ITER group

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1.

THE ITER GROUP

Instituto Tecnológico y de Energías Renovables, SA

Fundación ITER

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Energía Verde de la Macaronesia, SL

EVM2 Energías Renovables, SL

Parques Eólicos de Granadilla, AIE

Agencia Insular de Energía de Tenerife, Fundación Canaria

Solten II Granadilla, SA

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NAP África Occidental-Islas Canarias, SA

Instituto Volcanológico de Canarias, SAU

Soluciones Eléctricas Insulares, SL

ITER group awards and recognitions

1 The ITER Group

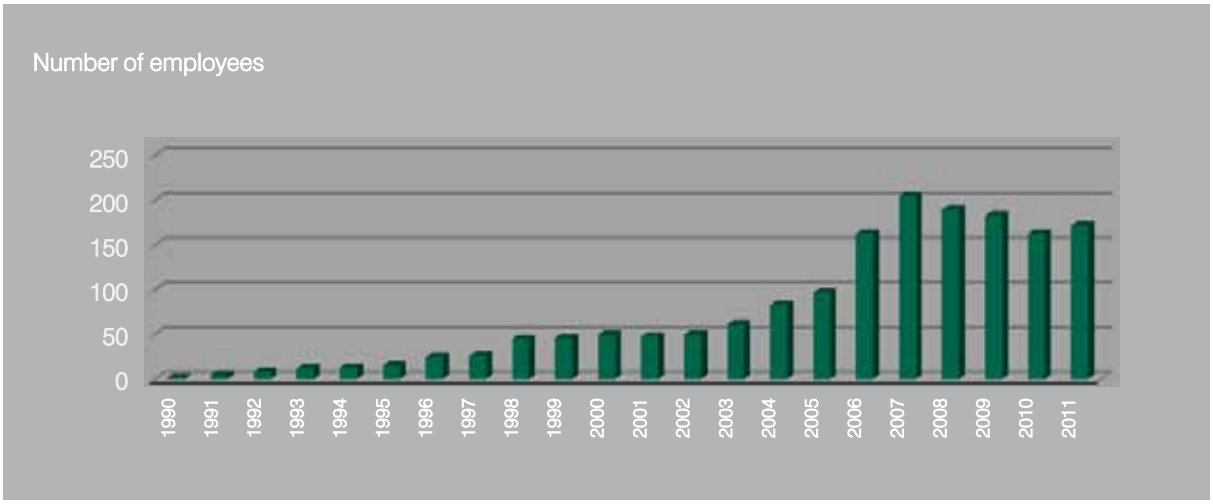
In 1990 the Cabildo Insular de Tenerife creates ITER as a solution to the island´s need of having a Research Centre of Renewable Energies and New Technologies. During its development, the Institute has not only grown in number of facilities and staff, but has branched into a group of entities which enables the attainment of the activities entrusted within its corporate purpose. These entities make up Group ITER.

Among the activities developed by these entities we can highlight the implementation and promotion of research applied to renewable energies and everything dealing with them, the infrastructure needed for the development of research, engineering and the local industry, and of the export of know-how to other countries and archipelagoes.

The ITER Group is made up of ITER and the following companies listed in the table bellow:

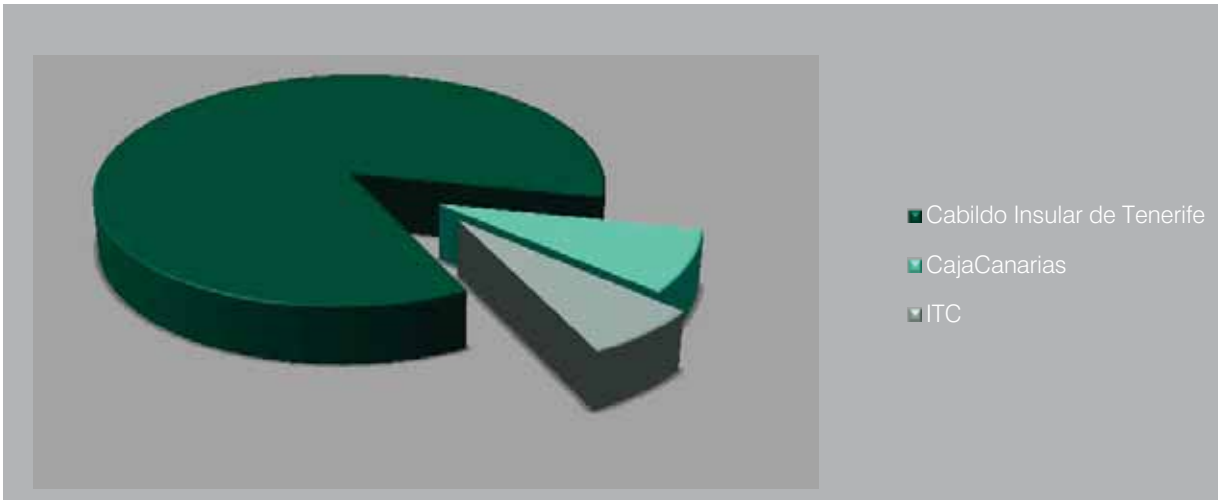
	Companies belonging to Group ITER	ITER´s Share
Renewable Energies	Fundación ITER	100%
	SOLTEN III Arico, S.A.	100%
	Eólicas de Tenerife, AIE	50%
	Energía Verde de la Macaronesia S.L. (EVM)	39,94%
	EVM2 Energías Renovables S.L.	30%
	Parques Eólicos Granadilla AIE	30%
	Agencia Insular de Energía de Tenerife,Fundación Canaria	23,53%
	Solten II Granadilla, S.A.	21,55%
	Instituto Tecnológico y de Telecomunicaciones de Tenerife S.L.U	100%
Telecommunications	NAP África Occidental Islas Canarias S.A.	48,52%
	Instituto Volcanológico de Canarias.	100%
Other	Soluciones Eléctricas Insulares S.L.	100%

The ITER Group relies on a multidisciplinary team of 173 professionals which work coordinately in the different activities carried out by the group.



Instituto Tecnológico y de Energías Renovables, SA

Public limited company constituted on December 27th, 1990. The Cabildo Insular de Tenerife is the main shareholder and after several incorporations, ITER´s share is distributed in the following way:



Research activities and technological development related with the use of renewable energies were meant to be promoted with the creation of the Institute. Other interesting aspects for the regional social and economic development of the island such as the groundwater resources, seismic-volcanic prediction and surveillance, environmental control, and development of communication and information technologies are also promoted nowadays.

Since the beginning, the Institute follows two main action lines: electricity generation with renewable energies and the execution of investigation projects related with renewable energies, environment and engineering.

The activities developed in the Institute can be classified within these action lines and are specially entrusted in its social purpose:

To implement and promote renewable energies applied research.

To develop technological systems for renewable energy uses.

To coordinate energy R & D projects in the Canary Islands.

To create the needed infrastructure for the development of local research activities, engineering and industry.

To develop results for the local industry and export the know-how to other countries and archipelagos.

To promote the relation with the scientific community at national and international level.

Scientific personnel training in all renewable energy fields.

Fundación ITER

Foundation established the 3rd of December, 1997, of which ITER is the only shareholder.

The foundation has as social purpose the promotion, development of scientific, technical and economic activities in renewable energies and technologies that contribute to reduce the dependence on imported oil, to obtain stable and competitive prices and to guarantee minimum energy supplies for production and elevation of drinkable water in exceptional situations.

For the development of these aims the Foundation carries out different actions:

Awarding of financial grants.

Awarding of grants to institutions.

Participation in the development of activities from other entities that carry out overlapping or complementary activities with the Foundation.

Studies, research, courses and conferences.

Publications, exhibitions and other cultural activities.

SOLTEN III Arico, SA

Trading company established the29th of October, 2008. It is totally shared by Instituto Tecnológico de Energías Renovables PLC.

This public limited company is in care of the promotion, design, building and exploitation of every kind of renewable energies plants, as well as to carry out and promote any kind of applied researches in this field and develop technical systems that allow the use of these energies.

Eólicas de Tenerife, AIE

Economic Interest Association established on November 27th, 1995 and registered in the Company House of Santa Cruz de Tenerife.

It is integrated by Unelco Participadas SA, el Instituto Tecnológico de Energías Renovables SA and Made Energías Renovables SA. The social purpose of the Association is the cooperation between the shareholders for the development and research in the field of wind energy, by means of the promotion, construction, exploitation and management of the resources of Tenerife, increasing therefore the wind energy exploitation in the island.

Eólicas de Tenerife owns the 4.8 MW Wind Farm installed in ITER lands, which consists of 8 MADE AE-46 wind turbines, each one with 600 kW power. It has an annual energy production of 14 GWh.

Energía Verde de la Macaronesia, SL

Trading company established the 10th of October, 2007 and shared by Sumitomo Corporation, ITER, Cerco Tenerife SL, Feralon Canarias SL, and two private investors.

As established in its social purpose, the limited company Energía Verde de la Macaronesía is aimed to promote, design, construct and manage all kinds of renewable energy plants, as well as to implement and promote any type of applied research in the field of renewable energies and develop systems or techniques for the use of them.

EVM2 Energías Renovables, SL

Trading company established the 10th of October, 2007. It is a limited company whose main shareholders are Proparsa 2000 SA, ITER SA, Cerco Tenerife SL and Feralon Canarias SL.

The social purpose is the promotion, design, construction and exploitation of all kinds of renewable energy plants as well as the implementation and promotion of any type of applied research in the field of renewable energies and the development of systems or techniques that allow the use of them.

Parques Eólicos de Granadilla, AIE

Economic Interest Association constituted on January 4th, 2005. The partners of this group are Instituto Tecnológico y de Energías Renovables SA, Polígono Industrial de Granadilla Parque Tecnológico de Tenerife SA and the company Granadilla SueloSur SL.

The social purpose of the Group is:

Cooperation among the partners for the development and research in the area of wind power.

Promotion, construction, exploitation and administration of the wind resources of the island of Tenerife.

Increase the use of Wind Energy in the island.

Agencia Insular de Energía de Tenerife, Fundación Canaria

Foundation established the 26th of July, 2005. The foundational members of the Tenerife Energy Agency are Cabildo Insular de Tenerife, Instituto Tecnológico y de Energías Renovables SA, Fundación Canaria Caja Rural Pedro Modesto Campos, Loro Parque SA, Endesa Distribución Eléctrica SL, Compañía Transportista de Gas de Canarias SA and Asociación Hotelera y Extrahotelera de Tenerife, La Palma, La Gomera y El Hierro.

The social purpose of the Foundation is:

Promote measures for the rationalization of energy production and consumption to achieve a higher energy self-sufficiency in the island.

Coordinate and collaborate with the different administrations, particularly those from the island.

Develops, in collaboration with local bodies, the implementation of dissemination, promotion and implementation programs of actions related with renewable energies and energy efficiency and saving.

The provision of information and advice on energy efficiency and good energy consumption behaviors to end users.

Solten II Granadilla, SA

Trading company established the 26th of October 2007 and shared by private investors and ITER.

Solten II Granadilla SA deals with the acquisition, promotion, management, development and exploitation of PV solar platforms, as well as with the production, transport and distribution of electricity from solar photovoltaic platforms.

Private investors interested in the production of PV solar energy connected to the grid have, this way, the opportunity to participate by means of the purchase of shares in sustainable initiatives for the economic and industrial development of the island, contributing to increase the participation of renewable energy in the primary energy balance of the Canary Islands.

Instituto Tecnológico y de Telecomunicaciones de Tenerife, SLU

Trading company established the 20th of April, 2009. It is totally shared by Instituto Tecnológico de Energías Renovables SA.

As established in its social purpose, this limited company has as aim the construction, exploitation, installation, management and maintenance of all types of networks and telecommunications infrastructures including the wiring through the seabed and / or land bed as well as the promotion, provision and marketing of services and / or products of electronic communications, telecommunications, information society services, multimedia and added value.

Furthermore, among its objectives there is the promotion of free competition in the market for telecommunications networks and services on the island of Tenerife, Canary Islands and West Africa.

NAP África Occidental-Islas Canarias, SA

Trading company established the 28th of April, 2006, and registered in the Company House of Santa Cruz de Tenerife. It is shared by a big number of companies including Chafiras SA, Construcciones Gomasper SL, Obras y Servicios Daltre SL and Instituto Tecnológico y de Energías Renovables SA.

This society focuses its activities on the purchase of infrastructure for the establishment of the Neutral Access Node NAP in Tenerife, the operation and maintenance of the telecommunications networks within the NAP of clients housed at the neutral point, as well as of the own ones of the centre.

The NAP of Tenerife will help Africa to reduce the cost of Internet connection, will focus the international traffic of data to this continent and will also manage the regional communication.

Instituto Volcanológico de Canarias, SAU

Public limited company constituted on June 29th, 2010. It is entirely shared by the Instituto Tecnológico y de Energías Renovables SA.

The institute works to improve the knowledge the population has on the volcanic phenomenon present in the Canary Islands. The Institute works to improve the management of the volcanic risk as well as the advantages of living in an active volcanic area in other to contribute to the sustainable development of the cities located in volcanic territories.

The following activities are specially entrusted within the corporate purpose, among others:

Cooperation and coordination among public administrations to carry out and promote the volcanic research, with special emphasis in the reduction of the volcanic risk.

To help to improve and optimize the knowledge on the volcanic phenomenon to improve the management and to contribute to the sustainable development of the societies established in volcanic territories.

To promote training of scientific and technical staff in all the fields concerning volcanoes.

To help improve the response before volcanic phenomena.

To promote and to stimulate scientist and technical collaboration and the creation of a network of knowledge on the volcanic phenomenon.

To collaborate with the Canarian Universities in the subjects related with volcanic matters.

To promote the dissemination of science in volcanic matters to contribute to a better education and culture on and about the volcanic phenomenon.

To develop research, technical projects, advising, technical assistance, work direction, and training in environmental matters.

Soluciones Eléctricas Insulares, SL

Trading company established the 17th of July, 2007 which is totally shared by Instituto Tecnológico de Energías Renovables SA.

As established in its social purpose, this limited company deals with the manufacturing, installation, marketing and distribution, both in national territory and abroad, of all sorts of articles and materials related to electricity and renewable energy in general, as well as the construction, repair, restoration and preservation of the building works and, specifically, facilities involving directly or indirectly the use of renewable energies.

The company also carries out researches or technical projects and offers advisory services, technical support and engineering management within the field of any activity in renewable energy and technological innovation, together with research, development and demonstration for the development of the activities listed above.

ITER group awards and recognitions

Through many years of experience, the ITER Group has received numerous awards. These recognitions have contributed to the consolidation and expansion of the group and state the usefulness of the social labor carried out.

Appointed Center of Excellence for the Development and Dissemination of the Renewable Energies by UNESCO.

Award " TEIDE DE ORO " 2001 of Radio Club Tenerife.

Award SOL y PAZ to the managerial labor 2005 within the frame of the Solar Meeting celebrated in the same year.

Award FECITEN 2009 of the Centres of Initiatives and Tourism´s Federation of Tenerife.

Data Center Leaders Award in the category of “Innovation in an Outsourced Environment " in the International Contest Datacenter Dynamic Awards 2010.

Award **Mundo Empresarial Europeo 2011** which recognizes The Institute of Technology and Renewable Energies **as the best organization of the Canary Islands** in the Edition XIV of the prizes**.**

2.

INFRASTRUCTURES

ITER's Headquarters

Engineering Warehouse

DATA CENTER of the ALIX project: D-ALIX

Generation Control Centre

Electric Substation

Photovoltaic module Factory

Wind Tunnel

Chemistry, Gas Isotope and Groundwater Lab

Electronics Laboratory

ITER's Bioclimatic Houses

Visitors Centre

2 Infrastructures

ITER is located in the Industrial Estate of Granadilla, in the southern coast of the island of Tenerife, covering a total of 400.000m^2. ITER was designed as an experimental and dissemination area. Following this premise ITER gathers several installations resultant from the projects carried out.

ITER is in continuous growth to support and encourage the R & D activities it develops. The results of the demonstrative projects executed have added new facilities to the infrastructures of the Institute.

ITER’s Headquarters

The main Office of the Institute is a bioclimatic building designed by the team of architects constituted by Ana Maria Zurita Exposito and Jose Fco Arnau Diaz-Llanos.

The headquarters were planned on the basis of the latest bioclimatic design criteria so as to reduce the energy consumption required to ensure the habitability and comfort of the facilities of the company.

It is a triangular construction based on two wings that contain the various offices and installations. The director’s office on the 1st floor and the meeting room at the bottom floor, are situated in the vertex.

Engineering Warehouse

The Engineering Warehouse is a new building of 800 m^2 that hosts ITER’s engineering division. It consists of a diaphanous area with capacity for 80 workstations, along with a manager’s office and a meeting room. A photovoltaic plant has been installed on the building, which belongs to part of the 2 MW installation of SOLTEN II project.

This building is also headquarter of the companies Instituto Tecnológico y de Telecomunicaciones de Tenerife, NAP of Western Africa and Canary Islands and Canalink's local office.

DATA CENTER of the ALIX project: D-ALIX

This high availability datacenter, framed within the ALIX initiative and instigated by the Cabildo Insular of Tenerife, is the infrastructure that stands as a site for ICT equipment. This equipment is required so that Tenerife can host technological enterprises that offer services both within the archipelago and Europe, Africa and America.

The building of the datacenter is a simple and modular structure that will allow its construction to take place in 4 phases replicating the initial model. At present, the first phase is finished. Phase one has a constructed surface of 4,498.87m^2, from which 1,500m^2 correspond to space assigned for technical floor where the ICT equipment will be located, and the rest for auxiliary facilities.

This infrastructure provides service levels comparable to the ones established in a TIER IV categorized facility. The TIER classification, established by the TIA (Telecommunications Industry Association), is based in the high availability infrastructure of the datacenter, due to its N+1 and 2N+1 redundancy levels in its electrical supply and air-conditioning infrastructures, and in the access to communication with the outside. Furthermore, and in line with the environmental awareness of the ITER, the datacenter's roof implements 400 kW of photovoltaic plants.

Generation Control Centre

According to the in force legislation, electrical production facilities in insular systems and outside the mainland, which are in special regime and from 1 MW must be assigned to a Generation Control Center, provided with a suitable connection with the control centers of Red Eléctrica. These centres must guarantee a secure live dialogue with Red Eléctrica and a continuous operation of 24 hours a day, 365 days a year. Benefits such as: reduction of the costs of operation and maintenance, improvement of the availability and integration to the network and increase of the efficiency are obtained when assigning the facilities to a Generation Control Center.

ITER´s Generation Control Center (CCG) carries out dialogue Works with the Control Centre of the Operator of the System of Special Regime (CECRE). These works are carried out both for wind installations and PV installations managed by the Institute, as well as for future installations. The Control Centre also has third party installations assigned.

The measurement equipment of the Wind installations assigned to the Control Centre had to be changed in order to connect to the centre and fulfill the standards set out in Regulation.

Electric Substation

ITER is finishing the transformer substation of 20/66KV of access to the transport grid. Its construction has been necessary to overcome the limitations in the available capacity of the electric company's distribution lines and enable the evacuation of the energy generated, not only by ITER's photovoltaic plants, but also by the new wind parks to be installed in the area. This electric substation will be used by future projects that will develop in the territory as well as by some previous ones.

The transformer substation of 66/20kV, initially of 50 MVA, will be enlarged with a second transformer until reaching a power of 100 MVA. This transformer substation will be connected by an underground line of 66 kV to the future substation of Abona, as planned by Red Electrica de España, although nowadays it is still in process to be connected temporarily to the substation in the Industrial Estate of Granadilla.

Photovoltaic module Factory

The creation project of a PV module factory in ITER installations was originated by the need of covering all the PV module requirements of the Institute and to continue and extend the investigations that have been going on in this area through the past years.

The Project included a warehouse 125 meters long and 20 meters wide divided in three sections, one assigned to the storage of raw material, the second one assigned to module manufacturing and the third one assigned to the storage of PV modules. It covers a total area of 2500 square meters in which 1000 are dedicated to the manufacturing zone with two assembly lines.

Each line consists of two cell soldering machines (Stringer machines), one cell positioning robot, layout glasses tables, module checking tables and one laminator to shape the modules. Both lines converge in a module testing and classifying machine. After that, modules go through the frame assembly tables and packing zone.

In 2008, this PV module factory was brought into operation in ITER facilities. The operator's experience and the familiarization with the machines have allowed an increase in the production to 200 kW each month.

Later on, ITER officially certified its modules after being tested in Italian laboratories. In these tests, not only did the modules pass every exam they were subjected to, but also passed with excellent results the demanding tests of power output capability against thermal cycles tests, temporal tests and aggressive atmospheric tests. Nowadays, ITER has the capability to produce 30 MW of PV modules with full quality warranties not only in its production lines, but also in the final product.

Furthermore, ITER has also evolved in the area of photovoltaic integration. ITER has been able to produce a high quality double glass PV module prepared which is installed in one of the ITER´s bioclimatic houses.

Wind Tunnel

The Wind Tunnel is an installation provided with a test section in which a rectilinear uniform flow of air with a constant speed can be obtained. Inside the Wind Tunnel's test section, real objects and scaled models are located to observe the real effect of wind over them, so that it can be studied. The test section has been built in a modular and exchangeable manner, so that it can be perfectly adapted to the requirements of each and every test.

The innovations in its construction, power plant and control, make the tunnel extremely competitive in terms of costs and features as well as suitable for a wide range of applications, such us: Agricultural R+D, civil Engineering, architecture, renewable Energies, sports Training. The tunnel has recently been modified and has been linearized to carry out aeronautical tests.

With the aim of carrying out the tests of the aerodynamic profiles and of the model of the solar plane prototype, the quality of the flow in the aerodynamic tunnel has been improved with the installation of grids in the settling chamber. Also for the solar plane prototype, ITER has designed, manufactured and calibrated a Pitot tube in order to measure the fluid flow reference velocity of the tunnel.

The outstanding features of the aerodynamic tunnel for civil tests are: closed circuit, test section of 2x2 m^2 and 3m long, 56 m/s of maximum operation speed and nine fans of 22 kW each one, controlled by a frequency converter.

Chemistry, Gas Isotope and Groundwater Lab

This lab carries out the chemical and isotopic characterization of gases and water underground along with other environmental matrixes, the lab is provided with:

- **Atomic absorption spectrophotometer (AAS)**
- **Induced-coupled plasma atomic emission spectrophotometer (ICP-AES)**
- **Gas chromatograph (GC)**
- **Gas micro-chromatograph**
- **Mass / gas chromatograph (GC/MS)**
- **Quadruple mass spectrometer (QMS)**
- **Ionic and liquid chromatograph (IC and LC)**

Electronics Laboratory

It's located inside one of the warehouses above which the photovoltaic platform of 2 MW has been installed.

Equipped for the design and development of prototypes and electronic systems, it relies on a clean area, equipped with:

Industrial machinery for the development of small and medium scaled prototypes in series (pick and place machine, convection drying oven).

Machinery suitable for the fast development of double side and high frequency prototypes.

Likewise, it has an area destined for checks and testing during the design phase, both for the analogical and the digital part, equipped with instruments such as logic analyzer, oscilloscopes, wave generators, frequency meters, power supply, etc.

Finally, the lab has also an area for the integration of large-scale equipment, as in the case of the inverters TEIDE 100 manufactured by the Department of Electronics.

ITER's Bioclimatic Houses

This urban development was carried out using bioclimatc architecture criteria where the adaptation to the environment and to the climate reduces their effects and the energy consumption used in the conditioning.

The 24 houses that make up the development are energetically self-sufficient due to the use of PV and solar thermal panels. It is, therefore, an autonomous, not pollutant complex provided with open spaces and inspired by ecological principles.

The houses are under constant research. Both the everyday monitoring and the different implementation of systems and materials used in each house are observed regularly.

The development is organized in 3 blocks separated by four streets which branch from the main that come down from the Visitors Centre. The development also has small squares and open spaces where the visitors can relax.

The averaged built surface of each house is between 110-120 m^2, with a kitchen, a lounge, 1 or 2 bathrooms and 3 or 4 bedrooms, distributed in one or two floors. All of the designs are different and count with contrasting aesthetic concepts. This makes the development a perfect place for the dissemination of the bioclimatic principles and to raise awareness about the importance of making this principles part of the actual buildings.

Visitors Centre

The Visitors Centre is a project of the architect César Ruiz Larrea, winner of the 25 Bioclimatic Dwelling contest which is, together with the Technological Walkway, part of ITER's dissemination's facilities.

The architect was entrusted to design this bioclimatic building to welcome the visitors to the complex and host some of the projects of the International Contest of the 25 Bioclimatic Dwellings for the Island of Tenerife, along with their monitored results.

The Visitor's Centre expects to draw the visitor's attention to energy matters; the sun as an energy source, traditional energy sources, consequences in the environment, their limited nature, the alternatives existing such as the renewable energies. This information complements those of the Technological Walkway and the ones resulting from the motorization of the Bioclimatic Houses.

The Centre has a conference room with 200 seats with two simultaneous translation cabins and one projection room, two multipurpose rooms, a small gift shop and a cafeteria.

Technological Walkway

This installation is an initiative designed, promoted and executed by ITER and the Cabildo of Tenerife which was inaugurated in 1998. The Walkway is an outdoor equipment integrated in a small valley that crosses the Industrial Estate of Granadilla, next to the headquarters.

The Walkway aims to inform the visitors a little more about renewable energies and concepts related to them, such as energy saving, and the rational use of the resources all this framed within ITER´s installations and being an example of real application of this type of energies. This outdoor equipment is provided with practical small scaled elements of the different types of renewable energies. Being outdoors brings the opportunity to interact with the natural resources which are the motor of the renewable energies explained.

The Walkway is located in a small valley, around an artificial stream that starts in a small pond in the head and ends in another one at the bottom. The stream helps to mitigate the climate inconveniences in the valley, reducing the strong winds and the high temperatures by the evaporation effect of the bodies of water and the surrounding vegetation.

The path is a one way tour that runs along the stream allowing everyone to see the different units that compound the walkway without the need of a guide, although guided visits are also available.

The Technological Walkway is organized in separate thematic areas or units. The reason for this distribution is only didactic starting the visit with a general introduction to the energetic problem and the consequences of consuming determined energy resources. The visit continues through specific displays on each renewable energy source and ends with a display aimed at how everyone can participate and get involved in order to contribute to solve the problem.

3.

PHOTOVOLTAIC INSTALLATIONS

ITER'S Installations

SOLTEN I 13 MW

SOLTEN II 11 MW

Finca Verde 9MW

Mercatenerife 100kW

Third Party PV Installations

Loro Parque 1 MW- Phase II

Metropolitano de Tenerife 880 kW

Mercasa 100 kW

80 kW Photovolatic Installation in Valle de Guerra

17,67kW Casa del Ganadero Project

Future Installations

900kW TITSA Photovoltaic Installation

200 kW Photovoltaic Installation in Bodega Comarcal de Tacoronte

Finca Roja 1,4 MW

400 kW PV Installation in the DATA CENTER of the ALIX Project

100 kW Photovoltaic Installation in Bodega Comarcal de Icod

100 kW Photovoltaic Installation Finca Punta Gorda

20 kW PV Installation in Helechos de Cuero Tenerife

9kW PV Installation in Los Realejos

4,6 kW PV Installation in Radazul

Monitoring, Operation and Maintenance of Photovoltaic Plants

3 Photovoltaic Installations

Fulfilling its foundational aims and taking advantage of the opportunity afforded within the frame of the existing energy policies, ITER has accomplished an important effort to promote the development of renewable energies in the island during the past years. In this line, and particularly dealing with photovoltaic energy, ITER has contributed to the installation of 40MW throughout the island since 2005. This is a great engineering and resource management achievement which has redounded on two very important benefits for the island. On the one hand, it has helped to increase the weight of renewables in the energy balance of the island, helping to reduce its external dependence. And on the other hand, a new economic engine capable of generating wealth and employment in crisis time has been created.

In order to guarantee the optimum operation of the installations and, as consequence, to assure the continuity of this type of initiatives in the future, ITER has compromised an important part of its resources in the exploitation and maintenance tasks of the installations mentioned above.

ITER'S Installations
SOLTEN I 13 MW

SOLTEN I is a photovoltaic solar platform installed in the terrains of Granadillas Industrial Estate. The platform consists of 130 PV modules of 100kW power connected independently to the low voltage electric grid. Each 100kW PV plant is owned by different holders and ITER acts as executor and manager of the entire installation.

Photovoltaic panels from six different manufacturers have been used in this installation, giving place to different geometries and different peak powers. The panels used were 56.395 modules made by SOLARWORLD, 20.690 modules made by KYOCERA, 3.498 modules made by SHARP for ITER, 667 modules made by ITER, 648 modules made by YINGLI and 308 modules made by DEIKKO.

The 100kW inverters used in the installation were the model TEIDE 100 and were designed and manufactured by ITER. The energy generated is evacuated to the electric grid through six transformation centers of 2MVA and one of 1MVA.

The photovoltaic plants of 100 kW that make up SOLTEN I are south oriented and have an inclination of 10 º. The support structures of the modules have been designed and installed by ITER. They are light structures of aluminum, totally modular and detachable. They are composed basically by pillars, girders and straps, by means of profiles of aluminum and foundation consisted of concrete and profile of galvanized steel.

The structures were installed adapting the pillars to the topography of the terrain, so that very little clearing works were needed. Furthermore, the installations were done with the minimum height required, observing the measures for the landscape integration.

The platform is controlled by a complete system of monitoring and control, designed and implemented by ITER. The monitoring is carried out remotely form ITER's facilities in Granadilla. SOLTEN I is assigned to the Generation Control Center (CCG-ITER) from July 1st, 2011. In addition, and in fulfillment of the RD 1565/2010, the three installations have the Certificate of Conformity of Response to power dips, issued by AENOR on October 1st, 2011. The installation of 13 MW was put in service by phases, begun in April, 2006 with the Pilot Plant and finishing in December, 2007, and has an accumulated production on December 31st, 2011 of 115.065 MWh.

SOLTEN II 11 MW

SOLTEN II is a solar photovoltaic platform of 11 MW of rated capacity, connected to the mid voltage electric grid, and made up by three installations; one of 7 MW on the ground located in the same plot of the Industrial estate of Granadilla where SOLTEN I is located, and two facilities of 2 MW each, one on the ground and the other one on cover, both located in ITER's lands. The plant is property of a sole member, the company SOLETN II GRANADILLA, S.A. owned by 313 shareholders, and ITER acts as promoter, installer, manager and president of the company.

The platform is divided in three installations and each of them articulated in generating units of 100 kW power, orientated to the south, on a light aluminum structure, modular and detachable sloping 10 º. The panels used in this installation come from five different manufacturers, 26.412 modules made by YINGLI, 24.640 modules made by SHARP for ITER, 9.676 modules made by KYOCERA, 6.639 modules made by DEIKKO, 1.188 modules made by SOLARWORLD and 532 modules made by ISOFOTON.

As already mentioned, one of the 2MW installations is located on the cover of the warehouses. These covers were finished with a suitable inclination to optimize and to correctly integrate the photovoltaic plants.

The 100kW inverters used in the installation were the model TEIDE 100 and were designed and manufactured by ITER. The energy generated is evacuated to the electric grid through five transformation centers of 2MVA and one of 1MVA.

The platform is controlled by a complete system of monitoring and control, designed and implemented by ITER. The monitoring is carried out remotely form ITER's facilities in Granadilla. The platform is assigned to the Generation Control Center (CCG-ITER) from July 1st, 2011. In addition, and in fulfillment of the RD 1565/2010, the three installations have the Certificate of Conformity of Response to power dips, issued by AENOR on October 1st, 2011.

The 7 MW installation started to work in December, 2008 and has had an accumulated production on December 31st, 2011 of 50.126 MWh. The installation of 2 MW on soil started working in June, 2008 and has had an accumulated production on December 31st, 2011 of 12.104 MWh. Finally, the installation of 2 MW on cover was put in service in August, 2008 and has had an accumulated production on December 31st, 2011 of 13.424 MWh.

Finca Verde 9MW

FINCA VERDE is a solar photovoltaic plant of 9 MW power, located in the place known as "Las Esquinas", in Arico's municipal area, connected to the mid voltage electric grid. The plant is owned by a single member, the company EVM2 Renewable Energies, S.L., where ITER operates as promoter, installer and president of the company.

The installation is composed by 90 photovoltaic plants of 100 kW power each, orientated to S-SW, placed on a light structure of aluminum, modular and detachable sloping 10º. The installation has a total of 58.380 modules model ST 162 P, made by the Japanese company Sharp for ITER. The inverters used are a model TEIDE 100, of 100 kW of power each, designed and made by ITER. The energy generated is evacuated to the electric grid through four transformation centers of 2MVA and one of 1MVA.

The plant is controlled by a complete system of monitoring and control, designed and implemented by ITER. The monitoring is carried out remotely form ITER's facilities in Granadilla. The platform is assigned to the Generation Control Center (CCG-ITER) from July 1st, 2011. In addition, and in fulfillment of the RD 1565/2010, the three installations have the Certificate of Conformity of Response to power dips, issued by AENOR on October 1st, 2011.

The installation was brought into service in July, 2008 and has had an accumulated production on December 31st, 2011 of 50.230 MWh.

This installation was finished in August 2008, and the final registration in the Administrative Register of Installations in Special Regime was done in September.

Finca Roja 3.6 MW

FINCA ROJA is a solar photovoltaic plant of 3,6 MW power, located in the place known as "Las Esquinas", in Arico's municipal area, connected to the mid voltage electric grid. The plant is owned by a single member, the company Energía Verde de la Macaronesia, S.L., where ITER operates as promoter, installer and president of the company.

The installation is composed by 90 photovoltaic plants of 100 kW power each, orientated to S-SW, placed on a light structure of aluminum, modular and detachable sloping 10º. The technology used in Finca Roja is the same as the one used in Finca Verde, which is right next to this one. The installation has a total of 23.352 modules model ST 162 P, made by the Japanese company Sharp for ITER. The inverters used are a model TEIDE 100, of 100 kW of power each, designed and made by ITER. The energy generated is evacuated to the electric grid through two transformation centers of 2MVA.

The plant is controlled by a complete system of monitoring and control, designed and implemented by ITER. The monitoring is carried out remotely form ITER's facilities in Granadilla.

This installation is assigned to the Generation Control Center (CCG-ITER) from July 1st, 2011. In addition, and in fulfillment of the RD 1565/2010, the three installations have the Certificate of Conformity of Response to power dips, issued by AENOR on October 1st, 2011.

The installation was brought into service in September, 2008 and has had an accumulated production on December 31st, 2011 of 20.324 MWh.

Mercatenerife 100kW

ITER has carried out the installation of a photovoltaic plant of 100kW in Mercatenerife. The power plant is placed on the cover of the warehouse 1 of Mercatenerife, in the Industrial estate of the Mayorazgo, in the municipality of Santa Cruz de Tenerife.

The PV plant is constituted of 616 KYOCERA panels distributed in 2 rows of 22 groups each and separated by a central skylight. Each of these groups contains 14 panels, occupying approximately 786,69 m^2 of surface of cover.

The technology used is the same as in other projects developed by the Institute, with a southwest orientation and modular structures of aluminum that can be dismantled and with a 10º inclination. The inverter used is the TEIDE 100 inverter, designed and manufactured by ITER. The installation is connected to the mid voltage electric grid.

The installation was brought into service in August, 2008 and has had an accumulated production on December 31st, 2011 of 575 MWh.

Third Party PV Installations

ITER not only implements projects in which he is the promoter but also carries out such projects for other entities.

Loro Parque 1 MW- Phase II

LORO PAQUE Phase II is a solar photovoltaic plant of 1 MW power located in the place known as "Lomo de Abole-Icor ", in Arico's municipal area", connected to the mid voltage electric grid.

This installation is owned by the Company Loro Parque, S.A., where ITER operates as installer and manager.

The installation is made up of 10 Pv plants of 100 kW power each, south oriented, placed on a light aluminum structure both modular and detachable with an inclination of 10º. This installation has 5.106 modules of the type POWER PLUS, manufactured by the company CONERGY. The inverter used is the TEIDE 100 inverter, designed and manufactured by ITER and the energy generated is evacuated to the electric grid through one transformation centers of 1MVA.

The plant is controlled by a complete system of monitoring and control, designed and implemented by ITER. The monitoring is carried out remotely form ITER's facilities in Granadilla.

The installation was brought into service in March, 2011 and has had an accumulated production on December 31st, 2011 of 1.503 MWh.

Metropolitano de Tenerife 880 kW

This photovoltaic installation placed on the roof of the Workshops and Bus depots of the Metropolitano, in El Cardonal. ITER made the draft of the project and executed the installation, owned by Sociedad Metropolitano de Tenerfie SA.

The installation is made up of 5.432 panels from two different manufacturers, SHANGAI-CHAORI and ITER, distributed in 9 groups of 100 kW power. The panels are placed on a light and totally modular aluminum structure designed by ITER together with 9 TEIDE 100 triphasic inverters of 100Kw manufactured also by ITER.

The plant is controlled by a complete system of monitoring and control, designed and implemented by ITER. The monitoring is carried out remotely form ITER's facilities in Granadilla.

The installation has had an accumulated production on December 31st, 2011 of 5.296 MWh.

Mercasa 100 kW

The 100kW plant is placed on the cover of Mercatenerife's warehouse number 2, in the Industrial Estate of El Mayorazgo, in the municipal area of Santa Cruz de Tenerife. ITER has carried out the installation of the plant owned by the entity called Mercasa.

The photovoltaic plant is made up of 616 KYOCERA panels of the model KC-175-GHT-2 made of polycrystalline silicon with an efficiency of 13,7 %. The panels have a dimension of 1290 x 990 mm and a power of 175 W (±5 %). The total installed power is of 107,800 kW.

The photovoltaic plant is distributed in 2 rows of 22 groups separated by a central skylight. Each of these groups contains 14 panels, for what this installation will occupy approximately 786,69m^2 of the surface.

The technology used is the same as in other projects developed by the Institute, with light demountable and modular structures of aluminum, with a 10º inclination and a Southwest orientation. The TEIDE100 inverter, developed and manufactured by ITER was used and the installation is connected to the low voltage grid.

The installation was brought into service in August, 2008 and has had an accumulated production on December 31st, 2011 of 573 MWh.

80 kW Photovolatic Installation in Valle de Guerra

This photovoltaic installation is located on the roof of a building with agricultural use for the production of ornamental plants located in Valle Guerra, in the Municipality of San Cristóbal de la Laguna.

ITER has drafted the project and has installed this plant that belongs to the Orchid Lycaste Company S.L.

The distribution of the PV plant was designed on the cover of a warehouse bound for storage and installations, in 28 rows of 18 panels. Therefore this installation will occupy a surface of 940 m^2 approximately.

This 80 kW powered plant connected to low tension grid, is made up of 504 monocrystaline silicon panels of the model CS170 manufactured by ITER, with an efficiency of 13% , dimensions of 1306 x 991 x 40 mm and a nominal power of 170 W (±5 %), being the total installed power of the plant, 85,680 kW. The panels are mounted on an aluminum support structure which is very light, modular and detachable. It is 0.59 m high or 0,76 m in its highest point, with a 10 % inclination and its lowest point is 0,25 m above the floor. The inverter used is the three-phase TEIDE 80 model. Both the structure and the inverter have been designed and made by ITER.

The installation was brought into service in September, 2008 and has had an accumulated production on December 31st, 2011 of 359 MWh.

17,67kW Casa del Ganadero Project

This photovoltaic plant is installed on four pergolas in “Casa del Ganadero” in the municipal area of La Laguna, and is a property of the Excmo. Cabildo Insular de Tenerife.

The plant is distributed in 6 groups of 19 panels. The panels used are of the model SW155 ST made of polycrystalline silicon, manufactured by the German company SolarWorld, with efficiencies of 12 %, dimensions of 1,61m x 0,81 m and power around 155 W (±5 %). Therefore, the total number of panels is of 114 that covers a surface of 148 m^2. The panels have been mounted on a light structure of aluminum designed by ITER, totally modular and dismountable and with an inclination of 10 º.

The inverter installed is the TEIDE model of 17 kW, designed and manufactured by ITER, and the connection to the low voltage grid.

The installation was brought into service in September, 2008 and has had an accumulated production on December 31st, 2011 of de 73 MWh.

Future Installations

900kW TITSA Photovoltaic Installation

This installation will be located on the roof of the building of the depot TITSA SA, occupying about 5,706.36 m^2 of the 9,909 m^2 surface available. The installation will consist of 5544 modules and each unit of the plant is made up of 616 modules manufactured by ITER. The installation is divided into 9 units of 100 kW, and the technology used is the same as in previous projects of the Institute.

Regarding the administrative handling of this installation, the grid connection point has been designated, and the administrative authorization and the inclusion in the special regime, obtained, while waiting for the classified activities license and the minor works license. In turn, the necessary modification works have been handled with the electric company, to change the distribution Centre which will host the following connection of the PV system.

200 kW Photovoltaic Installation in Bodega Comarcal de Tacoronte

This facility will be located on the building of the Regional Winery in Tacoronte, occupying approximately 1,583.4 m^2 of the 2,477 m^2 of available surface. The installation will consist of 1,218 modules and each unit of the plant is made up by 609 modules manufactured by ITER. The installation is divided into 2 units of 100 kW and the technology used is the same as in previous projects of the Institute.

Regarding the administrative procedures for this installation it already has the grid connection point from the Unelco-Endesa, works license, administrative authorization and the pre-registration in the power allocation register. During 2012, this project will be executed and the installation will be brought into service.

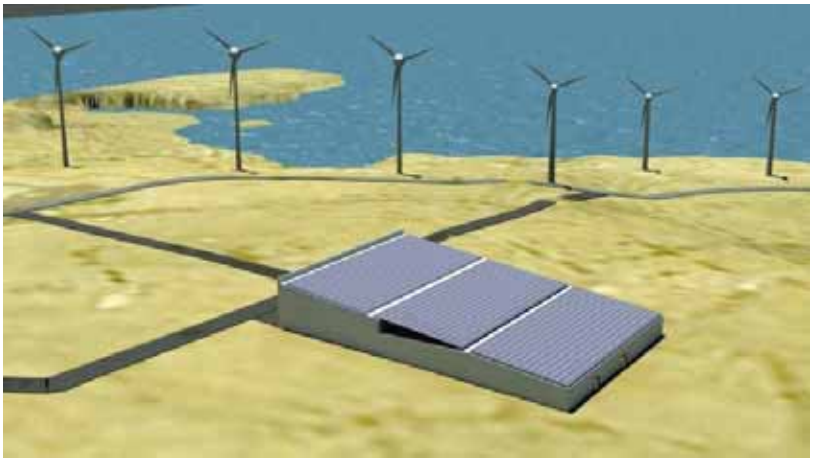
Finca Roja 1,4 MW

This installation will be placed the same plot as the Finca Roja 3,6 MW Photovoltaic Plant, in the place known as "Las Esquinas", in Arico's municipal area. The installation will be composed by 6.678 modules made by SHARP. The installation is distributed in 14 units of 100 kW, and the technology used will be the same as in the Institute´s previous projects.

This installation is owned by the Company Energía Verde de la Macaronesia, S.L., where ITER has participated as the installer. The works of execution of this project began in December, 2011, and there is foreseen that the installation is brought into service in May, 2012.

400 kW PV Installation in the DATA CENTER of the ALIX Project

This installation will be placed on the cover of the building of the Datacentre del ALIX project, located within ITER's boundaries, and occupying approximately 3859,68 m^2. The installation will be made up of 2.320 modules distributed in four units of 100 kW and the technology used will be the same as in previous projects of the Institute. Regarding the administrative processing of this installation, it already has the grid connection point and the administrative authorization and its waiting for the works license.



100 kW Photovoltaic Installation in Bodega Comarcal de Icod

This installation will be located on the building of the Regional Winery of Icod, occupying approximately 846,67 m^2 of the 1342,58 m^2 available. The installation will consist of 609 modules in one unit of 100kW and the technology used is the same as in previous projects of the Institute.

Regarding the administrative processing of this installation, it already has the grid connection point and the administrative authorization and its waiting for the works license.

100 kW Photovoltaic Installation Finca Punta Gorda

This installation will be placed on the cover of a warehouse of the company Finca Punta Gorda SL, located in Candelaria, and occupying approximately 846,67 m^2 of the 1322 m^2 available. The installation will be made up of 609 modules distributed in one unit of 100 kW and the technology used is the same as in previous projects of the Institute.

Regarding the administrative processing of this installation, it already has the grid connection point and the administrative authorization and its waiting for the works license. Once all these documents are granted, the installation will be registered in the pre-registration in the power allocation register.

20 kW PV Installation in Helechos de Cuero Tenerife

This installation will be placed on the cover of warehouse of the Helechos de Cuero Tenerife SL located in Tejina, and occupying approximately 185,76 m^2 of the 200 m^2 available. The installation will be made up of 144 modules distributed in one unit of 20 kW and the technology used is the same as in previous projects of the Institute.

Regarding the administrative processing of this installation, it already has the grid connection point and the administrative authorization, the works license and the registration in the power allocation register. During 2012, this project will be executed and the installation will be brought into service.

9kW PV Installation in Los Realejos

This installation will be placed on the cover of a private household in Los Realejos, occupying approximately 69,66 m^2. The installation will be made up of 54 modules distributed in a single unit of 9 kW power and the technology used is the same as in previous projects of the Institute.

Regarding the administrative processing of this installation, it already has the grid connection point and the administrative authorization, the works license, and the registration in the power allocation register. This installation has been built during this year, and it’s foreseen that the installation obtains the definitive registration in the producers' register of special regime.

4,6 kW PV Installation in Radazul

This installation will be placed on the cover of a particular house in Radazul, occupying approximately 38,6 m^2. It will be made up by 30 modules distributed in an single unit of 4,6 kW power and the technology used will be the same as in previous projects of the Institute

Regarding the administrative processing of this installation, it already has the grid connection point and the registration in the power allocation register, still waiting for the license of works. Once this license is obtained during the year 2012 the project will be executed and brought into service.

Monitoring, Operation and Maintenance of Photovoltaic Plants

ITER has developed several working tools and a proceeding methodology aimed at the uninterrupted works of monitoring, operation and maintenance of photovoltaic plants (both for those owned by ITER or to third parties), guaranteeing the ideal functioning of all its components.

This is possible thanks to the utilization of a monitoring system developed by ITER and applied in all its installations. This system is based on a SCADA (Supervisory Control And Data Acquisition) which allows to read the operational parameters of these installations at real time and to transfer them to a data server which centralizes the information and stores it.

The access to the above mentioned information allows, on the one hand, the constant supervision of the installations, which makes possible to know the status of the installation and this way to be in disposition to rapidly correct any incident that could arise. On the other hand the stored information can then be used in research or to elaborate periodic reports.

Finally, since every photovoltaic installation has singularities, ITER has designed protocols of preventive maintenance according to each of them, optimizing their requirements in a sustainable way using the available resources.

4.

WIND ENERGY INSTALLATIONS

2,83 MW Experimental Platform

4,8 MW Wind Park

5,5 MW Wind Park

New Wind Parks

16,8 MW La Roca and 18,4 MW Areté Wind Parks

18,4 MW Wind Park of Complejo Medioambiental de Arico

Monitoring, Operation and Maintenance of Wind Parks

4 Wind Energy Installations

At present, ITER has three active wind parks: the Experimental Platform of 2,86 MW, the Made Park of 4,8 MW, and that of Enercon of 5,5 MW. All of them are to be repowered and three new wind parks that obtained power in the last contest summoned by the Government of the Canary Islands will be installed shortly.

2,83 MW Experimental Platform

The Experimental Platform has produced a total of 74 GWh since its installation in 1990.

The experimental Platform was financed with the cooperation of several organizations (Cabildo de Tenerife, the Canary Islands Government, UNELCO and the European Union). It was installed with the aim of testing the performance of different wind turbines, regarding their origin, manufacture and technology. In total the Platform has 2.83MW of nominal power. The park consists of 9 wind turbines, installed between 1990 and 1993, with powers that go from 150 - 500 kW. Each wind turbine uses different technologies: horizontal and vertical axis turbines, fixed and variable pitches, synchronous and asynchronous generators. They show outstanding differences in diameter and height as well: diameters between 25 and 40 meters and heights between 25 and 42 meters. Nowadays, the rated power of the platform is of 1,8MW.

As provided in the Order of October 6th, 2004 of the Industry, Commerce and New Technologies regional Ministry of the Canarian Government, which establishes the technical and administrative conditions for the repowering of the current parks, ITER and ECYR have signed a cooperation agreement for the repowering of the above mentioned wind turbines. The repowering will allow the maximization of the wind's potential in the area by substituting the obsolete technology for new one, installing one single Enercon wind turbine of 200 kW, type E-70.

4,8 MW Wind Park

The MADE Wind Park has produced a total of 165 GWh since its installation in 1996.

The 4.8 MW wind park was installed in 1996 by the association of Economic Interest "EÓLICAS DE TENERIFE", a partnership shared by ITER (50%), MADE and UNELCO and subsidized by MINER. At the beginning, the park consisted of sixteen MADE AE-30 wind turbines, each one with 300 kW nominal power, that were replaced in 1999 by eight wind turbines MADE AE-46 of 600kW each.

As provided in the Order of November 15th, 2006 of the Industry, Commerce and New Technologies regional ministry of the Canarian Government, which establishes the technical and administrative conditions for the repowering of the current parks, Eólicas de Tenerife has requested the administrative authorization and approval of the project for the repowering of the Granadilla III Wind Park, by means of replacing the existing wind turbines by four wind Enercon turbines type E-82.

5,5 MW Wind Park

The Enercon Wind Park has produced a total of 175 GWh since its installation in 1998.

This 5,5MW park was an ITER's self-financed project that was installed in 1998. It consists of eleven ENERCON E-40 turbines with 500 kW of nominal power. The estimated annual energy production is of 16, 5 Gwh.

The Art. 7 of the Decree 53/2003 of 30 April, which regulates the installation and operation of wind parks in the area of the Canary Islands, allows the unit capacity increase of wind turbines by replacing them by new ones, This increase is allowed up to a limit of 50% of the total power of the wind turbines replaced.

Within this frame, the current park will be repowered and substituted by a 9,75 MW (5 ENERCON E-70 of 2 MW each) in the Granadilla industrial estate.

New Wind Parks

The Order of April 27th of the General Directorate of Industry published in the BOC Nr. 89, announced on May 4th 2007, a public contest to assign power in the category of new wind park installations appointed to inject all their energy in the insular electric systems.

The wind parks allocated to ITER are:

Wind Park of the Complejo Medioambiental de Arico, with a power of 18.4 MW, to be installed in the Municipal Term of Arico and promoted by ITER.

La Roca Wind Park with 18,4 MW, to be installed in the Municipal Term of Granadilla, promoted by the Economic Interest Group "Parques Eólicos de Granadilla", of which ITER is part.

Areté Wind Park, with 18,4MW, to be installed in the Municipal Term of Granadilla, also promoted by the Economic Interest Group "Parques Eólicos de Granadilla".

16,8 MW La Roca and 18,4 MW Areté Wind Parks

ITER will represent the wind parks of La Roca, Areté and Central de Granadilla when dealing with Red Electrica de España. The wind park of Central de Granadilla is promoted by ENEL Green Power.

These three parks will be connected to the future substation of Granadilla (planned to be operating by 2014 by Red Electrica de España). Previously ITER´s substation will increase its voltage from 20 to 66 kW.

During the year 2011, and continuing with the works begun in 2010, ITER has presented a request of extension of the execution project (granted also in 2011) waiting for the resolution of the Environmental Impact study. A second rectification was made to the mentioned Study after being requested by the Council of Environment. At this moment the document is in the consultation phase in the administrations and public entities.

In addition, the Declaration of General Interest for both parks was requested, and granted during the summer of 2011.

The procedures to request the access to the transport grid of the Industrial estate of Granadilla´s node started at the end of 2010 and were granted by Red Eléctrica de España during the year 2011.

18,4 MW Wind Park of Complejo Medioambiental de Arico

The Wind park of Arico's Environmental Complex will connect to a position of line in Abona together with the parks of Las Aulagas of 3,8 MW and Chimiche II of 18,4 MW (both promoted by Ecological Energies of Tenerife) and the Wind Park El Rincón of 18,4 MW (promoted by ENEL Green Power).

The parks will be connected to the future substation of Abona (planned to be operating by 2014 by Electrical Network of Spain) in a position of line L2. Previously, a new substation still not built and owned by all the promoters, will increase its voltage from 20 to 66 kW. At present, the suitable future emplacement is still to be determined.

During the year 2011, and continuing with the works begun in 2010, ITER has presented a request of extension of the execution project (granted also in 2011) waiting for the resolution of the Environmental Impact study. A second rectification was made to the mentioned Study after being requested by the Council of Environment. At this moment the document is in the consultation phase in the administrations and public entities.

In addition, the Declaration of General Interest for both parks was requested, and granted during the summer of 2011. The procedures to request the access to the transport grid of the Industrial estate of Granadilla´s node started and were granted in 2011 by Red Eléctrica de España.

A mediados de 2011 comenzó a tramitarse la solicitud de acceso a la red de transporte del nudo de Arico, que ha sido concedida recientemente por Red Eléctrica de España.

Different possibilities for the location of the substation that will raise the voltage of the four parks of the knot to 66 kV have been considered. Among the alternatives is the electric substation located in the Environmental Complex of Arico, choosing the same emplacement than the corresponding service of the Cabildo of Tenerife. The draft of the execution project of this substation is foreseen to start during the year 2012 along with the line of 66 kV that will connect it with the substation of Abona.

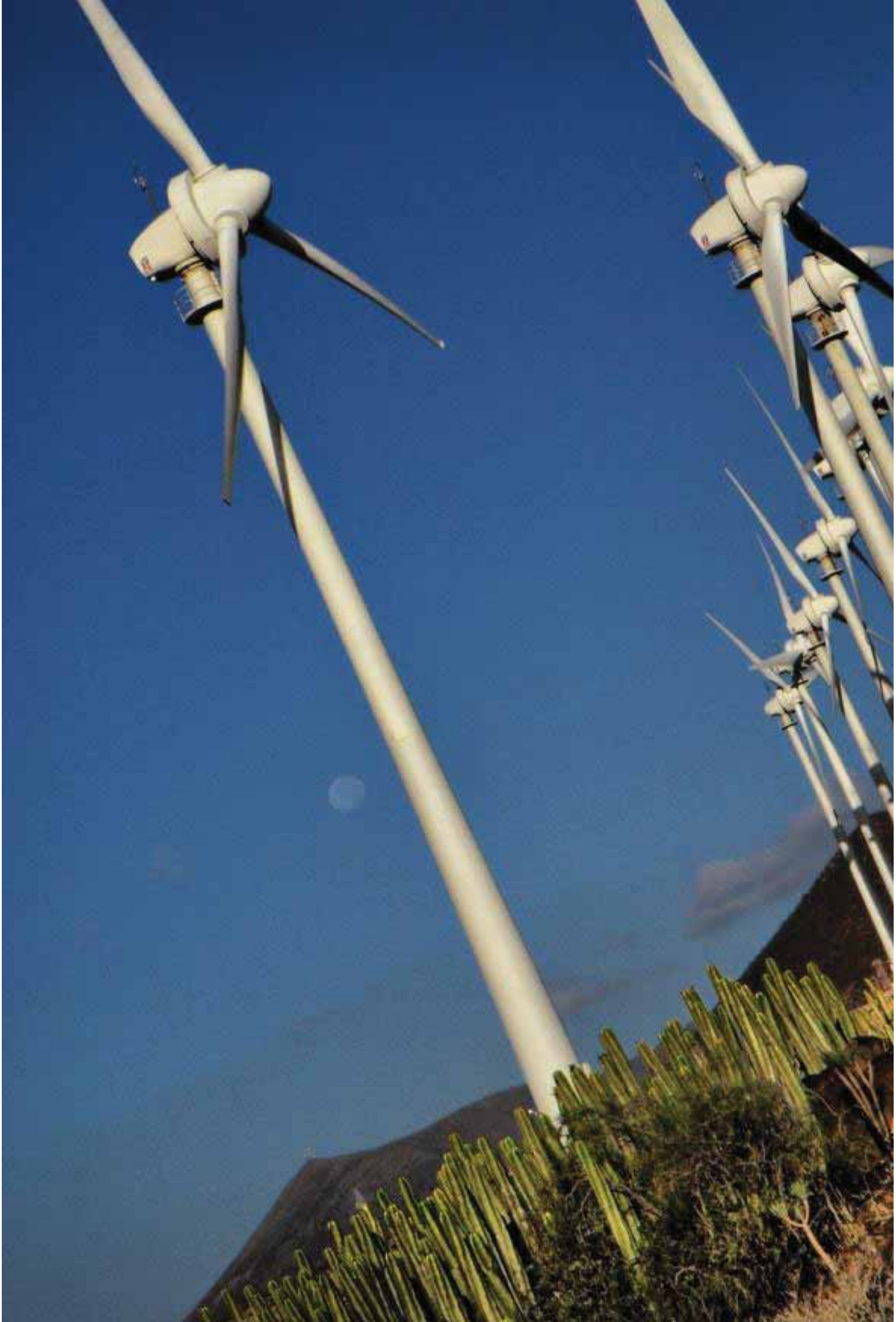
Monitoring, Operation and Maintenance of Wind Parks

2011 Several activities have been carried out in ITER´S 3 wind parks during the year 2011. The remote control systems of the wind parks Enercon of 5,5MW and MADE of 4,8 MW have been updated. In addition, intense corrective maintenances has been effectuated including the substitution of multiplier's bearings in one of MADE's wind generators. Finally, the mechanism needed to comply with the requirements of response to power dips of the installation of production in Special Regime was installed. These mechanisms establish that the holder of the park must adopt the measures of design and / or control necessary so that the installation stays connected to the electrical system without be disconnected because of the power dips.

The update of the remote system of the wind park MADE 4,8 MW consists in 8 automata developed by ITER´s electronics department and installed one in each wind turbine. The automata communicate through a common industrial protocol, the MODBUS, which makes the interpretation of the signal from the turbine to the hardware system easier. This remote command allows managing the power generated by the wind park from anywhere, enabling an immediate response to the order for a production limitation.

An interface was installed in the case of the wind park Enercon 5,5 MW, in order to act distantly on the wind generators. This interface is called "Pdi interface" and was mounted in the current system SCADA, which up to now was only allowing the visualization of certain parameters of the park. Once ITER installs and configures the “Pdi”, the staff will be able to act upon the wind turbines remotely using the “Border Gateway” protocol (BGP). The purpose is the same as for the MADE wind park, to limit the power in case there is an order and be able to act upon the individual Enercon wind turbines.

The adaptation of the wind park MADE 4,8 to the power dips took place during September and October of the year 2011. The compensation system GPCOM STATCOM developed by GPtech was used. The compensator GPCOM is designed to compensate the reactive power absorbed by the wind turbine, especially during power dips and its recovery. The compensator has three functioning modes, compensating dips according to PO12.3, permanent reactive power compensation with power reference and permanent reactive power compensation with power factor reference.



5.

RENEWABLES

Project Drafting of Renewable Energy Installations

ITER's Photovoltaic Module

Photovoltaic Test Platform

Fotosil Project

Aerodynamic Profile tests in the Wind Tunnel

PRONTAS Project

PROAVISOL Project

Wing Profile tests of the Solar Plane

Calibration in the Wind Tunnel

Euro-Solar Project

MACSEN-PV Project

Rural Photovoltaic Electrification Pilot Plant in Senegal

Island 100 Concept

ORECCA Project

Meteorological Stations

Weather Forecast

5 Renewables

One of the main activities of the ITER group is the development of R&D projects in the area of Renewable Energies.

Most part of the projects aim to improve the technologies and processes to obtain energy from the most important renewable energy sources. The accomplishment of projects focused in international cooperation is worth being mentioned. These projects seek to introduce renewable technologies in electrification systems in isolated regions, contributing to improve the living conditions of the local population in developing countries.

Project Drafting of Renewable Energy Installations

The experience in renewable energy facilities acquired in the past two decades makes ITER an expert in project drafting and subsequent implementation.

ITER elaborates projects both for PV installations, as for wind farms, counting with three executed wind farms, the approval of several projects to repower the parks and more recently the approval of three projects submitted to the last contest of power allocation of the Canary Islands Government.

In the area of photovoltaic energy, ITER has been responsible for the installation of over 40 MW in the last six years.

Enhance renewable energy installations on the islands, and therefore increase the increase the share of electricity generated from renewable energies, is one of the main objectives of ITER.

ITER's Photovoltaic Module

ITER manufactures photovoltaic modules both for its own use and on request. The technology used by ITER makes possible the production of mono and multi crystalline solar panels with an energy conversion efficiency of 13,5%. To offer the maximum protection in the worst environmental operation conditions, the cells are capsuled between a tempered glass and EVA, and a TPT backsheet.

The laminated end product is fitted into an anodized aluminum structure to provide structural resistance and to make its installation easier.

The characteristics of this module give great versatility, being the ideal candidate for grid-connected photovoltaic applications, as well as isolated photovoltaic installations.

These photovoltaic modules are designed and certified according to rules IEC61215, IEC61730-1, IEC61730-2, CE.

Photovoltaic Test Platform

ITER has among its installations, a platform used to carry out PV tests, as for example the installation and monitoring of a Sharp Photovoltaic Concentrator.

Fulfilling with an agreement signed between the SHARP Company and ITER S.A. at the beginning of the year 2008, a prototype of a photovoltaic Concentrator, which was developed by the Japanese company, was installed in the tryout camp for renewable energy mechanisms.

The prototype consisted of 27 modules, each articulated in 10 high efficiency cells of triple union, with a concentration optics type Fresnel and a passive system of heat evacuation.

The set goes mounted on a two axis supporter, which allows a maximum exposure to solar radiation during the whole year.

The concentrator's power is of 2,922 kW and to have a reference system, a photovoltaic plant was installed on a fix structure oriented 21º south, made up of 19 conventional photovoltaic modules, achieving a 2.916 kW power.

Both mechanisms, the concentrator and the conventional plant, were provided with the same type of inverter, a Sunplug model SPO 3000, along with a monitoring system developed ex profeso by ITER that automatically connects to ITER meteorological station and to an ftp server entitled specially for this.

This monitoring system allows the working parameters of the mechanisms involved to be stored and sent in real time to Japan with the meteorological conditions of the moment.

Fotosil Project

The FOTOSIL project is financed within the Subprogram of Scientific - technological Actions in the Scientific and Technological Parks (IMPLANTA) of the Ministry of Science and Innovation. The project began in 2011 and will finish in 2013.

The aim of the Project is to manufacture more efficient low cost silicon PV cells. In order to achieve this, third generation cell technology will be used to make the solar photon absorption better and obtain more efficient electrons emitters.

To reach the aims established, high efficiency photovoltaic cells will be produced. Simultaneously the production costs will be reduced and the third generation cell technology of cells will be developed studying the behavior of photoluminescent materials, such as the rare earth elements and the silicon nanostructures so that they act together as photoconverters. Parelally, a new process to obtain more efficient emitters to improve the electric characteristics of the photovoltaic cells is being developed. Finally, an intertwined layer of amorphous silicon deposition process will be developed in order to improve the electron emission over higher energetic beams (within the UV-VIS range). Lastly, an economic study will be elaborated to study the introduction of this technology.

In order to develop this Project, the Institute already counts with a chemical bench, and a spin – on obtained from a previous Project on Industrial Applyed Investigation of the MITYC (Record no: IAP-600100-2008-35) along with a diffusion furnace acquired in a TF INNOVA call of the Cabildo de Tenerife (Record no: TFINNOVA 2010/25).

The endowment of instruments for this research line arises from ITER's need to continue with its investigations in the field of solar energy. After several years investigating in the different fields, which integrate this type of energy, it’s time to continue moving forward in this line, therefore research projects of regarding photovoltaic cells is the natural step to follow.

Aerodynamic Profile tests in the Wind Tunnel

The aim of the project has been to investigate possible improvements of an airfoil, focusing in the increase of the aerodynamic efficiency that will later be used in the Solar Plane. For this reason, the airfoil must comply with a series of special requirements, both in its geometry as in the flight conditions. The tests carried have been part of the Final Projects of a team of students of the ERASMUS Program of the ETSI Aeronautical of the UPM.

Now that, regarding the measures of force, the main airfoil had already been tested; the adjustments for the visualization technique and the corresponding tests took place in the first place. This continued with a series of force tests upon the basic airfoil which led to the corresponding changes. During the first session the students were instructed in the managing of the aerodynamic tunnel, the system of acquisition of information, both anemometric and of force measurement, along with the basic aspects of the visualization techniques. Nevertheless, the software of data processing had to be improved now that it was the first time massive tests were going to be carried out and the automatic process had to be defined. Besides this, an exhaustive checking of the calibrations and corrections was also carried out to guarantee the validity of the results.

PRONTAS Project

This project is the continuation of the Study of Viability for the Development of a Solar Plane, financed by the Ministry of Industry, Tourism and Trade within the frame of the National Plan of R+D+I 2008-2011; and of the construction of a smaller prototype financed by the Canary Research Agency, Innovation and Society of the Information. After the success of these two previous steps, the Ministry of Science and Innovation has granted a subsidy for the development of the solar plane to ITER, the Technical University of Madrid and Aernnova Engineering Solutions. The total cost of the project is 1.400.000 Euros and it will be co-financed by the Ministry with 1.000.000 €. ITER acts as leader of the project.

The aim of the project is to build of a solar plane, capable of flying autonomously and for indefinite time, using only solar energy and of developing different types of predefined scientific, institutional or commercial missions. This plane is thought to carry out vigilance tasks, rescues, environmental protection, communications in case of emergencies, material research or urban development and geographical control.

The Project started in 2011 and will last 3 years. Currently, the definite plane configuration is being developed and will be ready within the first six months of 2012. Once this is ready, the plane will be tested in the wind tunnel, reconfigured if necessary and three future prototypes will be built with their corresponding tests and tryouts. The industrialization plan is also part of the project, where the requirements and procedures to go from the manufacturing of prototypes to a production chain will be studied.

The project is in an industrial border area, being demanded by itself and by the market of the components which needs important technological improvements. Because, as already mentioned, with the current aerodynamic development and of the adjacent technologies, the project is technically viable, nonetheless once the photovoltaic cells and batteries are improved this will redound in a greater energy availability for the mission equipment and a major load of payment.

PROAVISOL Project

This Project was financed by the Canary Agency of Investigation, Innovation and Information Society in the year 2009. The output of this project was the prototype of a Solar Plane with a wingspan of 6.4m. Nevertheless the activities regarding the Project have extended over the financed period which ended in 2010.

The permits needed to carry out the flying test in height have been the main obstacle found in the Project. As a matter of fact the prototype has only been tested in aircraft modeling conditions. The procedures to obtain the special experimental airworthiness Certificate have been suspended by the Civil Aviation Directorate General until a specific regulation for non-manned planes is developed.

Despite this, flight testing has continued below the 300m, which have allowed continuing working in the autonomous navigation system, which is right now totally operative and implemented. This navigation system will also be used in the PRONTAS Project, currently being developed. Therefore all the results achieved will be eventually used in the development of this other project.

Wing Profile tests of the Solar Plane

A model of a rectangular wing, unswept, without taper nor twist was made and tested in the wind tunnel continuing with the Study of Viability for the Development of a Solar Plane carried out between 2008 and 2010. The investigations regarding this wing profile have continued during the year 2011, testing modifications of the profile located in the trailing edge, modifications of the shape of the profile in the lower surface, in its half rear, and modifications in the leading edge. The aim of these measurements is the study of the drag coefficient, lift coefficient, the pitch down coefficient, the aerodynamic efficiency and the polar of the profile.

Calibration in the Wind Tunnel

The anemometer of the VAISALA, Meteorological Compact Station, model WXT520 was calibrated ordered by Environmental Area of the ITC (Ceramics Technology Institute) of Castellón.

The anemometer calibration is one of the main services offered by the wind tunnel and one of the most demanded by external companies. This time, the calibration was done taking special care with the low speeds upon special request of the ITC due to the uses the station is aimed at. The hot wire anemometer of the wind tunnel was used as reference.

Euro-Solar Project

This Program involves the installation of 600 electricity generation kits using 100% renewable energy sources in eight South American countries: Guatemala, El Salvador, Honduras, Nicaragua, Ecuador, Peru, Bolivia and Paraguay.

The main goal of the program is to Foster the use of renewable energy sources. ITER has been involved in the activities of the project since the beginning. During the year 2011ITER has carried out the following actions:

Using the web application developed in the previous years, ITER has supervised both the installation of the kits as well as the internet connection systems in the communities involved in the program. At the end of the year 2011, 99% of the kits are installed and operating, although the percentage of communities with internet connection is slightly less. The follow up of how the program is doing can be done through the web page http://instalaciones.programaeuro-solar.eu/.

The monitoring of the installations is possible thanks to the fact that the information is gathered and stored automatically in the web application mentioned before. This way the verification to make sure the quality services Hereby it is possible to check that the quality levels of the service demanded from the companies entrusted to carry out the communications of the communities are fulfilled. ITER presents these reports both to the EU and to the delegations in the beneficiary countries.

In addition, ITER carries out constant visibility activities regarding the program both at national and international level. ITER has a designated area among its installations in Granadilla de Abona where the prototypes are displayed and operate. Similarly, the most important results gathered are presented in different conferences and meetings where ITER is present. People can even consult how the program is doing in real time is possible through the information available in the web application developed by ITER.

MACSEN-PV Project

The MACSEN-PV project, “Study of Alternatives and know-how/ technology transference to implement renewable energies as part of the power supply in Tenerife and Senegal, along with the installation of a PV pilot plant connected to the grid”, is co-financed by the European Program MAC 2007-2013.

This project is conceived as a platform for the technical cooperation between Tenerife and Senegal in the area of the integration of the renewable energies in electrical networks. The most important goal is to improve the capacity of the public authorities and the local technical personnel to favor the introduction of renewable energies for the electrical supply in these regions. Among the expected results to be obtained in this project is the establishment of new legislative measures and energetic planning in the participant regions which will contribute significantly to their socioeconomic development, and to decrease their energetic dependence on foreign countries and to fossil fuels. This will help to strengthen their own electrical networks. Likewise, the project will contribute to the preparation and training of the human local capital to supply, to design, to install and to support this type of facilities, and will be used as an example to other neighboring regions.

The Project started in October 2010 and will end in December 2012. Está liderado por ITER y en él participan como socios la Agencia Insular de Energía de Tenerife, la Agencia Senegalesa de Electrificación Rural y el Centro de Estudios e Investigación en Energías Renovables de la Universidad de Dakar.

Among the most important milestones of the Project during the year 2011 is the development of the second transnational meeting for the coordination of the Project celebrated in July in Tenerife and the follow up meeting celebrated in Dakar during the month of October. Coinciding with the development of both meetings, new meetings were held with local actors and several technical visits were organized both in Tenerife and in Senegal which was essential for the development of the rest of activities of the project. The web page and the Facebook of the project were published during this year along with general materials that were developed for the dissemination.

The activity “Analysis of the environment” was finished during the year 2011, resulting in four reports for Tenerife and four for Senegal. These reports included a sectorial evaluation of the energetic situation in both regions and are available in the web page of the project.

Rural Photovoltaic Electrification Pilot Plant in Senegal

This project is framed within the strategy of decentralized cooperation “Tenerife Con Senegal”, of the Cabildo Insular de Tenerife, and its execution has been entrusted to ITER by virtue of an agreement of collaboration between both entities.

The project, based on ITER´s previous experience on the EURO-SOLAR Program of the DG Europe-Aid of the European Commission, aims to contribute to the development of Fordou's village (Ranerou), located in the north of Senegal, guaranteeing the access to electricity based on photovoltaic solar power for the school and the health centre of the village. This PV system will also feed a communication system and the community lighting system.

The installation of this system finished during October of 2010. This installation is composed by 10 photovoltaic modules of 130 W designed and made by ITER specifically to answer to the specific characteristics of this installation.

The first visit to evaluate the project took place in the year. The trip to Fourdou was organized together with ITER and the ASER, counting as well with an engineer of the CERER. This trip confirmed the end of the works of the project as well as the good functioning of the facilities. Local people were interviewed to gather their personal opinions of the installation. Besides the street light system, internet is also expected to reach the village.

Island 100 Concept

The Island 100 computer model developed by ITER some years ago has continued with gradual modifications to include other renewable supply sources as well as storage. Furthermore the model has been standardized allowing the addition of any energetically isolated scene for its analysis.

A new variable has been introduced in the model during the year 2011. This new variable includes the introduction of a fleet of electric vehicles. This new scene would need an energetic additional contribution for the load of the above mentioned vehicles, but it would allow an energy input in periods when the car is not being used, leveling of the curve of demand of the insular system.

ORECCA Project

ORECCA is a Pilot Project of Support and Coordination Activities that was developed between March 2010 and August 2011 and was financed by the European Commission within the frame of the Seventh Framework Programme.

In total, 28 partners from Europe, U.S. and Canada, collaborated with the aim to create a frame for the exchange of knowledge and the development of a roadmap of research and technological development for activities regarding marine renewable energy.

ORECCA intends to overcome the fragmentation of the existing knowledge in Europe and make useful contributions to industry, research organizations and to the politicians responsible for the next steps needed to foster the development of this ocean energy sector in a sustainable and respectful way with the environment.

The most important researches carried within the frame of the project are:

State of the resources available separated by areas (North Sea, Baltic Sea, Atlantic Ocean, Mediterranean Sea and Black Sea), identifying the amount and type of renewable energy resource, along with the sea characteristics, infrastructures, both offshore and onshore as well as the offshore database WEB-GIS.

Legal framework, energy policies tax regulations and financial incentives all relevant for the development of the investment and technology.

State of art of offshore converters of renewable energies and platform technologies (oil, gas, wind energy, marine energy, etc.), identifying the synergies, both at theoretical level (installation and operation) as in the administrative level (costs, permits and other).

Coast infrastructure (ports, ships), marine network, etc.

One of the main goals of the ORECCA Project has been the development of a roadmap for the development of research activities, implementation and regulation in this area. Strategic priorities have been defined, including socio-economic aspects for the development of conversion platforms of marine energy in the context of an integrated maritime European policy.

In addition, within the frame of the project there two Workshops have been carried out where 100 experts of different sectors took part. This workshop was about: "The potential for Energy Conversion Platforms in Europe: resources, technologies " celebrated in The Hague, Holland, and "Outlining the Vision for Future Renewable Energy Conversion Platforms in Europe" celebrated in Milan, Italy.

For more information in: http://www.orecca.eu/ y http://www.linkedin.com/.

Meteorological Stations

A new meteorological station will be set up on an already existing lattice tower located within ITER´s facilities and which previously served for similar purposes. This new meteorological station will be equipped with speed and wind direction sensors, as well as a thermo-hygrometer. The new station will be specifically used to gather wind information at two different heights, necessary to study the wind resource of the area with an eye on the new wind parks that will be installed in the surroundings.

Meteorological stations have been installed in the two big photovoltaic platforms to evaluate its functioning. These stations are endowed of radiation sensors, speed and direction of wind sensors, temperature of the modules and Thermos – hygrometer. Both stations are operative and are placed one in Granadilla (SOLTEN) and other one in Arico (Finca Roja and Finca Verde).

In order to implement both the information gathered from the sensors, and their storage, the electronics department has developed an acquisition system to manage, gather and store the data obtained. This system is made up by a programmable plate with different modules used to read and gather information from the different sensors, as well as a MicroSD card to record and store the information every minute using a clock and calendar module which makes the readings at real time. Likewise, for the suitable transmission, storage and processing of the meteorological information obtained the department of Engineering and New Technologies has managed the connection of the mentioned plates to the ESCADA of the facilities.

During this year, the Institute has considered the possibility of moving the meteorological sensors from the current Station Tower to a new tower of telephony belonging to a private company, and that will be located within the ITER´s facilities in the next year. This will bring a new and possibly better location with a change in the height of the sensors, etc.

In addition, the maintenance works have continued in the meteorological station Euclides, to ensure its operation, and data acquisition and storage.

On the other hand, and with the cooperation of ITER´s Engineering and New Technologies department, a new web page has been developed where all the information gathered by the sensors in the meteorological stations is available in real time along with the graphs showing the evolution of the data in the last 24hrs. This web is currently only available for the staff of the institute.

Weather Forecast

Weather forecasting is a very important tool when dealing with renewables; therefore, ITER has continued working to improve the Institute's weather forecasting system. Changes were made so that now the forecasting is done with the WRF model (“Weather Research and Forecasting Model") that has updated applications with more efficient tools for the selection of domains, wind prediction, graphical outputs, etc.

Nowadays, the institute is in process of programming the model to make local and regional forecasts and to develop an online service of weather information. The first data on wind predictions and solar radiation is being collected and compared with the real data from ITER weather station, to verify its accuracy and correct the possible deviations.

SUSTAINABLE BUILDING

6.

Renewable Energy Integration in Buildings

Monitoring System and Data gathering for the Thermal Comfort StudyDesign Patterns Project

PROMISE Project

Design Patterns Project

6 Sustainable Building

Continuing with the existing research lines, ITER has encouraged the sustainable building, conscious of the importance of developing architectural technologies that allow to design and to construct buildings in tune with the climate, the local geomorphology, the vegetation and the water, so that the energetic consumption is reduced and the thermal comfort increases. In a parallel way, the group also takes part in projects that promote the energy saving at home and help to obtain a more sustainable island.

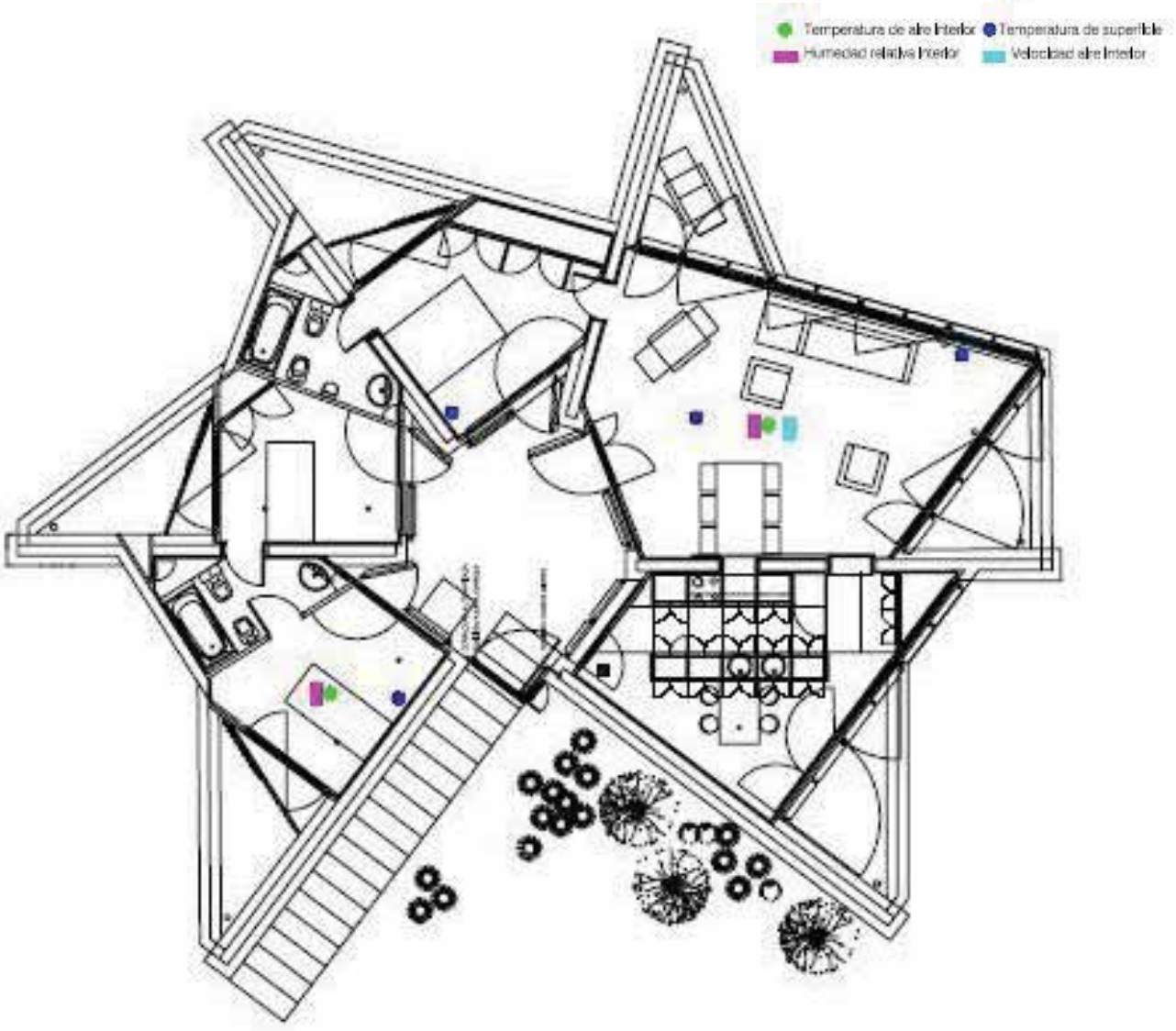
Renewable Energy Integration in Buildings

Following this line, ITER works mainly in two fields: the evaluation of buildings energy performance and the design of renewable energy installations.

The evaluations of buildings energy performance are made by simulations or real working conditions throughout the implementation of inside and outside sensors for its later monitoring and interpretation. Once the evaluation has been made, we will proceed to disclose the energetic functioning of the different buildings to contribute in the users and group consciousness.

A new research line has begun in coordination with different Universities to implement the energetic evaluation also in the urban space, uniting comfort, urban geography, social development and I design.

The design of renewable energies includes their integration in buildings optimizing designs, energy models and elements used in buildings, defining models to integrate passive and active solar energy strategies in small and big scale. A new line has been implemented to integrate these kind of installations in historic town centres without interfering or decreasing their cultural value. Research is also going on regarding big renewable energy installations, optimizing the integration techniques, planning and building.



Monitoring System and Data gathering for the Thermal Comfort Study

Design and development of a control system governed by micro-controller which allows to capture information from several sensors which measure dampness, temperature and air speed and then transmit them through the communication protocol MODBUS RTU for serial port RS485.

The Electronics department has carried out the installation of the above mentioned system in the housings of the Bioclimatic Dwellings located within ITER´s boundaries. The data will be used to develop a study about thermal comfort within single-family bioclimatic housings of different typology under real conditions. Finally, the aim is to develop a comparative study among the different housings, which will conclude in the development of design and integration guidelines of active solar systems and home automation systems from real data on energy efficiency.

Design Patterns Project

The project "Design Patterns to optimize energy consumption and sustainable energy generation in single-family housings in warm climates" is developed with the co-financing of the Department of Science and Innovation within the National Program of Projects of Applied Research.

This project aims to create exportable design pattern, which could be used in other regions with similar climate, using as benchmark unit ITER´s Bioclimatic Dwellings. The design guidelines are determined by real experiences measured when living in the houses and gathered information about the different active and passive systems of bioclimatic architecture used in each house. In order to achieve this, each house is monitored so the comfort conditions are controlled. This information is gathered in a control system and can be checked in real-time at each house or in ITER's Visitors Centre. This data will help to establish which particular efficiency solution works best and to compare them.

The catalogue of solutions, applications and conclusions has been elaborated after finishing the first phase of data gathering and analysis with the results obtained. A seminar was organized in July, 2011 to share the results and the first conclusions. The above mentioned seminar organized by the AIET, was carried out in ITER´s Visitors' Center complementing itself with a technical visit to the houses in which the attendees could see and experience all the installations and systems in detail.

The monitoring and the analysis that is currently being done is complemented with the evaluation of the comfort in real habitability conditions based in the experience of the temporary tenders of the houses, which allow real contrasted conclusions.

PROMISE Project

The PROMISE project, Promoting best practices to support energy efficient consumer behavior on European islands, is financed by the European Commission within the frame of the Intelligent Energy Programme.

PROMISE seeks to achieve a change in consumer habits by promoting energy savings and awareness among households.

The Project started in June 2011 and will end in November 2013. The partners of the project, Innova S.p.A – INNOVA, Samsø Energy Agency – SEA, Energy Agency Iceland – EAI (Iceland), Kos-Aegean Energy Agency - AEA (Greece), Agencia Insular de Energía de Tenerife – AIET- (Spain), Forventi Media Limited – FORVENTI – (United Kingdom), look forward to reduce energy consumption in households sharing best practices and experiences.

The first partner meeting took place in July 2011, in Samsø, Denmark. The action lines of the project were established during this meeting where the main actions to develop were coordinated. Among these activities was the planning of the first Workshop of the Project which took place in Tenerife to later be replicated in Iceland and in Rhodes.

ENVIRONMENTAL AREA

7.

Antartida Project

Teide Project

Timanfaya Project

Makavol Project

Helio Project

Muon Radiography Project

Early Warning system facing the volcanic phenomena in Nicaragua, Philippines and Cape Verde

Ocean Island Basalt-CO2 Project

Izu Oshima Project

C-isotope Geothermic Project

Project volcano-seismic crisis at El Hierro

Tenair Project

7 Environmental Area

The scientific works developed within this field are basically related with the reduction of the volcanic risk, the research of underground water resources in volcanic islands, analysis and evaluation of atmospheric pollutants using optical remote sensors, exploration of geothermal resources using and applying geochemical methods, and the prediction of earthquakes by means of geochemical and hydrological methods.

Antartida Project

This project has been financed by the National Subprogram of Polar Research of the Ministry of Science and Innovation and has been carried out by ITER´s researchers and the Universities of Düsseldorf (Germany), Toyama and Tokyo (Japan).

The aim of this study is to estimate the CO2 emissions from the Deception volcano bay and to measure the spatial distribution of the carbon dioxide diffuse efflux in this volcanic system. Decepcion Volcano is in Decepcion Island, where the “Gabriel de Castilla” Antartic Base is located. The Operations Division of the Spanish Army is in charge of this base that is hardly 100 km away in the North of the Antartica continent, in the Bransfield Strait. Decepcion Island forms the emergent part of a young active shield volcano, which is still active and last erupted in 1967, 1969 and 1970.

Teide Project

Since 1997, ITER has been working to optimize and improve the volcanic surveillance in the island of Tenerife providing a multidisciplinary approach to the monitoring of the volcanic phenomena.

Nine geochemical stations and nine more geodesic ones are operated and maintained within the frame of this project for the volcanic surveillance of Tenerife. Three of the nine GPS antennas have been handed by the Nagoya University, which collaborates actively with ITER in the surveillance activities. Beside this geochemical and geodesic surveillance in continuous mode, other discrete geodesic surveillance work is done in discreet mode with the aim of optimizing the volcanic surveillance in the island of Tenerife.

Timanfaya Project

This Project has been financed by the Spanish Ministry of Science and Innovation and its aim is to contribute to the volcanic surveillance tasks of Timanfaya Volcano (Lanzarote) through the use of the CO_2 diffuse emissions measurements as a way to evaluate the volcanic activity level. Due to the absence of visible gases emissions in Timanfaya volcano, it is necessary to use the CO_2 diffuse degasification methodology in order to complete the volcanic surveillance tasks, thereby fulfilling the recommendations given by the IAVCEI (International Association of Volcanology and Chemistry of the Earth's Interior). These studies are carried out by two complement ways:

1) Elaborating Maps of diffuse emissions spatial distribution that covers all the study area and that allows to evaluate the emission total rate and to detect the more permeable areas for the ascent of deeply origin fluids.

2) By means of the use of automatic geochemist stations in a sensible point for magmatic activity changes, that also register in continuous mode the CO_2 emission through the volcano.

Makavol Project

The Project MAKAVOL (MAC/3/C161) is financed by the Transnational Cooperation Program of the European Union MAC 2007-2013 and its main aim is to strengthen the R+D+I capacities for contributing to the reduction of the volcanic risk in the Macaronesia Region (Canary Islands, Cape Verde and Azores). The analysis of the existing seismic-volcanic monitoring systems in that regions allowed concluding the need to strengthen them, although the EU INTERREGIII program has contributed significantly in the past few years with projects led by ITER. This project, also leaded by ITER is aimed to:

1) Strengthen the volcanic surveillance networks in Cape Verde and in the Canary Islands by implementing new technologies,

2) Promote the know-how between the participating institutions as a way of transferring knowledge and technology in R + D + I, and

3) Implement pilot experiences like the education program directed to the school community and the citizenry about the volcanic phenomena in the Canary Islands, Cape Verde and Azores.

In the Project also participate as Partners the Laboratório de Engenharia Civil - LEC (Cape Verde), the Serviço Nacional de Protecção Civil - SNPC (Cape Verde) and the Cape Verde University - Uni-CV.

Helio Project

This Project is financed by the Canary Islands Agency for Research, Innovation and the Information Society (ACIISI), and its main objectives are to contribute to a better knowledge of the structural-volcanic features of the Cumbre Vieja Volcano (La Palma Island) and the Island of El Hierro, together with the improvement and optimization of the volcanic surveillance programme in these islands. These objectives are pursued by means of the evaluation of the space-time variations of the Helium diffuse emission through the surface of the Cumbre Vieja volcano (La Palma Island) and the Island of El Hierro. For achieving these objectives, diffuse degassing studies of Helium gas are carried out through the surface of both volcanic systems. The presence of Helium gas deviances in the surface is mainly linked by the volcanic fluids migration (due to the Helium geochemist features), controlled by the tectonic characteristics of the area.

Furthermore, the studies about the Helium isotopic composition in the gases presents in the surface of El Hierro and La Palma are excellent indicators of the contribution of gases from the mantle of these volcanic systems.

Muon Radiography Project

This Project is financed by the Canary Islands Agency for Research, Innovation and the Information Society (ACIISI) and its principal aim is the application of Muon Cosmic Rays Radiography to know the density distribution in a volcanic building and its application in the study and forecast of its mechanical and eruptive behaviour in case of collapse of one of its flank. Volcanoes under study are the followings: Teide and Cumbre Vieja (Canary Islands) and Unzen (Japan). This innovative technique has been successfully used recently in Japanese volcanoes in order to access in a visual way to the density internal distribution in volcanoes, and therefore, to its internal structure. This technique is based in the measuring of the cosmic Muon flow and its reduction when its go through the rock. Accordingly, the Muon Radiography is an ideal technique to get direct information about the density distribution in geologic bodies, such us the volcanoes. Likewise, the Muon Tomography allows the researching of the density variations associated to flow movements inside volcanoes.

Early Warning system facing the volcanic phenomena in Nicaragua, Philippines and Cape Verde

These three projects aim to strengthen the warning system facing the volcanic phenomena.

The main goal of these three international cooperation projects financed by AECID is to provide the bodies responsible for the seismic and volcanic surveillance in Nicaragua, Filipinas y Cape Verde with the capabilities and technical resources needed to strengthen the volcanic surveillance in Nicaragua, Philippines and Cape Verde by incorporating the works on diffuse carbon dioxide (CO_2) measurements as a scientific-technical tool to enhance the detection of early warning signs of volcanic adverse events (seismic-volcanic crisis and volcanic eruptions) in these three countries.

The bodies in charge of the seismic and volcanic surveillance in these countries are the Instituto Nicaragüense de Estudios Territoriales, the Philippine Institute of Volcanology and Seismology, the Laboratório de Engenharia Civil de Cabo Verde, the University of Cape Verde and the National protecção Civil Service of the Government of Cape Verde.

The research activities, which have been carried out within the frame of these projects, have been mainly focused in Cerro Negro and Masaya volcanoes in Nicaragua, in São Vicente and Fogo volcanic island's systems in Cape Verde, and in Pinatubo and Taal in Philippines.

Ocean Island Basalt-CO2 Project

The purpose of this Project, financed by the Canary Islands Agency for Research, Innovation and the Information Society (ACIISI) is to evaluate the CO_2 diffuse emission as a scientific-technical tool to enhance the surveillance of the volcanic phenomenon. To achieve this, it has been carried out researches on CO_2 diffuse emission from active basaltic volcanic systems in subduction zones (Cerro Negro, Nicaragua) as well as in insular areas (Pico do Fogo in Cape Verde; Fernandina and Alcedo in the Galápagos Islands; Teide and Cumbre Vieja in the Canary Islands). The relevance of researching and comparing the CO_2 diffuse emission measurements between these basaltic volcanic systems is due to (1) its location in different volcanic-tectonic environments, and (2) the different eruptive cycles of these volcanic systems. Additionally, this project expects to evaluate the temporary evolution of the CO_2 diffuse emission in some of the volcanic systems proposed (Teide and Cumbre Vieja). The results of this project will have important consequences for the improvement and optimisation of the volcanic surveillance in the Canary Islands.

Izu Oshima Project

Since 2007, ITER and the Chemical Laboratory of Earthquakes of Tokyo University (Japan), have been developing a live monitoring project of CO_2 emissions in Izu Oshima volcano with the purpose of strengthening the geochemical programme for the volcanic surveillance.

In Izu-Oshima volcano, located 110 km southwest from Tokyo, 39 volcanic eruptions have been registered in the last 100 years, the last one in 1990. Volcanic eruptions with a higher explosive index have occurred in this volcanic building in a gap of 50 and 135 years along the last 1500 years. The first research efforts about diffuse emissions of carbon dioxide in Japanese active volcanoes (Myiyake-jima, Usu, Tarumae, Hakkoda, etc.) where made by ITER´s researchers in collaboration with Tokio University scientists.

One of the most important results was published in the prestigious scientific magazine Science and was related with the high increment of CO_2 diffuse emissions observed in the volcano Usu (Hokkaido, Japan) 6 months before it erupted in year 2000.

C-isotope Geothermic Project

The principal aim of the project is to elaborate a technical feasibility study about the application and use of the isotopic signature of the carbon in the CO_2 of the soil atmosphere as a low cost geochemical technique for estimating the profitability of the Geothermal Energy exploitation in the island of Tenerife, in the Canary Islands.

The development of geochemical studies together with geophysical prospection techniques must contribute to the selection of suitable areas for exploratory drillings. A positive result of this project will allow to more forward a feasibility study of the Geothermal Energy exploitation in the island of Tenerife (that will contribute to the use of this important renewable energy source), but also will allow a real breakthrough in researching and development of geochemical techniques for feasibility studies in other areas around the world with Geothermal exploitation potential.In an insular region, like the Canary Islands (and particularly in Tenerife Island), with two thermoelectric power plants, with a great dependence on foreign fossil fuels, any contribution to energy self-sufficiency and to the diversification of RES sources brings great environmental benefits, such us the contribution the sustainable development of the fragile insular ecosystem.

Project volcano-seismic crisis at El Hierro

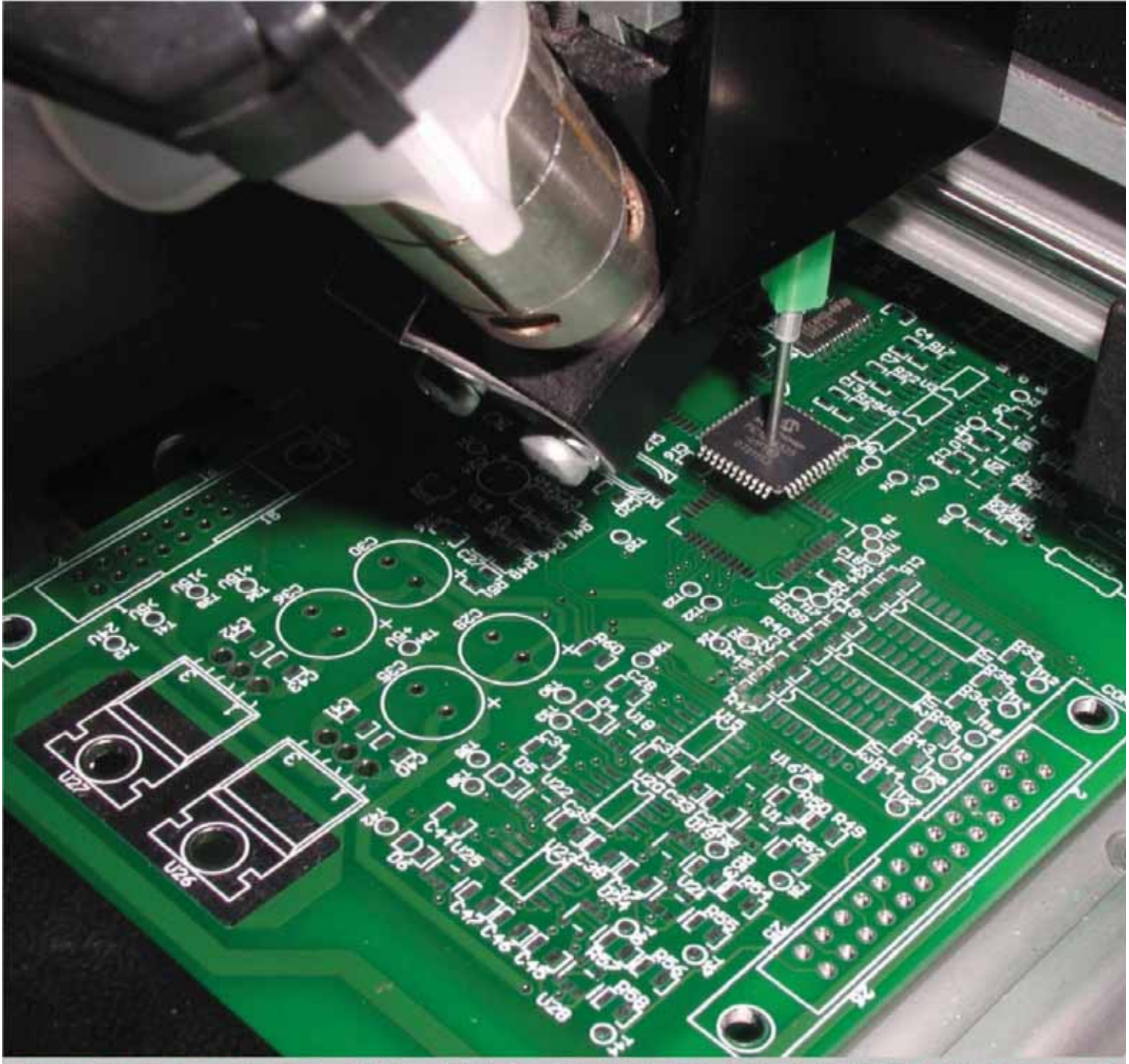
Since the end of July, 2011, ITER's Environmental Area has carried out an intensive work in order to provide important information about the evolution of the volcanic reactivation phenomena in El Hierro to the Managing Board of the Civil Protection Special Plan for Volcanic Risk in the Autonomous Community of the Canary Islands (PEVOLCA).

The Works carried out by ITER have consisted in (1) more than 10.500 CO_2 diffuse flow measurements through many scientific surveys about diffuse emissions of volcanic gases that have been produced in all the insular surface; (2) thermal images in a airline mobile position in the eruption area, in collaboration with the Civil Guard's helicopter unit in the Canary Islands; (3) SO_2, CO_2 and H_2S emission to the atmosphere measures by the La Restinga submarine volcano using remote optic sensors (COSPEC & mini DOAS) in mobile air position with the collaboration of the Civil Guard's helicopter unit in the Canary Islands; (4) the carrying out of vertical geochemical profiles in Las Calmas Sea, next to the coastline, where the volcanic gases bubbling is higher, and also in the north part of the Island, thanks to the collaboration provided by the Oceanographic Ship "Professor Ignacio Lozano" and by the Canary Island Institute of Marine Sciences (ICCM), the Canary Island Oceanic Platform (PLOCAN) and the Spanish Institute of Oceanography (IEO); (5) the installation of 5 new permanent geochemical stations and 5 new GPS stations for contributing to the continuous on-line monitoring of the volcanic reactivation phenomena; (6) launching of a Hydrogeochemical Programme in which the chemical composition and the dissolved gases are analyzed in four observation points distributed along the island of El Hierro three days a week; (7) the participation in awareness programmes for El Hierro population about the volcanic phenomena and the necessary works for the reduction of the risk associated with volcanic hazards.

Tenair Project

The environmental quality of air and the improvement of our knowledge about atmospheric pollution emission sources in Tenerife as well as their immission levels is the goal of this project.

To materialize this goal, there is a mobile unit equipped with sensors, that includes sensors to measure in continuous mode atmospheric polluting agents (particles, SO_2, NO_x, O_3, CO and CO_2), as well as a canister and an electrovalve system to take air samples and periodic analysis of volatile organic compounds (VOCs) in the ambient air of Tenerife. ITER also has remote optical sensors (COSPEC y OPFTIR) that allow the evaluation of pollutants from fixed sources and form the ambient air.



ENGINEERING AND INFORMATION TECHNOLOGIES

8.

High Performance Computing Infrastructures

TICa Project

Cooperation agreements with the Insular Institute of Computing and Communications (IIIC)

Cooperation Agreement with public administrations for the development of the Information Society

Development of the Tenerife Local website and web pages for the municipalities

Cooperation Agreements with the Town Hall of Vilaflor de Chasna to develop a new website

Verdino Project

Adaptation of the new TEIDE 100 Inverters: Reactive Power and Voltage tips.

Design and Development of single phased Inverters

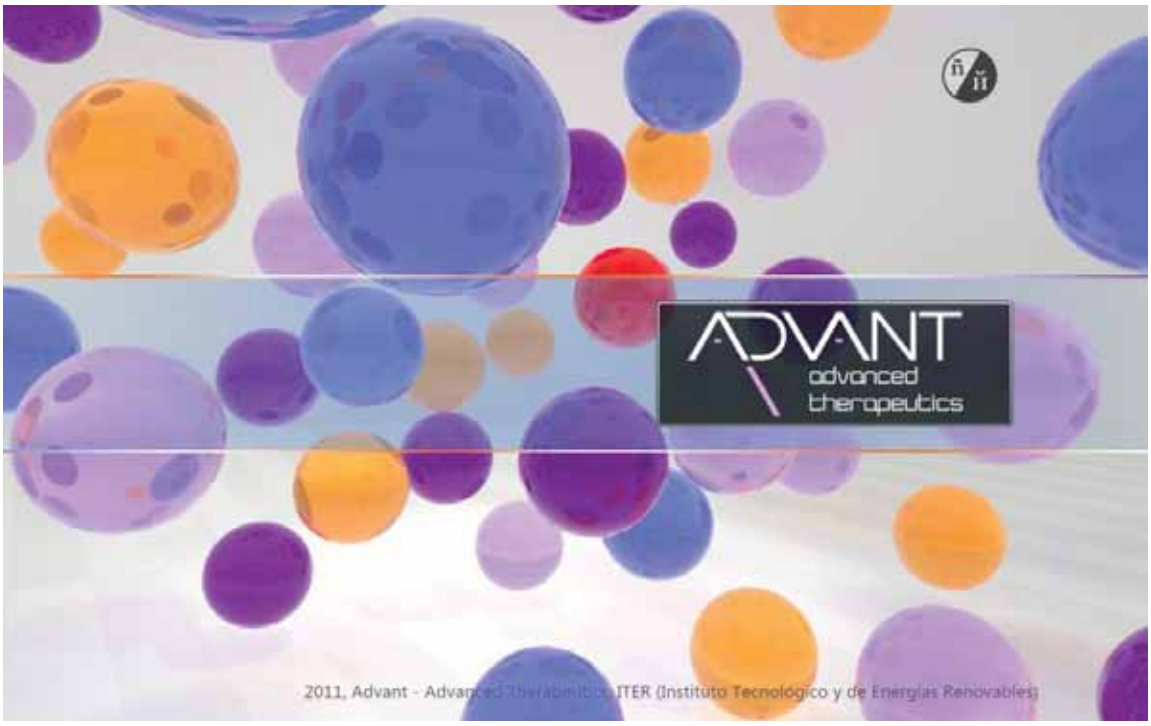
Design and development of an Inverter for energy storage in New Generation Batteries

Development of a 1MW continuous electric feed system

8 Engineering and Information Technologies

ITER works in IT development offering services related to New Technologies and focused in the improvement of Web communications. ITER participates in several projects and agreements to help in the network approach.

On the other hand, ITER designs and develops electronic systems that allow the integration of technological systems which feed on renewable energies.



High Performance Computing Infrastructures

This infrastructure is framed within the ALiX project to start the infrastructures aimed at the creation of an industrial fabric concerning the Information and Communication Technology (Tics) in Tenerife. It is an initiative financed in the frame of the program Innplanta of the Ministry of Innovation and Science, with charge to FEDER Funds for the acquisition of scientific and technological Infrastructures intended for R+D+i.

A High performance computer is a computing equipment capable of solving a problem a few thousand times faster than a conventional computer. The use of last generation process chips will represent the most important upgrade that will mean the difference in power and speed with respect to the other high performance computers which currently exist in the Spain. When the supercomputer enters into service, the system will have a calculation capacity peak over 400TFlops, which will place the high performance computer among the 50 most powerful machines worldwide.

The model suggested will count with processors based in the most advanced manufacturing technology (32 nanometers), which will increase its performance significantly and will decrease the energy consumption of the machine.

A machine with these characteristics has innumerable applications. The calculating power available will be a significant improvement in the precision of the simulation processes in areas such as: weather forecast, climatic analysis, aerodynamic simulations. Geologic models, medicine molecule interaction modeling, DNA analysis, etc.

This High Performance Computing will offer researchers, companies in the Technological and Scientific Park of Tenerife and to the University of La Laguna, a high capacity processing support to improve and expanding the national and international scope of their investigations.

TICa Project

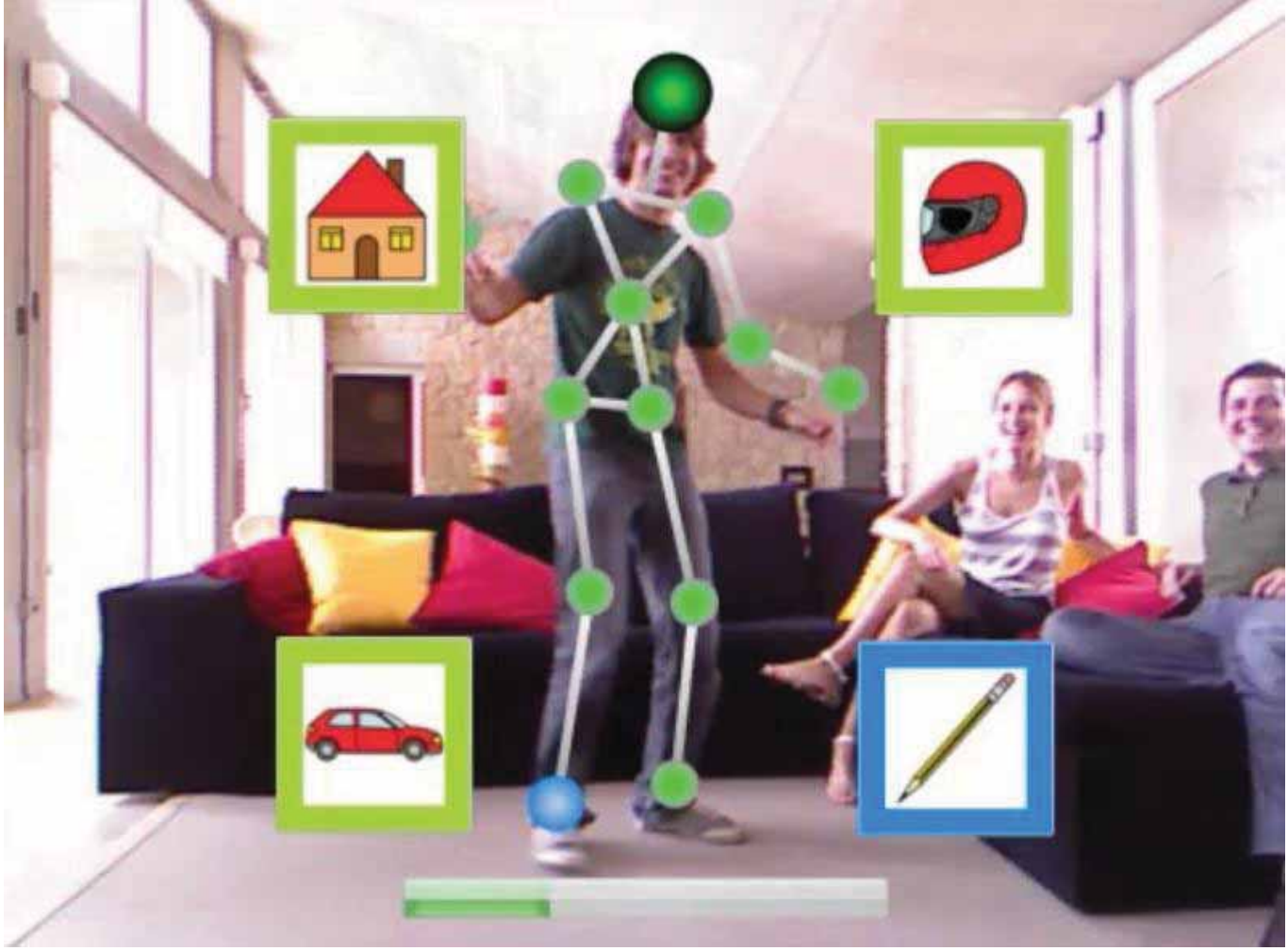
The TICa project (accessible Information and Communication Technologies) aims to develop tools implementing new technologies that help the integration of disabled people.

This project is financed by the INTERREG PCT-MAC 2007-2013 Programme, where SINPROMI, is the Project manager and the Institute of Acçao Social Direcçao Regional da Solidariedade e Segurança Social (Azores) is the collaborating partner.

Within the specific objective of establishing new technologies and support products as tools which will allow the integration of impaired mobility people, ITER has developed the following applications.

DiLO

Lingual device: It's a communicator for Android, which allows the impaired mobility user to adjust phrases to their personal circumstances and particular routines. The phrases can be reproduced in the loudspeaker of the Android device or combined to create and to send SMS messages or e-mails. The phrases are grouped in categories to make its classification better. The communicator will be managed by an administrator user who designs the contents so that it can then be used by others. More information at http://www.youtube.com/itertenerife#p/u/1/mIv_cH7lvn4



ADVANT

Advanced Therapeutics: It is a platform aimed at the physical rehabilitation and to the cognitive training with exercises that imply movement by the user. By means of Microsoft © Kinect, a device capable of recognizing the human body and their environment, ADVANT allows the interaction with information systems without needing physical contact with the traditional control systems. The power of ADVANT lies in its ability to generate exercises, this meaning that it's not a static platform in which the exercises or games are completely defined and integrated, but that it allows the implementation of these games by means of a configurator making this task simple. This characteristic offers the possibility of creating exercises especially adapted to the needs of the users and being a tool which will improve the quality of persons' life with functional diversity.

The configurator used to create the exercises is called ADVANT-ED | ADVANT-Editor.

More information http://www.youtube.com/itertenerife#p/u/2/_dcqyK2noX8

Adapro

Adapro is a multi-player word processor which is framed within the current usability criteria, where the user doesn´t participate in the management of the documents, only taking part in their generation. Besides as a word processor, Adapro can be used as tool to improve the dysfunctions of the user with virtual keyboards representing tasks designed beforehand and adapted to the user by an educator or therapist.

Adapro is a Word processor adapted to people with functional diversity designed to:

To apply specific criteria which contribute to the use of a word processor according to the functional diversity of the user.

To establish routines which help the user in the improvement of their dysfunction using predesigned tasks.

To prepare the functional diversity users in the interaction with the last word processors available.

Cooperation agreements with the Insular Institute of Computing and Communications (IIIC)

These agreements aimed the development of different joint activities, ranging from the improvement of quality application models in engineering software, to technical support in the development of web sites for the Cabildo de Tenerife. Studies have also been conducted for the possible application of certain solutions based on free software, support in drafting specifications and evaluation, and the study for the implementation of a Data Centre for the support of ITER's installations, including the canalization projects of the Data Center.

ITER collaborates since 2009 in the new design of the Corporative website of the Cabildo of Tenerife (www.tenerife.es) inaugurated in November, 2010. During the past year, ITER has worked together with the Cabildo to obtain and maintenance of the Accessibility certification of TIC according to the legislation UNE 139803, made for AENOR in April, 2011. At the same time works are done to collaborate in the project to improve the web positioning of the portal.

Towards the end of 2011, ITER joined the project Electronic Processing, collaborating in the evaluation and tests of the corporative electronic processor, as well as in the electronic processing itself.

Cooperation Agreement with public administrations for the development of the Information Society

ITER continues cooperating with different public organizations to develop numerous projects with the same objective: to improve the access conditions to the Information and Communication Technologies (TIC). Improving the availability of Internet services in general and the Electronic Administration services in particularly.

Development of the Tenerife Local website and web pages for the municipalities

ITER and the Cabildo de Tenerife have reached a collaboration agreement to develop the Website Tenerife Local along with the web pages of all the municipalities. ITER will coordinate and develop Tenerife Local, which will be used to provide the municipalities with a greater presence in the internet, gathering them under the umbrella (www.tenerifelocal.es), as well as increasing the e-administrations abilities.

This Project is found within the frame of the PMC, Plan de Modernización de los municipios de la isla (Modernization Plan for the Municipalities). The tool for the development of the websites has been picked within the agreement, basing on free software applications.

Within the frame of this agreement ITER has developed or offered support in the website of the following municipalities: Santiago del Teide, Buenavista del Norte, San Miguel de Abona, Los Silos, Garachico, El Sauzal, Arafo, Vilaflor e Icod de los Vinos.

During 2011, ITER continues offering technical support and corrective maintenance to the municipalities included in the Project.

Cooperation Agreements with the Town Hall of Vilaflor de Chasna to develop a new website

The objective of this Project is to improve and update the internet visibility plan of the Town Hall of Vilaflor de Chasna.

Within the collaboration frame of this Project, ITER will provide the municipality with maintenance, hostage and development for the new website www.vilaflordechasna.es, as well as the counseling needed to use social networks.

Verdino Project

This project aims to develop a self-guided vehicle to transport people within the bioclimatic dwellings of ITER.

The vehicle Verdino has been designed in cooperation with the Group of Robotics of the Department of Engineering, Systems and Automatic and Architecture and Technology of Computers of the University of La Laguna (GRULL).

Verdino is an ecological low cost electric vehicle such as the ones used in golf courses, but adapted both mechanically and electronically in order to make its direction, brakes and traction systems able to receive orders from a computer as well as being able to be led normally.

Verdino receives information from a set of detectors provided to supply vital information from its environment for the autonomous navigation. At the current point of play, works are being carried out to provide Verdino with new features; actually this vehicle is able to circulate with a remote control through a wireless connection. Also it is capable of carrying out the detection and the follow-up of a road that lacks all type of road signposting using exclusively information from one of its cameras. Finally, Verdino is able to repeat a pre-established tour only using the information provided by its positioning system.

Adaptation of the new TEIDE 100 Inverters: Reactive Power and Voltage tips.

ITER manufactures and sells the TEIDE 100 inverters under request. TEIDE 100 is a three-phase photovoltaic inverter with a nominal power of 100 kW designed for grid connection. This inverter has all the electrical safety devices demanded by the article 11 of the RD 1663/2000, of September 29th, on the connection of photovoltaic facilities to the low voltage grid. An efficiency of up to 98,5 % has been measured for a power 30 % higher than the nominal one.

The TEIDE 100 is able to communicate with a control computer using the MODBUS protocol across a serial interface RS-485. Its functioning and commands could be monitored using a control software if necessary.

The inverter TEIDE 100 has a CE labeling and has passed successfully the tests proposed by the UNE-EN 50178 procedure of electrical safety and the UNE-EN 61000 of electromagnetic compatibility.

Several modifications have been carried out in the inverter during the year 2011. This modifications consisted in adapting the inverter to the new legislation regarding reactive power (R.D. 1565/2010, of November 19th) and the response of the inverters to voltage dips (R.D. 1565/2010, of November 19th, P.O. 12.3 Reply Requirements upon voltage tips, PVVC Proceeding, validation and certification of the requirements of the PO 12.3 about the reply of the wind parks and PV installations upon voltage tips.

The installations under special regime can be penalized some way because of the reactive voltage in virtue of the maintenance of determined power factor values. Similarly, those installations under special regime whose installed power is the same or more than 5MW (regarding insular energy systems) could receive instructions from the operator of the system to temporally modify the range of the power factor or of the voltage instructions acknowledgement in a determined knot of the system. An analysis of the consumption and preparation of the inverters (firmwire) was carried out in order to adapt the PV installations managed by ITER to these new control requirements to enable the monitoring of the voltage instructions carried out by the Control Centre.

On the other hand, the installations and gatherings of PV installations with a power higher than 2MW, are obliged to follow a series of requirements to guarantee the continuity of the supply when facing voltage tips. The most adequate solution was investigated and the adaptation of the TEIDE 100 inverter was adapted (hardware and software) so that the requirements were fulfilled regarding voltage tips. The TEIDE 100 inverter successfully overcame the test for the voltage tips as PVVC and obtained a report issued by the LME, (Laboratorio de Metrología Eléctrica CIRCE) that includes that the TEIDE 100 inverter satisfies the requirements found in the P.O. 12.3 regarding the response of PV installations to voltage tips. Similarly, and with date of October 1st, 2011, AENOR issued a Conformity Certificate for the response to voltage tips of the PV gatherings managed by ITER with a power higher than 2 MW.

Design and Development of single phased Inverters

Design and development of 3kW inverters for domestic photovoltaic installations, whose immediate application would be the PV installation of the 25 bioclimatic dwellings located in the terrains of ITER.

These single-phase inverters for small PV roof plants have the development objectives of reducing the size and weight while increasing its efficiency. The inverters are scalable to different powers adjusting certain components. For example, less power allows a reduction of the costs using more economic components in the power stage. The design is not altered, only the components involved.

The determination of the optimum control algorithm has been the most important working line during the year 2011. An inverter prototype has been implemented with very satisfactory results in aspects such as functioning and efficiency. The prototype makes a direct conversion of the voltage coming from the PV panels to the voltage in the grid, without needing voltage booster, which reduces the losses and therefore increases its performance. Similarly, the design phase, the design of the outer shell as well as the election of the possible inverter models depending on their powers to optimize manufacturing costs all started during the year 2011.

Design and development of an Inverter for energy storage in New Generation Batteries

This project counts with a subsidy of the Department of Industry Tourism and Trade, and aims to help renewable energies penetrate in the electrical system, which implies a very high capacity accumulation system. This project constitutes the first step to evaluate the capacities and costs of this type of storage systems for its later large-scale implementation.

The most important challenge raised in this Project is the technological development of an inverter for batteries and connected to the grid which can be adapted to the functioning characteristics of the storage systems chosen. The working way of the inverter is as follows: the control phase receives energy set point through its software depending on the energy demand of that specific moment and that certain amount of energy is released from the batteries to transform it and release in on the grid.

A mix (ion-lithium-lead) storage system has been acquired for the development of the Project along with the required infrastructure in order to release energy into the grid.

The justification regarding the year 2010 was carried out and Works have continued in the development of the inverter to make it work in reverse mode, this is as an inverter and as a battery charger. Although this was not the objective of the project, it was considered to be very interesting to have both functions in a same devise not only from a technological point of view, but also to reduce costs.

Development of a 1MW continuous electric feed system

The SAI system is made up of an inverter, batteries, a charger for these batteries and the control system required.

An inverter is designed as a voltage generator for Uninterruptible power supply (SAI) applications of up to 1MW of power.

The batteries will be adapted to the requirements only limited by the inverter's maximum power.

The system will preferably operate on-line to decrease the use of mechanical components and to improve the time of reaction. Normally, the energy would come from the network, and then it would be redirected towards the batteries and returned back to the inverter. In case there is absence of voltage in the grid, the inverter will extracts the energy from the batteries, guaranteeing the energy supply for the equipments connected at all times. A well designed inverter will improve the quality of the electric power, keeping it free from transient voltage surges.

The battery charger has the same power that the inverter, 1MW, and therefore should work with a unitary power factor, otherwise it would produce distortions for grid over-currents.

During the year 2011, works continue in the development of the system which is currently in the implementation phase.

TELECOMMUNICATIONS

9.

ALIX Iniciative

Telecommunications Insular Ring

CanaLink

Datacenter D-ALiX

Telecommunication System for Bioclimatic Houses

9 Telecommunications

ALIX Iniciative

The ITER Group is involved in the ALiX project, an initiative consisting of submarine and terrestrial connectivity. This participation is undertaken through ITER coordinating the different activities and through IT^3 (Instituto Tecnológico y de Telecomunicaciones de Tenerife S.L.).

The deployment of the Telecommunications Insular Ring and the Canalink submarine system are also framed within this initiative, as well as the construction and start-up of the datacenter that will be located at ITER's premises in Granadilla.

Telecommunications Insular Ring

With the aim of promoting and developing Tenerife's interior and exterior connectivity, ITER has created the Instituto Tecnológico y de Telecomunicaciones de Tenerife (IT3).

During the year 2011, IT^3 has participated in plenty of projects regarding expansion of telecommunication infrastructures of the AITT, (Tenerife Telecommunication Insular Ring) to provide this infrastructure with the connectivity needed to offer its connectivity services.

IT^3 has carried out both, studies and projects, as well as the execution and installation of the fiber optic needed to offer the above mentioned connectivity. In total IT^3 has installed more than 14 Km of fiber optic, mainly in the Metropolitan area and Candelaria during the year 2011. These new infrastructures have allowed, and will allow as the deployment is developing, to connect the AITT to the headquarters of the Cabildo Insular de Tenerife in the Metropolitan area and to the most important Telecommunication operators operating in Tenerife: Movistar, Ono, Vodafone, Orange, British Telecom, etc., in order to offer all of them, dark fiber of transport and this way to contribute to the creation of a Wholesale Market that, indirectly, stimulates and promotes the Retail Market of Broadband to:

Promote the deployment of new services in broadband by the electronic telecommunication operators.

Promote the competition among operators regarding services of broadband.

Increase the number of telecommunication operators in the Island of Tenerife aiming to reach a market situation similar as in the mainland.

The electronic communications service network that IT3 develops and exploits consists of a passive fibre optic network, designated towards its rent as dark fibre optics.

IT3's network passes through underground conduits in both road and rail infrastructures. It consists of an estimated 200 kilometres ring network with a maximum capacity of 504 fibre optics (all segments fully redundant).

All fibre optics that composes this network complies with the technical requirements for signal transmission:

General, core and access segments: ITU-T G.652d.

Special segments of the submarine cable endings: ITU-T G.655c.

CanaLink

CanaLink is a submarine cable consortium between the Instituto Tecnológico de Telecomunicaciones de Tenerife and the firm Islalink, whose mission consists in developing the alternative telecommunications core network between the Canary Islands and mainland Spain.

The CanaLink cable system will connect Tenerife with mainland Spain, Gran Canaria and La Palma. This infrastructure has been deployed following the highest quality procedures and a solid network design due to the technical and service needs demanded by international telecoms, required to break down the digital barrier that currently exists between the Canaries and the rest of European regions.

In Tenerife, the reduction of these entry barriers and therefore its appeal for ICT enterprises (telecoms and others) will be even more significant, due to the NAP as connectivity hub, and the deployment of terrestrial core network to all of the island's towns, which has been developed by the Council.

Among the actions developed by ITER during the year 2011 to support the project are:

Support in the activities regarding the deployment of the network, including the reception of equipment in the technical centres, design and development of the engineering regarding the network, configuration and enable the communication circuits

Operation and gathering of data during the tests regarding the equipment

Active participation in the operation and maintenance (OyM) of the project, including training of the OyM staff of the CanaLink system

Analysis and parameterization of the ticketing tool

Supervision of the monitoring connection of CanaLinks technical centres, both in the islands as in the mainland. Monitoring of the variables of control and alarms of the technical centres

Design, installation and management of the DCN network for the interconnection of CanaLinks technical centres

Design and development of an application used to control the equipment and the services offered by CanaLink

Document management. Handing over of the stages to Red.es, within the RedIRIS Nova Project

Active participation in the delivering of the services to the clients

Datacenter D-ALiX

D-ALiX is a datacentre providing TIER III+ category facilities framed within the Alix initiative. This infrastructure has more than 4500 m^2 of installations, with more than 2000 m^2 intended for IT equipment. It is also a base station of submarine cables, with beach manholes (BMH) and all the infrastructures needed to offer these services.

The works and installations needed to give service to clients were accomplished during the year 2011, starting to work the 26th of March. Since then, different users have been implemented to the information centre.

The line of work of the data centre D-ALiX (punto de acceso neutro de África Occidental-Islas Canarias SL) is to be a basic infrastructure so that its clients can develop their business model without having to make big inversions, going instead through a rental model which will allow a flexible growth, while they benefit from the scale economies transmitted by ITER, promoter of the infrastructure. As an added value, D-Alix has a Meet-Me-Room.

The aim is to offer clients high availability hosting services and a competitive environment of high-end communications with the outside world, prevailing by the following three concepts as the main characteristics to be offered to the information and communications technology (ICT) market:

Highest levels of security, cooling and electrical availability.

High levels of energy availability, according to TIER IV

Total duplicating of equipments and refrigeration distribution

Resistance to inclemency and autonomy in case of environmental disasters.

Provide high connectivity and quality levels of the communications based on the neutrality regarding the selection of the operator

Total monitorización y control 24x7 de las instalaciones

At the same time, ITER has been in charge of the development of the corporate identity of the datacentre: logo, advertising materials and web page, using the Pista Local Plus tool, creating a personalized template adapting it to the needs.

Currently, Works are being done to move ITER´s corporative services to the Data Center A-Lix.

Telecommunication System for Bioclimatic Houses

Among the facilities that make up the Institute of Technology and of Renewable Energies, there are a set of Bioclimatic housings, a not pollutant urbanization inspired by ecological principles. Each of the housings is different regarding design, materials, in the integration of natural resources and in architectural integration of thermal and photovoltaic solar power.

Due to the importance of this Project, several lines have been developed for the control and presentation of the environmental data gathered in the housings, as well as for their public promotion:

Web page. Aimed to promote the bioclimatic houses and favour their rental. Web page of the bioclimatic houses is: http://casas.iter.es/

Management Application. Designed as a management application used in hotels. The app controls reservations and the occupancy of the bioclimatic dwellings.

Remote monitoring. Monitoring and storage in real time the environmental variables registered by the sensors installed in each of the bioclimatic houses.

Information panel. TV screen located in ITER´s visitors centre which gives information and a real time representation of the environmental variables monitored in each of the bioclimatic houses.

IP Television. Interface to use TDT televisions in each of the bioclimatic houses. It gives internet access and real time monitoring of the environmental sensors, internal communication, online press, interesting information etc.

DISSEMINATION AND TRAINING

10.

10 Dissemination and Training

ITER strives to make a good dissemination of its projects and investigation lines of work, carrying out dissemination tasks in energy, new technologies and environment so that the local population along with ITER´s visitors are informed about the researches carried out to promote renewable energy technologies and systems.

Furthermore, being one of the ITER's main goals the contribution to the social awareness as for supporting a more sustainable development, it carries out also education and social awareness tasks. It uses a variety of dissemination tools, giving priority to those related to new Technologies, such us the Web Pages and Social Networks.

On the one hand, ITER has one of the first educational equipment dedicated to Renewable Energies in Spain, which was launched in 1998, and it has been gradually extended with other installations, as the Visitors Centre and the Bioclimatic Dwellings. On the other hand, ITER participates in training activities, such us the Master Degree in Renewable Energies of the University of La Laguna, and also collaborate in the development of training practices, as well in Courses and Conferences. It develops specific dissemination programmes for its own projects or for contributing to the General Dissemination of Science contents, as the Radio Program Planeta Vivo Radio or the TV Program Teleplaneta.

Other tasks carried out by ITER in this field are the organization of Open Doors Days, and the participation in Scientific and Educational Fairs and Congresses.

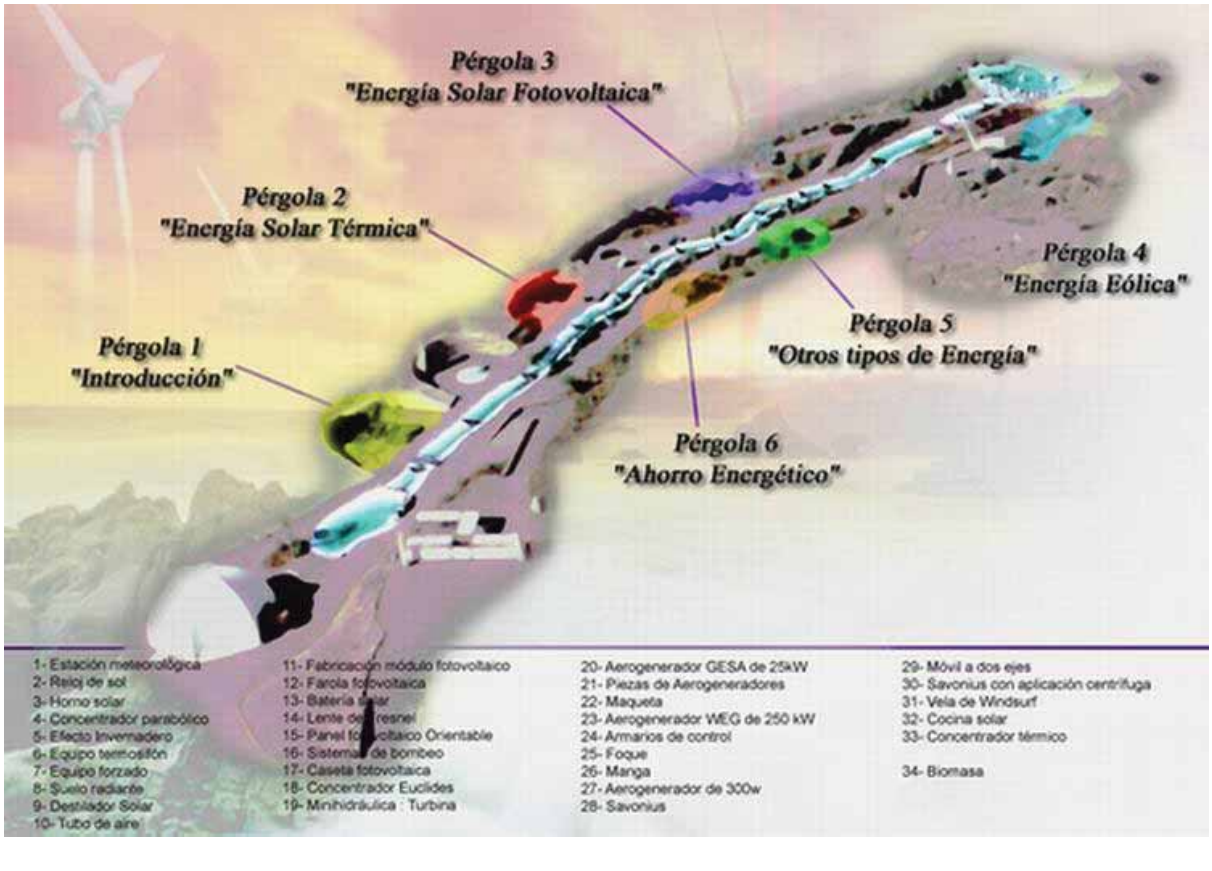
Dissemination and Educational Facilities

The educational-dissemination facilities of ITER are part of a very ambitious project called “Renewable Awareness”. The principal aim of this project is to show the research activities related to renewable energies, environment and new technologies, fostering a social ant touristic awareness that brings together the concepts of clean energies and new technology developments, with a maximum respect with the environment, contributing to a sustainable development and to a zero CO_2 future.

To execute this project, three educational equipments have been developed for the society awareness about the importance of the individually responsibility in the energy sector. Each one of the equipments suggests a different way of approaching the concepts, all being compatible and nonexclusive. The technological walkway introduces the concepts visually and very easily to understand. The Visitors Centre encourages a second thought on what has been learnt. The Bioclimatic Dwellings is where the ideas translate into actions, where the concepts learned are applied and are there to experiment and prove that Zero CO2 emissions does not mean less comfort.

Technological Walkway

The equipment is working since 1998, becoming a leading installation in Spain in this field where visitors could experiment how renewable sources transformed into useful energy. The Walkway greatly contributed to the approach of the population to energy generating systems that used renewable resources and helped in their social integration. This equipment is a useful complement for all stages of the education system (elementary, middle school, high school, university, professional associations, etc.), because it allows to the educational centres to make a complementary activity for the curriculum development in this field. The Technological Walkway receives yearly about 8.500 visitors, including students and other guided visits. During year 2011, the posters that constitute the educational route have been updated and edited in a more resistant material against the inclemency of the weather.



Visitors Centre

Inaugurated in year 2004, it is a bioclimatic building mainly characterized by its integration with the environment. The Visitors Centre counts with a circuit of displays which encourages the visitor to learn about energy matters such as their most common sources, their impact in the environment, their limited characteristics, as well as the alternative use of the renewable energies. As well as dealing with contents related to the energetic problem, climate change and bioclimatism, the Visitor's Centre has access to the monitoring system that controls each house. It's a space where different activities both of technical and scientific nature can coexist and offer the local and the foreign visitor a way to participate actively. For this reason, the Centre also counts with a 200 seats auditorium, several multipurpose rooms, a gift store and a cafeteria.

During year 2011, the Visitors Centre, in addition to being the starting point for the ITER's Guided Visits, has hosted several events both organized by ITER or by third parties. Some of these events that took place during 2011 are:

- Opening Ceremony of the D-Alix Centre, which is the Neutral Access Point (NAP) of West Africa / Canary Islands.

- Technical visit organized for the participants in the International Conference "Doing Business with Africa", organized by the Corporate Council on Africa.

- Conference "Design Patterns, use and restoration of housings for the optimization of energy consumption".

- 2nd TUI Environmental Conference in the Canary Islands

- Training Programme about sustainable building "Costruire verde".

Bioclimatic Houses

This equipment, inaugurated in year 2010, is one of the most useful as a training resource. The Development comprises 24 different models of Bioclimatic Homes energetically self-sufficient (through the use of its own thermal and photovoltaic panels integrated in each house), in a zero CO_2 emission scenario. The development offers a wide exhibition of real and replicability solutions (both for the building sector as well as for the integration of renewable energies) that allows the visitor to check that is possible to choose more sustainable solutions without sacrificing aesthetic criteria and of course without giving up the comfort.

The uniqueness of this equipment is also increased for the fact that these houses are offered as accommodation, so that the visitors have the option to experience, in a more direct way, the comfort and singularity of living in these kinds of houses. Each house is like a small-scale laboratory equipped with different sensors that allows its monitoring and to show in real time its thermal behaviour; thus, the tenant can experience how small changes in the use of some of the elements presented in the house, can change that behaviour.

During year 2011, the Conference “Design Patterns, use and restoration of housings for the optimization of energy consumption” was organized by ITER. In that conference, the results of the houses monitoring measures were exposed. The Development has received several visits and among its tenants underlines media representatives, such us the German Production Company Capital Entertainment that made a special report for the TV Program Galileo on the German Channel PRO 7, and also a group of Italian students that received a training programme about bioclimatic building specifically designed by ITER for them.

Master's Degree in Renewable Energies of the University of La Laguna

ITER started in year 2006 the collaboration with the University of La Laguna for the delivery of the Master's Degree in renewable Energies. This Master has reached a recognized standing, together with a great success in the labour market insertion of its graduates. Besides this, the great demand that the Master has had in all its editions, shows the need of this kind of specialized training in the Canary Islands, but also in the rest of Spain and in Latin America. In fact, the number of pre-registered students for each Edition has exceeded the number of offered places.

The third edition of the Master, with a two years length, started in year 2011, and during this year ITER assumed approximately one-third of the teaching works, with the participation of several technicians and researches form the departments of Wind Energy, Photovoltaics, Bioclimatism, Electronics, New Technologies and Environment.

In the frame of this line of work, one Framework Partnership Agreement was signed with the University of La Laguna for the development of external practices for the students of the Master during the academic course 2011/2012.

The Master is mainly focused on training professionals in the field of renewable energies with the following profiles:

Economists and business men expert in commercial or pre-commercial technologies, capable of designing strategic plans for the public administration and socioeconomic fabric to promote the development of the sector, and able to promote an appropriate business and financial framework.

Researchers with scientific and technical profile capable of undertaking research and development projects within the university and business sphere.

Professionals capable of designing and implementing systems with technologies in pre-commercial or commercial state.

Furthermore, one of its principal aims is to bring up graduates capable to dynamize and to generate economic activity in the fields of Renewable Energies and Energy Efficiency, also promoting its entrepreneurship with survival guaranties. In this sense, some companies have already being created by students of previous editions of the Master.

Design and development of a Technological Unit for Renewable Energies demonstration

ITER, aware of the importance of the dissemination of Renewable Energies and the role that the technological infrastructures can play in the training field in this sector, is carrying out the design and development of a Technological Unit for Renewable Energies demonstration. This Unit intends to be an effective tool for being used in training modules about renewable energies. The modularity of this Technological Unit will allow its adaptation to different requirements, making it suitable for its use in a diverse range of training modules.

ITER's Technological Unit of Renewable Energies will consist in a demonstration system compounded by the following equipment:

Off-Grid Solar Photovoltaic Energy Module.

Thermal Solar Energy Module.

Small Wind Energy Module.

Small Hydropower Module.

The Technological Unit, with an educational nature, will be equipped with the necessary elements for its complete monitoring, control and management, in order to bring the students closer to these renewable energies knowledge.

Professional Practices "Assembly and maintenance of Thermal and Photovoltaic Solar Installations"

ITER collaborated with the Training Centre "Labour Building Foundation" in the island of Tenerife, receiving 6 students for the development of non-labour professional practices. These practices were part of one of the Modules of the Certificate of Professional Standards "Assembly and maintenance of Thermal and Photovoltaic Solar Installations". This initiative was organized by the Training Centre "Labour Building Foundation" of Tenerife and it is co-financed by the European Social Fund, the Spanish Ministry of Labour and Immigration and the Canary Islands Employment Service.

The 120 hours of practices realized in the photovoltaic installations situated in ITER's facilities, was carried out for the capacity building of the students in works related to the assembly and maintenance of Thermal and Photovoltaic Solar Installations. The Certificates of Professional Standards gives a labour accreditation that assures to the employers that the worker is competent in the specific qualification that the Certificate accredits. So these Certificates facilitate the insertion in the labour market and the personnel selection tasks, because it shows clearly what each worker does best. They also bring the possibility to the educational community to validate the competence units that fit in with the Professional Training Titles and they make easier to get a lifelong learning, because they can be done gradually, by Training Modules and Competence Units.

Dissemination Programmes

ITER carries out specific programmes for achieving more visibility for its own projects and also for contributing to the general dissemination of Science.

Planeta Vivo Radio

Planeta Vivo Radio is a scientific dissemination programme of both, ITER and RNE in the Canary Islands, which is coordinated by the Division of Environment of ITER. This radio programme is 50 minutes long and is broadcasted weekly on Radio 5 for the Canary Islands and Radio Exterior de España (REE) for the rest of the world. This initiative promoted by ITER and RNE was born in a very special year (2008), the International Year of Planet Earth, and intends to contribute in the dissemination and accomplishment of the purposes of this important international statement proclaimed by the General Assembly of the United Nations in the session of December 22nd, 2005. The main objective of this statement is to make the society aware of the relationship between the Humankind and Planet Earth, and to stand out the importance that Earth Sciences have in the consecution of a sustainable and balanced future in order to increase the quality of life and safeguard the planetary dynamic. PLANETA VIVO RADIO is co-financed by the Spanish Foundation for the Science and Technology (FECYT) and the Insular Authority Cabildo Insular de Tenerife.

In October 2011, coinciding with the volcano-seismic crisis at El Hierro, one live programme was recorded from this island. In November, coinciding with the Science Fair of La Orotava, like in previous years, another live programme was recorded and broadcast from there.

The last 2011 programme was the number 166, broadcast on December 25, and it was dedicated to resume all the previous programmes broadcast during the year. All the Radio Programmes are available in the Programme Web Page: http://www.planetavivoradio.es

Canary Islands: A Volcanic Window in the Atlantic Ocean

It is a dissemination programme about the volcanic phenomena and the management of the volcanic risk. From its 1st Edition, in year 2008, this programme has been visit the total 88 municipalities that compound the Canary Islands, including the island of La Graciosa, and has registered a high rate of participation with a total of 15.195 assistants. During year 2011, the overall citizen participation in this 4th Edition has been higher than the rate registered in previous years, being a 26,38% slightly above the rate registered in the 1st edition.

With the aim of awarding and recognizing those municipalities that in their island has registered the highest participation for this 2011 edition, Recognition Diplomas were awarded to the following municipalities: La Frontera, Tías, Valle Gran Rey, Tijarafe and Santa Cruz de Tenerife. Furthermore, the following Institutions were awarded for its support with the dissemination programme and for its works in the volcanic phenomena and the management of the volcanic risk, particularly during the volcano-seismic crisis at El Hierro: the Spanish Institute of Oceanography (IEO); the Civil Guard's Helicopter Unit in the Canary Islands; the Civil Guard's Principal Post of Valverde; the Spanish Red Cross; the Canary Islands Volcanic Association (AVCAN); and the whole of Civil Society of El Hierro.

The educational Programme “Canary Islands: A volcanic window in the Atlantic Ocean" stems from the need to inform and train the citizens of the Canary Islands about the volcanic risks, which is one of the priorities of the Contingency Plans for volcanic hazards and one of the activities that the Basic Guideline for the Civil Protection Planning against Volcanic Risks in Spain considers necessary for the maintenance of the Civil Protection Special Plan for Volcanic Risk in the Autonomous Community of the Canary Islands (PEVOLCA). In parallel, and through this Programme, citizens can also get to know the actions that the society - both Administrations and citizens - must materialize for the reduction of the volcanic risk. Therefore, the final aim of this Programme is to contribute to make the Canary Islands a better informed and organized community against the volcanic risk, managing the hazards that surround it and reducing its own vulnerability to these hazards.

TELEPLANETA TV scientific program

TELEPLANETA is a 15 minutes long TV scientific programme that reviews current information concerning the most important natural hazards occurring on planet Earth during the last 7 days. Moreover, two scientific video reports are broadcast explaining the different natural hazards and remembering some anniversaries of events which took place on this day in history. During last year, TELEPLANETA has broadcast more than 75 reports, reaching an audience of approximately 300.000 viewers, according to TVE data. This fact means a milestone in the television for such a programme, in which worldwide experts from leading Institutions related with Earth Sciences, has participated.

The program TELEPLANETA, presented by one of ITERs geologist David Calvo, and cofinanced by the Spanish Foundation for the Science and Technology, is a product elaborated entirely in the Canaries for the world thanks to its broadcast in Channel 24 hours of TVE every Saturday at 09:45 hours. The aim is to steady itself as a program of classified by RTVE as of "public service", which helps to raise awareness among the society of the existing relation between Humanity and Planet Earth.

The commission of the 12 edition of “Ciencia en Acción” in the part of Scientific short film, educational material and Dissemination unanimously agreed to appoint TELEPLANETA as the winner in the modality of Short Scientific films. This decision is based in the importance and relevance of its weekly programs informing about the risk of natural disasters and the way to stop them. The international Contest “Ciencia en Acción” is aimed at teachers and professors, researchers, scientific disseminators as well as any other person interested in science in Spain, Portugal and Latin American Contries. The “Ciencia en Acción 12” took place in the Universitat de Lleida on the past October 9th, 2011. Ciencia en Acción is an iniciative of the Superior Council of Scientific Investigations (CSIC), Ciencia Viva, the Royal Spanish Society of (RSEF), the Geology Society of Spain (SGE) and the The National Distance Education University (UNED).

Visibility Plan for ITER´s Bioclimatic Houses

Since the inauguration of the bioclimatic houses in 2010, ITER has focused its efforts in the development of new action lines that allow the attainment of its principal aim, the dissemination of bioclimatic skills and of the integration of renewable energies together with its possible applications.

Within its visibility plan in 2011, ITER has continued with the initiatives started in 2010 in order to reach this objective. New dissemination publications have been created regarding the project and the bioclimatic techniques, and technical visits to the houses continue being offered, as well as guided visits for the public in general. The housings have been visited during the year 2011 by approximately 2500 persons.

ITER has a close collaboration relationship with both national and international media both which helps in the dissemination of the Project at a larger scale. The project has also been presented in different conferences linked to energy efficiency in building, sustainable architecture, integration of renewable energies and sustainable holiday housings. Among them we can highlight the participation with the abstract “Home Bioclimatic Dwellings for the Island of Tenerife. A non-polluting estate developed by the Institute of Technology and Renewable Energies in the **World Sustainable Building Conference**, which will take place in Helsinki in 2012. The Bioclimatic Houses together with the ITER´s Visitors Centre have applied to two international awards, on the one hand, to the International Awards of the Environment of the German Travel Agency, with Ecotrophea. On the other hand to the International Award of Dubai for the Best Practices, award established in 1995 during the International Conference of the United Nations celebrated in Dubai.

The technical stays have continued aiming at groups in the training stage of architecture and solar energy, along with any other group who is interested in learning about a bioclimatic house. In this line, the educational project developed specifically for the Association “Cooperativa Sociale Le Mille e Una Notte” can be highlighted. The educational program designed by ITER was one of the four chosen by the Council of Sports, Tourism and Youth of the Province of Rome to be part of the field trips contained in the study plan for students in High School dedicated to new technologies adapted for sustainable development.

A total of 12 students formt the Province of Rome and three monitors stayed in the Bioclimatic Dwellings for July 15th to the 21st to attend several workshops and technical visits included in the *educational programa* "*Costruire verde.* The program also included a technical seminar and several talks and presentations. The workshop “Learn about your Bioclimatic House” can be emphasized. The students used the houses where they were staying as small bioclimatic laboratories learning about the importance of the different building techniques and the way to use them correctly. Other related workshops included the importance of color and material of different objects when dealing with heat absorptions and heat transference, the effect of the wind and the influence of the design, the criteria which makes a city sustainable or not, how to measure out daily energy consumption, where energy comes from and how we can decrease our consumption, etc.

The webpage of the Bioclimatic Houses http://casas.iter.es/ where you can find information about how to proceed to stay in the houses, chose one and make the reservation, has received during the year 2011, 20.039 visits. The Bioclimatic Houses also have a Facebook that started this same year.

Webpages and Social Networks

Aiming to increase the visibility not only of the Institution but also of some specific projects, several webpages have been created along with their Facebook YouTube channel.

Web Pages

www.iter.es is ITER´s webpage. ITER works to develop and update the web page content, improving navigation and accessibility. Works are still going on to improve the page and get a more dynamic and easier site. The page, available in both English and Spanish, offers a tour explaining the main tasks and projects carried out by the individual departments as well as offering news updates of the activities conducted at the Institute and the possibility of downloading different ITER´s media publications such as the trimester bulletin LessCO_2 , and the Activities Report. ITER´s webpage has had 44.351 visits during the year 2011.

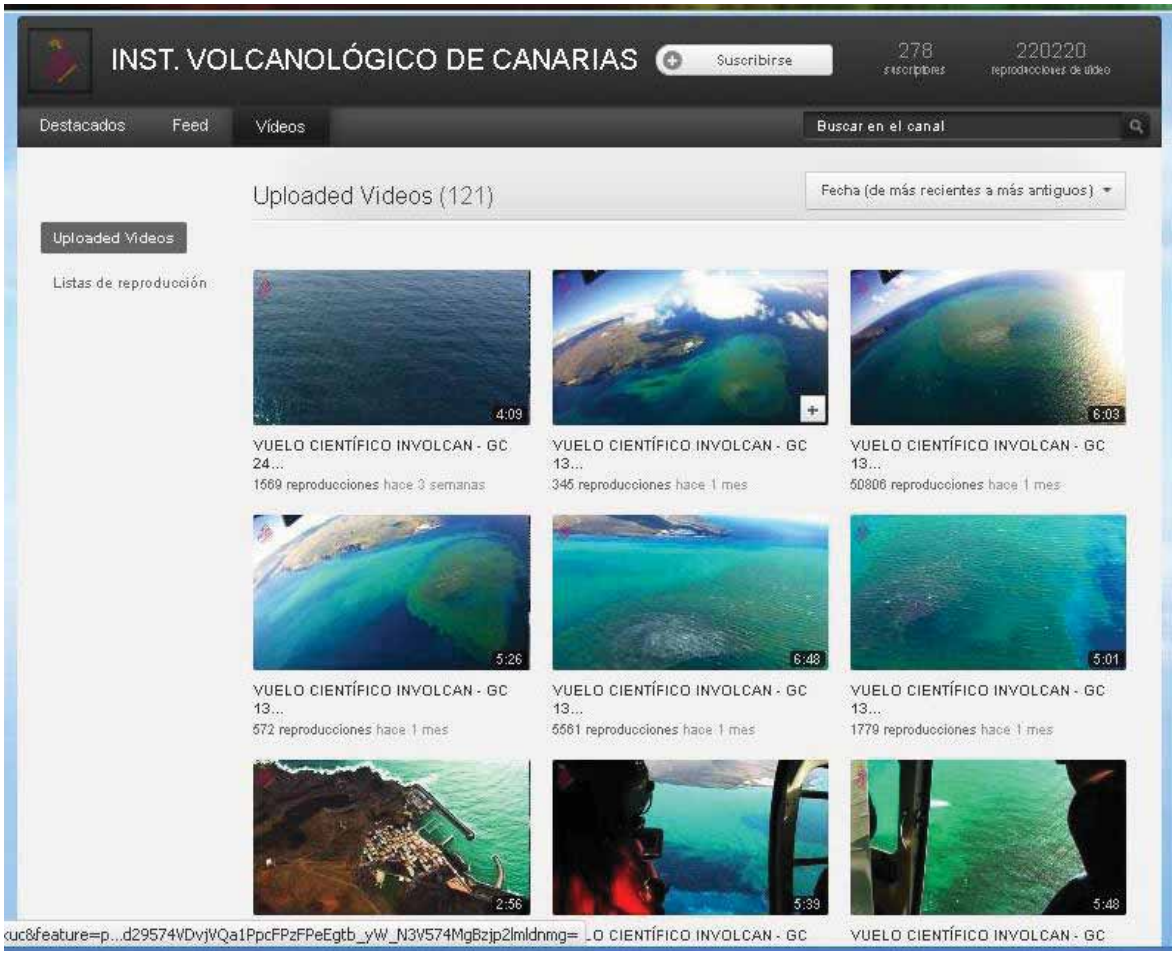
Other web pages for specific projects have been developed as well. Among them there is:

Tica Project: www.advant.iter.es y www.dilo.iter.es

D-ALIX: www.d-alix.com

Bioclimatic Houses: www.casas.iter.es

MACSEN-PV Project: www.macsen-pv.iter.es



YouTube Channel

El ITER has a YouTube channel, www.youtube.com/itertenerife. In addition to this one, and due to the submarine eruption of the Volcano in El Hierro in November, another channel of the Volcanological Canary Institute, INVOLCAN www.youtube.com/user/INVOLCAN/videos was created. This channel helped in the dissemination of videos and images of the eruption of this volcano. These videos were recorded from the air thanks to the help and collaboration of the Helicopter Unit of the Guardia Civil of the Canary Islands. This was a way to bring a closer look to this unique and special event of nature that was taking place in the island of El Hierro.

The last 31 days of the year 2011, the YouTube Channel INVOLCAN registered more than 100.000 visits from 147 countries. Spain, had 27,9% of the total visits followed by Germany, United States, United Kingdom and Rumania; all them with percentages above 7%. Bellow this were France, Holland, Brazil, Poland, Italy, Canada, Belgium, Switzerland, Mexico, Russia, Austria, Portugal and Finland.

Facebook

Totally aware of the importance the social networks have acquired and with the concern of giving the best coverage to the activities and projects, ITER opens a profile in Facebook, www.facebook.com/itertenerife.

This tool is very helpful exchange information and the increase social participation, making it ideal for many of ITER´s projects in which the social interaction is fundamental. Therefore, to achieve the best performance from this tool, the different projects have opened their own profile; among them: D-ALIX project: www.facebook.com/datacenteralix, MACSEN project: www.facebook.com/macsenpv or that of the UNVOLCAN: www.fecebook.com/innvolcan that registered 5.270 new friends proceeding from approximately 20 different countries (an increase of 1.573 % with regards to the year 2010), 2.439.816 of visualizations and 17.775 comments on the publications.

Open Door Days

ITER knows the importance of promoting the scientific culture among the population and therefore periodically celebrates “ITER´s Dissemination Days”. During these days the visitors can go into facilities that are normally closed to the public and learn and participate in activities and projects that are being carried out.

The year 2011 has continued the line developed throughout the previous years of dissemination and participating in the ENERGY DAYS, both within the Sustainable Energy Week (EUSEW) as in the European Solar Days.

The “Open Door Days of ITER´s 25 Bioclimatic Houses” were organized within the EUSEW 2011 in collaboration with the Tenerife Energy Agency. The EUSEW was launched by the European Commission in the year 2005 as an event for the promotion of the renewable energies and energy efficiency within the Campaign for Sustainable Energy for Europe. Being part of this Campaign is a significant acknowledgement to the importance of these installations and their promoters in their effort for achieving a more energetically sustainable future for Tenerife.

The aim of these days is to bring the population closer to this bioclimatic laboratory found within the houses. The activities programmed include the accomplishment of guided visits to the houses and dissemination talks. As the year before, this event had a very good acceptance.

ITER participated for fourth year in a row in the European Solar Days. This event is an initiative within the Intelligent Europe Program of the European Commission, which is coordinated by the European Federation of the Thermal solar industry in collaboration with the European Association of PV industry. The aim of this event is to stimulate the population awareness about the importance of the use of solar energy. The participation in this event during the year 2011 in collaboration with the Tenerife Energy Agency consisted in Open Door days to show “Technologies to use solar energy and integration in houses”. The event took place during four days and received more than 150 people.

Along with the promotion of European day, ITER is very keen about the promotion of science at a national level. Therefore, ITER not only participated in events within the Science Week promoted by the FECYT, but organized Open Door Days in November 2011, which included guided visits to the most important installations and projects regarding scientific and innovation affairs.

Open Door Days, Fairs and Scientific Meetings

2nd TUI Environmental Conference in the Canary Islands. January 31st, ITER's Visitors Centre, Granadilla.

This conference was organized by TUI in cooperation with blueContec, ITC and ITER. The conference dealt with the exchange of knowledge and experiences to promote energy saving and increase energy efficiency in hotel management.

The conference counted with the participation of the Deputy Vice-minister of Tourism and the Deputy Vice-minister of Industry and Energy from the Canarian Government as well as with the President of the Cabildo Insular de Tenerife.

This Conference aimed to promote the use of best innovative practices that have been successful in other hotels and to further those formulae that allow the best management of the energy saving innovations and energy efficiency so that the models and shared experiences can be replicated later in other similar installations. Due to the characteristics of this event, it was included within the preparatory actions of the Managers of Innovation program aimed to gather professionals and Managers of innovation of the Touristic Sector.

International Conference “Doing Business With Africa” of the Corporate Council on Africa. March 29th – April 1st Adeje, Tenerife.

This conference was an important business meeting to discuss economic matters, of trade and investment in the African continent, one of the most important emerging markets in the world. ITER made a presentation outlining the cooperation projects in which it participates. In addition, a technical visit to ITER´s facilities was organized to see the DATACENTER of the ALIX project. This visit was complemented with two presentations, one given by Manuel Cendagorta, ITER´s Manager and the other by Javier Zazo, of ARX Soluciones, company which has designed the DATACENTER.

I Focus Senegal Forum, April 1st, Santa Cruz de Tenerife.

This Forum tool place in Santa Cruz de Tenerife and was the opportunity to show Senegal as a very dynamic country, with an enormous potential for growth and the great opportunity it will bring to the Canary Islands if they managed to become the active agent of the development of this country. ITER currently carries out several projects in Senegal.

Innovaction Forum 2011, March 24th and 25th, Santa Cruz de Tenerife.

This event was organized by TF Innova and took place in the exhibition grounds of Santa Cruz. The event was aimed companies and entrepreneurs of the island of Tenerife to train them in innovation using creativity, innovation and technological development as best strategy for competitiveness and local development.

Employment Forum in Granadilla, April 6th – 8th, Granadilla, Tenerife.

Organized by the City hall of Granadilla de Abona. This event counted with the collaboration of other city halls of the area, Middle Schools, Professional Centres, and other institutions such as Ashotel, Tenerife Energy Agency, The Institute for Technologies and Renewable Energies, Cabildo de Tenerife, Canarian employment service and the Deputy of Education, Culture, Sports and Universities of the Canary Islands.

VIII Seminar of the Workgroup of the Ministry Environment and Rural and Marine Affairs: "Answers from the communication and the education to the climate change. April 6th – 8th, Segovia.

This seminar constitutes a forum of reflection, work and exchange of experiences between the persons and institutions that develop awareness programs and campaigns, education and civil participation regarding climate change affairs. ITER takes part as an expert in this seminar and in their annual meetings since the year 2006.

In this edition, the Seminar targeted the following topics: The New technologies applied to the communication of the CC; The Spanish society facing climate change; Evaluation after the first year applying the Code on the use of environmental arguments in advertising; Science and climate change: hot topics; and climate change from a perspective genre. In addition, a street market of projects and initiatives regarding communication, education and public participation in terms of climate change was put into practice in order to include the initiatives that are carried out and that for lack of time would not be specifically addressed during the seminar. Two workshops developed simultaneously during the workshop session. Workshop 1: How to organize a "transition group" and Workshop 2: The Slow Corner.

Seminar “Design Patterns, use and rehabilitation of houses to decrease their energy consumption”. July 15th, ITER’s Visitors Centre, Granadilla.

This seminar was carried out as part of the dissemination actions included in the Project “Design Patterns to optimize energy consumption and sustainable energy generation in single-family housings in warm climates”.

The main objective of the seminar was to give visibility to the conclusions obtained from Project. In addition, the environmental best practices in terms of use and rehabilitation of houses was also addressed. The participants gained a general view about how to proceed when building and rehabilitating a house or just in the way of making a good use of it in order to decrease energy consumption.

26th European Photovoltaic Solar Energy Conference and Exhibition, September 5th – 8th, 2011, Hamburg, Germany

This International Conference is a reference for the scientific community regarding Photovoltaic energy. This edition registered 4.467 participants from 84 countries. In addition, this exhibition was made up of 999 exhibitions form 37 countries and had 41.000 visitors from 103 countries.

MAKAVOL 2011 TENEGUÍA Workshop, October 24th – 28th, 2011, Fuencaliente, La Palma.

ITER, together with the Laboratório de Engenharia Civil, la Universidad and the Serviço Nacional de Protecção Civil de Cape Verde, MAKAVOL organized the volcanology international meeting 2011 TENEGUÍA workshop, which took place in Fuencaliente (Island of Palma) from October 24th to 28th, 2011. The purpose of this event is to commemorate the 40th anniversary of the eruption of the Teneguía Volcano (1971). This event counted with the support of the Town hall of Fuencaliente, Cabildo Insular de La Palma and the Agencia Canaria de Investigación, Innovación y Sociedad de la Información del Gobierno de Canarias.

MAKAVOL 2011 TENEGUÍA Workshop became an international forum which gathered specialists which work in active volcanic islands and debated about the reduction of the volcanic risk in these insular environments. The scientific and technical debates centred mainly on the management of the volcanic risk on the Canary Islands and other active islands, and they will stimulate the exchange of the know-how with the purpose of understanding and improving the multidisciplinary initiatives to reduce the volcanic risk. More than 70 participants from 14 countries (Germany, Argentina, Cape Verde, Cameroon, USA of America, El Salvador, Spain, Iceland, Italy, Japan, Mexico, Norway, Portugal and United Kingdom) registered in this scientific meeting, and approximately 30 scientific and technical communications were presented as well as several discussions regarding the management of the volcanic risk in islands. Some of the presentations are related to the numerous advantages of living in active volcanic areas (geothermic, geotourism, etc.). Given the recent volcanic activity in El Hierro an important number of participants of this international meeting moved to the Island on the 27th and 28th of October to witness the process of the volcanic reactivation that took place in El Hierro.

V Business meeting Canary Islands – Africa. November 2nd – 4th, 2011, Las Palmas de Gran Canaria.

ITER participated in this event organized by the Commerce Chamber of Gran Canaria, which brought together a total of 150 African companies and 150 Canarian companies related mainly to the food industry, construction and service sector (consulting, engineering and a significant number of ICT companies).

The Commerce Chamber of Gran Canaria has been has been organizing business meetings between the Canary Islands and Africa for more than 10 years with the aim of promoting business and institutional rapprochement between these two regions.

Science and Innovation Weeks in the Canary Islands 2011. November, 13th – 27th, La Laguna, La Orotava and Granadilla.

El ITER organized and participated in several events during the celebration of the Science and Innovation Weeks 2011:

ITER participated in the Fair of the Science of La Orotava, which took place in La Orotava on November 13th. The Radio program “Planeta Vivo Radio” was live broadcasted over Radio 5 of RNE during the celebration of this event.

ITER carried out the dissemination program “Canarias una Ventana Volcánica en el Atlántico” in San Juan de la Rambla during the days 15th – 17th and in Icod de Los Vinos during the days November 20th - 23rd.

ITER participated in the Minifairs of R+D+I organized in La Laguna on November, 17th – 19th.

ITER organized an Open Door Days, from November 22nd – 26th.

EWEA Offshore 2011. November 29th – December 1st, Amsterdam, Holland.

ITER participated as a member of the Committee of Revision of technical abstracts, conducting assessments of papers presented at the conference.

The European Wind Energy Association (EWEA) organized the EWEA Offshore 2011 conference and exhibition in Amsterdam, Holland (November 29th – December 1st, 2011).

The world's largest offshore wind energy event broke a new record this year. With over 8,200 participants attending the 23 scheduled sessions at conferences and 8,000m^2 of exhibition space housing more than 480 exhibitors. In addition, the event was an opportunity to strengthen and enrich the business sector.

Publications, Communications and Presentations

ITER´s trimester bulletin "LessCO_2". This bulletin is published in ITER´s webpage and is sent by email to more than 400 organizations.

ITER´s yearly activities report. Published in ITER´s website and includes the most important projects and activities developed throughout the year.

Visual presentation at the 26th European Photovoltaic Solar Energy Conference and Exhibition: The New Spanish Regulatory Framework and the Photovoltaic Market. Authors: A. Pío, D. Molina, B. González-Diaz, A. Linares, C. Montes, E. Llarena, O. González, M. Friend, M. Cendagorta.

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Behind the green door: Tenerife's eco village. Source: This article appeared on p7 of the Travel section of the Guardian on Saturday 14 May 2011. It was published on guardian.co.uk at 00.05 BST on Saturday 14 May 2011. It was last modified at 00.07 BST on Saturday 14 May 2011.

Wohnen der Zukunft - das erste CO2-freie Dorf. Source: Galileo (GreenSeven 2011), tv in -1 TV, Deutschland, 06. Mai 2011, ProSieben

Tenerife eco selfcatering houses, Canary Islands. Source: http://www.responsibletravel.com/accommodation/7237/tenerife-eco-self-catering-canary-islands, 2011

Travel Green: Öko-Urlaub auf Teneriffa. Ferien im CO_2-freien Dorf. Source: http://www.just2guide.com/spanien/travel-green-oeko-urlaub-auf-teneriffa-ferien-im-co2-freien-dorf/, 31/03/2011, Sue Weyrich

ENERGY PRODUCTION

11.

Photovoltaic Installations

SOLTEN I

SOLTEN II

Finca Verde

Finca Roja

Mercatenerife 1

Pilot plant

Wind Energy Installations

Experimental Platform

4,8MW Wind Park

5,5MW Wind Park

11 Energy Production

ITER Group executes projects both of photovoltaic plants and of wind parks.

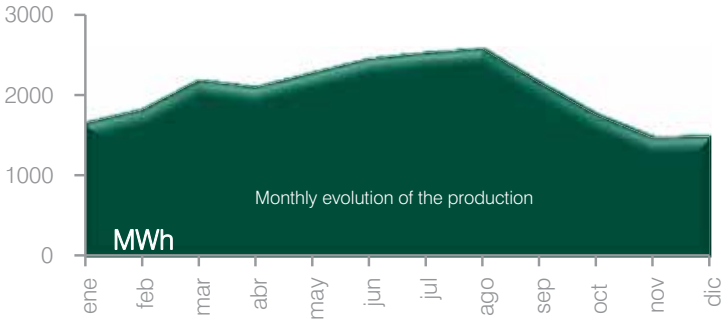
In the photovoltaic field, the Group has carried out the installation of 39MW, which corresponds to 46 % of the total photovoltaic power installed in the island.

As for the wind power, the Group owns 13,16MW distributed in three wind parks and, after the power appointment in the last wind energy contest, ITER will install three new wind parks that will add up to a total of 53,6MW of wind power installed in Tenerife.

Below is the energy production information regarding the year 2011 and all the installations of Group ITER.

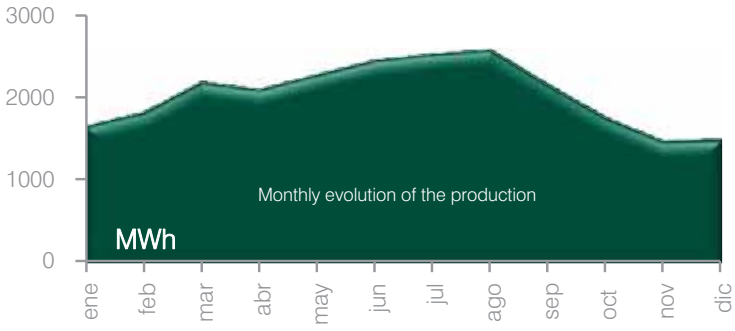
Photovoltaic Installations

SOLTEN I



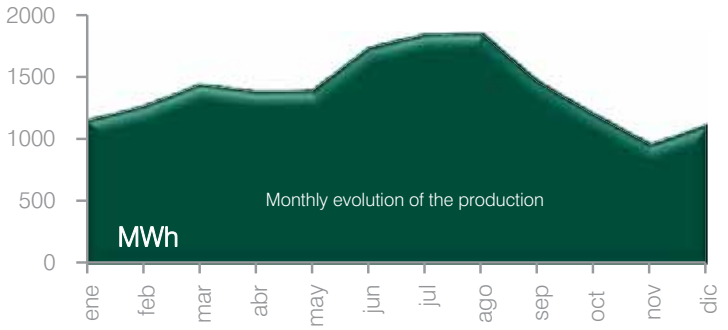
Installed power 13.000 kW
Generated energy 24,436 MWh
ITER's participation 400 kW
Equivalent consumption 28.926 persons
Tons of CO_2 emissions avoided 13.570 tons

SOLTEN II



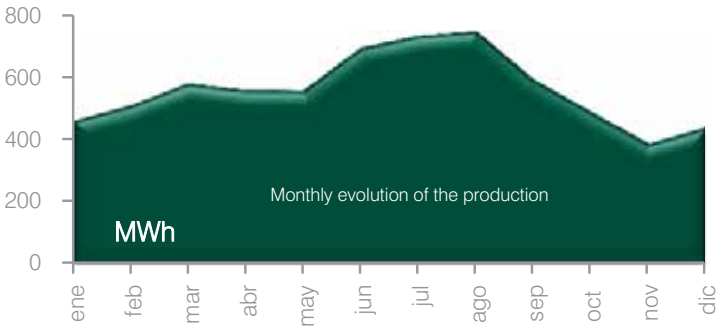
Installed power 11.000 kW
Generated energy 20.407 MWh
ITER's participation 21,55 %
Equivalent consumption 24.157 persons
Tons of CO_2 emissions avoided 11.333 tons

Finca Verde



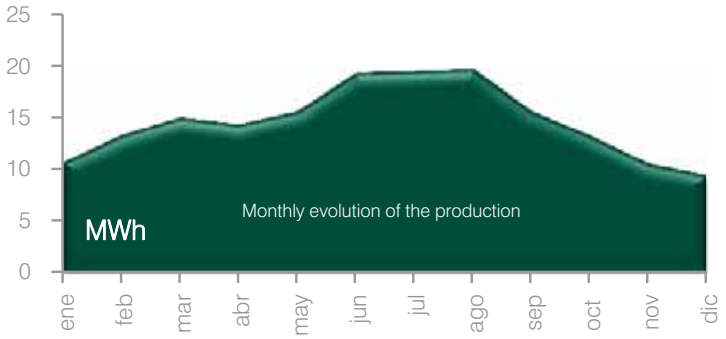
Installed power 9.000 kW
Generated energy 15.933 MWh
ITER's participation 30 %
Equivalent consumption 18.861 persons
Tons of CO_2 emissions avoided 8.848 tons

Finca Roja



Installed power 3.600 kW
Generated energy 6.441 Mwh
ITER's participation 39,94 %
Equivalent consumption 7.625 persons
Tons of CO_2 emissions avoided 3.577 tons

Mercatenerife 1



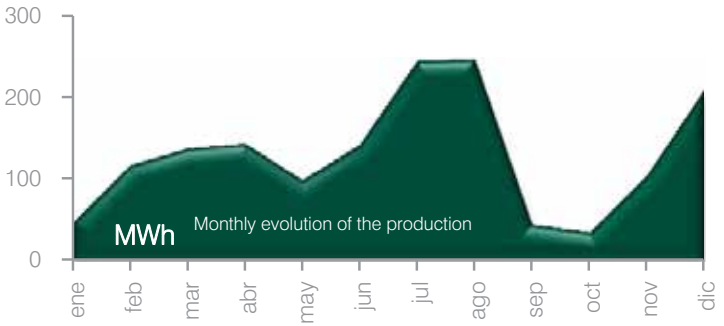
Installed power 100 kW
Generated energy 176 Mwh
ITER's participation 100 %
Equivalent consumption 208 persons
Tons of CO_2 emissions avoided 98 tons

Pilot plant

Installed power 100 kW
Generated energy 181 MWh
ITER's participation 100 %
Equivalent consumption 214 persons
Tons of CO_2 emissions avoided 101 tons

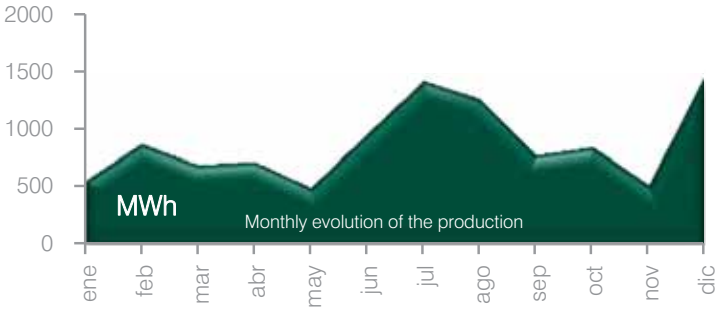
Wind Energy Installations

Experimental Platform



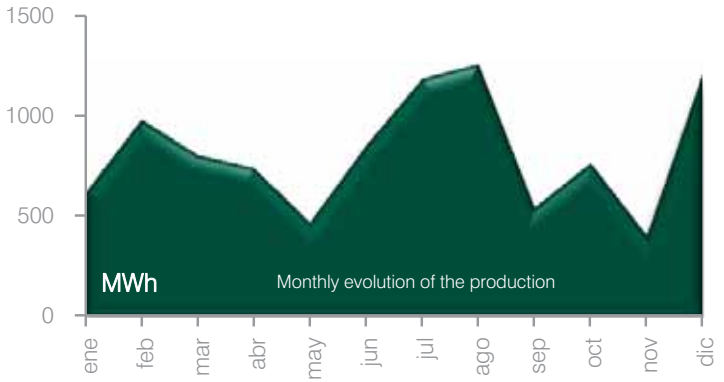
Installed power 2.830 kW
Generated energy 1.596,7 Mwh
ITER's participation 75,26 %
Equivalent consumption 1.890 persons
Tons of CO_2 emissions avoided 886 tons

4,8MW Wind Park



Installed power 4.800 kW
Generated energy 9.750 Mwh
ITER's participation 50 %
Equivalent consumption 11.541 persons
Tons of CO_2 emissions avoided 5.414 tons

5,5MW Wind Park



Installed power 5.500 kW
Generated energy 9.431 Mwh
ITER's participation 100 %
Equivalent consumption 11.164 persons
Tons of CO_2 emissions avoided 5.273 tons

ECONOMIC INFORMATION

12.

Consolidated Statement of Profit and loss

Consolidated balance sheet

12 Economic Information

Consolidated Statement of Profit and loss

ASSET	2011	2010
NONCURRENT ASSETS	**161.949.817,20**	**125.312.393,61**
Intangible assets	**6.286.450,93**	**43.977,86**
Tangible fixed assets	**117.382.178,55**	**107.544.560,11**
Land and constructions	87.913.632,09	18.442.617,57
Technical installations and other tangible assetsial	23.663.140,84	70.017.527,35
Fixed assets under construction and advances	5.805.405,62	19.084.415,19
Long term investments in group companies and associates	**16.008.179,32**	**9.055.239,63**
Holdings inequity method	15.163.029,32	9.315.112,85
Other financial assets	845.150,00	-259.873,22
Long term financial investments	**18.346.409,12**	**3.734.696,70**
Assets by deferred tax	**3.926.599,28**	**4.933.919,31**
CURRENT ASSETS	**29.851.007,02**	**71.009.814,03**
Stock	**2.141.937,02**	**5.071.947,77**
Trade and other accounts receivable	**15.256.793,44**	**6.588.422,64**
Clients from sales and provision of services	10.594.090,13	3.505.639,73
Equity-Accounted Companies	0,00	220.786,04
Assets through ordinary tax	779.353,76	24.070,32
Other debtors	3.883.349,55	2.837.926,55
Short term investments in group and associated companies	**136.865,04**	**656.620,88**
Credit for Equity-Accounted Companies	16.620,14	463.544,96
Other financial assets	120.244,90	193.075,92
Short term financial investment	**5.526.253,94**	**30.701.775,74**
Short-term accrual accounts	**1.162.163,00**	**0,00**
Cash and other equivalent liquid assets acquired	**5.626.994,58**	**27.991.047,00**
TOTAL ASSETS	**191.800.824,22**	**152.588.497,82**

NET WORTH AND LIABILITIES	2011	2010
NET WORTH	**104.853.317,24**	**148.673.908,45**
Own capital	**93.066.993,15**	**91.247.138,79**
Capital	**16.816.280,50**	**12.816.325,00**
Share premium	**1.608.057,62**	**1.608.057,62**
Reserves and results from previous years	**69.541.267,81**	**64.149.256,76**
Distributable reserves	66.977.639,81	61.785.980,52
Non-distributable reserves	2.563.628,00	2.363.276,24
Reserves in consolidated companies	**293.536,67**	**1.946.498,42**
Reserves in equity accounted companies	**2.627.648,53**	**1.404.764,99**
Results from the year attributed to the Parent Company	**2.180.202,02**	**9.322.236,00**
Consolidated losses and gains	1.730.784,56	6.254.896,91
(External partners losses and gains)	449.417,46	3.067.339,09
Received Subventions, donations and legacies	**1.223.484,31**	**1.274.736,98**
In consolidated companies	**1.223.484,31**	**1.274.736,98**
External Partners	**10.562.839,78**	**56.152.032,68**
NON CURRENT LIABILITY	**45.498.014,70**	**41.041.530,10**
Long term provisions	**10.284,69**	**276.125,55**
Long term debt	**27.599.584,94**	**40.155.549,39**
Debt with credit institutions	26.079.202,84	39.229.150,26
Other financial liability	1.520.382,10	926.399,13
Liabilities by derred tax	**586.020,07**	**609.855,16**
Long-term accrued expenses	**17.302.125,00**	**0,00**
CURRENT LIABILITY	**41.449.402,28**	**6.606.769,09**
Short-term provisions	**91.048,01**	**0,00**
Short term debt	**19.208.890,62**	**248.873,26**
Debts with financial instutions	19.053.457,16	-27.668,54
Other financial liability	155.433,46	276.541,80
Short term debt of the group and associated companies	**375.189,95**	**11.631,97**
Debts with equity accounted companies	0,00	11.631,97
Other debts	375.189,95	0,00
Suppliers and other creditors	**13.872.794,39**	**6.346.263,86**
Trade creditors	6.992.403,42	1.137.607,55
Liabilities by ordinary tax	177.881,52	75.374,45
Other creditors	6.702.509,45	5.133.281,86
Short term accruals	**7.901.479,31**	**0,00**
TOTAL NET WORTH AND LIABILITIES	**191.800.734,22**	**196.322.207,64**

Consolidated balance sheet

CONTINUED OPERATIONS	2011	2010
Net sales figure	**23.770.663,18**	**19.558.233,53**
Sales	4.834.727,91	13.639.148,07
Provision of services	18.935.935,27	5.919.085,46
Changes in inventories of finished good and work in progress	**-2.154.546,23**	**376.818,75**
In-house work for its assets	**4.223.012,88**	**1.874.335,64**
Supplies	**-9.710.497,26**	**-2.627.862,70**
Consumption of merchandise	-2.722.993,34	-1.601.142,17
Consumption of raw materials and other consumables	-6.112.218,46	-661.648,48
Work carried out by other companies	-875.285,46	-365.072,05
Other operating income	**600.344,54**	**916.421,72**
Accessory and current operating income	41.826,77	153.060,47
Grant income brought to the fiscal year profit	558.517,77	763.361,25
Personnel expenses	**-5.023.036,26**	**-4.885.765,63**
Wages, salaries and similar expenses	-3.779.824,12	-3.591.708,12
Social contributions	-1.243.212,14	-1.294.057,51
Other operating costs	**-7.608.580,74**	**-2.196.561,02**
Other current operating expenses	-7.608.580,74	-2.196.561,02
Amortization of fixed assets	**-1.945.901,38**	**-4.477.281,79**
Allocation to profit or loss of grants related to non-financial non-current assets and other	**75.087,78**	**104.167,94**
OPERATING INCOME	**2.226.546,49**	**8.642.506,44**
Financial Income	**1.737.902,90**	**905.917,06**
Of equity instrument shares	-1.421.244,80	95.018,35
Of marketable securities and other financial instruments	3.159.147,70	810.898,71
Financial expenses	**-910.740,70**	**-33.709,72**
Variation in fair value of financial instruments	**0,00**	**-155.031,52**
Exchange rate differences	**-17.989,64**	**-1.301,73**
Impairment losses and income form disposal of financial instruments	**-3.339.804,26**	**-7.868,29**
Damages and losses	-3.339.804,26	-7.868,29
FINANCIAL RESULT	**-2.530.631,70**	**708.005,80**
Share in Income of equitity accounted companies	**-1.166.880,24**	**1.027.468,62**
PRE-TAX PROFIT OR LOSS	**-1.470.965,45**	**10.377.980,86**
Taxation of corporate profits	**3.651.167,46**	**-1.055.744,86**
RESULTS OF THE YEAR FROM CONTINUED OPERATIONS	**2.180.202,01**	**9.322.236,00**

CONSOLIDATED INCOME FOR THE PERIOD	**2.180.202,02**	**9.322.236,00**
Income attributed to the parent company	**1.730.784,56**	**6.254.896,91**
Income attributed to Minority Interests	**0,00**	**3.067.339,09**

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