acts in the present, looks to the future
Melfosur was founded in 1990.

Melfosur is a comprehensive supplier of efficient, sustainable and profitable energy solutions.

The presence of Melfosur can be found throughout the complete energy cycle, from design conception to its introduction in the market place.
MELFOSUR was created to offer a comprehensive, transparent and quality service. We have responsible, ethical and competent human resources as well as the technological and professional tools required to render our clients more competitive. Our social welfare and personal development practices make us the best market referent within this service.

We aim to be a dynamic company finding solutions to our clients’ present and future needs, and we get involved, from the very beginning, in an open, proactive, in-depth manner so that we can identify and respond strategically to your business needs via a continuous process of transformation and evolution.

Our services go beyond basic human administration. In our extensive experience, in an engineering and assembly service, outsourcing highly efficient personnel with a high degree of specialization allows clients to obtain a much higher added value, which translates into a competitive advantage in the market.

Our clients’ drive and demand in parallel with the market evolution and trend and MELFOSUR’s continuous excellence culture have turned us, 25 years down the line, into a strong group which takes part in both national and international projects and holdings.

We take part in international projects in America, Africa, Europe and Asia, and we have local offices in Romania, Nicaragua, Peru and Qatar.
Our distinguishing value lies in the appropriate response and solution to cases throughout our professional services, supported by our certified, highly qualified specialists in all the products we offer.

Over 25 years of experience in the industrial and energy sectors.

Sufficient financial power to deal with large projects.

Verified technical ability and highly qualified personnel.

Innovation in products and services which improves existing needs or fulfills new ones.
Ours Activities & Services

ELECTRICAL POWER STATIONS
- Building and installation of wind, photovoltaic (PV) and solar thermal farms
- Engineering and development of Electrical Projects
- Commissioning and legalization
- Preventive maintenance
- Installation of security systems

SUBSTATIONS
- Engineering and development of projects
- Building and maintenance of substations
- Commissioning
- Routine and preventive maintenance
- Machinery operation in farms
- Thermographic testing
- 24 hour breakdown service

HIGH / MEDIUM VOLTAGE
- High/Medium voltage work, both remotely and on-site.
- Building and maintenance of aerial and underground networks
- Building and maintenance of transformers and sub-stations
- Standard checks and thermography
- Machinery operation
- 24 hour breakdown service
- Tree cutting and pruning near electrical lines

LOW VOLTAGE
- Building and maintenance of aerial and underground networks.

OTHER ACTIVITIES
- Street lighting
- Electrification of industrial parks
- Assembly/commissioning of remote control services, communications and telemangement
- Commercial activity, assembly / dismantling of meters and measurement equipment, supply cut-off management, energy contracting.
- Checking, programming of measuring equipment
- Installation and maintenance of singular buildings and industries
We are experts in renewable energies

Uninterrupter Hybrid of Solar Power System.

Engineering & Installation Solar Power Plant.
High Efficiency Cooling System.
Engineering & Installation of Wind Power plant.
Engineering & Installation of Solar Thermal plant.
Commissioning and Legalization.
O&M.
Our values

- All these values are our internal benchmarks.
- Union and enthusiasm
- Constant desire for renewal
- Practical experience in our work has taught us that nothing is constant except change. So easily see the need for renewal.

Our values

- Humility and willpower
  Being humble towards others and their ideas is natural in Culture Melfosur.
  The combination of humility, honesty and willpower is what makes our way of doing things so special and is what helps us to be more successful than the competition.
  We see opportunities and solutions rather than problems

- Ingenuity helps us to run the business, to solve problems and make good decisions for the future.

- Rigor and reliability
  In today’s world the core of any business relationship is lasting rigor and confidence.

Excellence, innovation, commitment
High Voltage & Substations Experience

DOUBLE CIRCUIT 138KV SUBSTATION MANAGUA, NICARAGUA
SUBSTATION 45/22 KV, 45 KV BADAJOZ, SPAIN
LINE 132 KV, GRANADA, SPAIN
LINE 66 KV ATARFE, GRANADA
SUBSTATION 66/20 KV DARRO, GRANADA.
132 KV SUBSTATION JABALCON, GRANADA.
LINE 20/66 KV-SALINAS ARCHIDONA, MALAGA, SPAIN
SUBSTATION EXTENSION 66/132 KV MUJAS CREEK, MALAGA.
SUBSTATION 66/20 KV GRANADA, SPAIN
Melfosur has a strong presence and international focus
Street Lighting

- Lighting of Metropolitan Park, Granada.
- Lighting of Relief Road in Miraflores, San Roque (Cádiz).
- Street lighting at the port of Malaga.
- Street lighting of West Promenade, Malaga.
- Street lighting in MA-401 crossing.
- Street lighting URB. Sector 3 East (Ronda).
- Lighting of MA-401 crossing María Zambrano to Híenasa.
- Lighting of road outside IDEA (Malaga).
- Street lighting in Fuerte del Rey.
- Street lighting of Campus de la Salud, 5th and 6th Phase.
- Lighting and energy saving in Chana and North of Granada City.
- Singular installations.
- Installation of TDD infrastructure in Alhaurín Prisión.
- Diagnosis and testing of MV/LV isolation at Malaga and Granada airports.
- MV/LV installation at Granada University.
- MV/LV installations at Malaga University.
- Installations at the medical centre in Cala del Moral, Malaga.
- Multi-Business building in PTA. de Campanillas, Malaga.
- Pumping electrification and automation at Las Cruces Copper Mine, Seville.
- Installation of LINKS, Marina Banus Shopping Centre.
- Alhaurir Shopping Centre, La Zuela, Granada.
The development of renewable energy plays a very important role for Melfosur. Proof of this is the large number of work we have carried out in this field: more 100 MW installed. We are pioneers in the implementation of projects, sales, promotion and assembly of solar photovoltaic and wind installations. We have put renewable energy to the service of sustainable development, using the most appropriate technologies to obtain the highest effectiveness and productivity.
Photovoltaic Solar Energy
Photovoltaic solar energy is the direct transformation of solar radiation into electricity. This transformation takes place in devices known as photovoltaic panels, in which solar radiation excites the electrons in a semiconductor medium, generating a small power difference.

Thermal Solar Energy
Thermal solar energy consists of using the sun's energy to generate heat which, in turn, can be used to produce hot water for domestic consumption in the form of sanitary hot water, heating or production of mechanical energy which can then be transformed into electric power.

Thermal Solar energy with CSP technology
Thermal solar energy with CSP technology is based on the concept of concentrating solar radiation to produce steam or hot air which can then be used in conventional electric power plants. Most of these systems use parabolic mirrors because of their ability to focus their high reflectivity.

Wind Energy
Wind energy has to do with the harnessing of the kinetic energy generated by the effect of air currents, which are transformed into forms of energy, principally electricity.

Cogeneration
Cogeneration has the advantage of being more energy efficient, because it uses heat as mechanical or electrical energy in a single process, rather than using a conventional electric power plant.

Geothermal Energy
Geothermal energy is energy stored in the form of heat which is found below the Earth’s surface. This energy can be used for direct heat production or for generating electricity.
Some Renewable Energies Experience

26 MW SOLAR PHOTOVOLTAIC FARM IN CASTUERA, BADAJOZ, SPAIN.  
12 MW SOLAR PHOTOVOLTAIC INSTALLATION ON TOP DECK EN  
12 MW CASTELNAU, FRANCE.  
1.7MW FIXED SOLAR PHOTOVOLTAIC FARM IN UGLAS, FRANCE.  
6MW SOLAR PHOTOVOLTAIC FARM IN VALENTANO, ITALY.  
TRACKING AND FIXED 18 MW SOLAR PLANTS IN LAS GABIAS, GRANADA.  
50-400 RURAL ISOLATED PHOTOVOLTAIC INSTALLATIONS, BANGLADESH.  
WIND FARM IN ENIX, ALMERÍA, SPAIN.  
5MW PHOTOVOLTAIC SOLAR FARM IN OLIVENZA, BADAJOZ, SPAIN.  
5MW PHOTOVOLTAIC SOLAR FARM IN ALBURJUEQUE, BADAJOZ.  
5MW PHOTOVOLTAIC SOLAR FARM IN ALVARADO, BADAJOZ.  
3MW SOLAR PLANTS IN VALLADOLID, SPAIN.  
INSTALLATION OF ELECTRIC INFRASTRUCTURE FOR 4.7MW  
P HOTOVOLTAIC FARMS IN DARRO, GRANADA.  
MY INFRASTRUCTURE FOR PHOTOVOLTAIC FARMS IN ALDEIRE, GRANADA.  
MY INFRASTRUCTURE FOR SOLAR PLANTS IN CALAKOPPA, GRANADA.  
LV/ MV EVACUATION OF 1.8 MW SOLAR PLANT IN CAMPILLOS, MALAGA.  
5MW PHOTOVOLTAIC SOLAR FARM IN ALMEIDA, MALAGA.  
SHARE IN SMARTCITY PROJET, MALAGA.

Castuera 26 MWp
Melosur built the solar farm with thin-film technology largest in Spain. The plant with an area of 69 hectares generates more than one million kilowatt-hours of electricity per year.
Energy Efficiency

The workforce at MELFOSUR ENERGY EFFICIENCY is qualified and capable of finding viable financial and technological solutions for all types of investors and energy products.

As well as photovoltaic power, MELFOSUR ENERGY EFFICIENCY performs research and development into numerous natural energy sources to obtain higher efficiencies and profitability, through two types of solutions:

**Active Solutions:**

Active solutions take energy from sources such as the Sun, the Earth, organic material, the wind and the sea, and transform them into thermal, geothermal, biomass, wind energy and potable water, respectively.

**Passive Solutions:**

MELFOSUR ENERGY EFFICIENCY researches, develops and implements construction systems that enable buildings and installations to supply themselves with energy, with a view to achieving a sustainable building.

We develop passive solutions for the self-supply of energy in different areas:

- **Industrial:** Companies requiring sanitary hot water to manufacture and/or transform their products.
- **Hotel:** Energy production and savings in establishments and large facilities.
- **Large Companies:** Large amounts of energy.
- **Construction:** Sustainable building projects for public works and private sectors.
Monitoring & Control

Monitoring and Control is the division of MELFOSUR that has developed its own, state-of-the-art software that continuously monitors photovoltaic installations to guarantee their optimum profitability and energy efficiency.

Monitoring and Control provides the following services:

• Real-time monitoring of photovoltaic plants.
• Storage and subsequent processing of plant data in a database.
• Graphic display of the stored data, with energy and power graphs in different time scales (day, week, month, and year).
• Data assessment and statistical reports (comparison reports) of production at different plants.
• Software configuration adaptable to each customer’s needs.
PowerBox

Innovative alternative Energy Solution for telecommunications and off-grid connection.

Electric generation system for aerial repeaters and/or isolated areas or difficult electric net access, it is based on renewable energies and sustainability parameters that extend the reach of services.

Power system has an integrated management & remote monitoring system, involving easy operation and simplified maintenance tasks.

Control System:
- It manages the following features, maximizing the system’s overall efficiency:
  - Power Equipment:
    - High Efficiency Battery Charging (>96%) with MPPT technology.
    - Power Supply available in AC and DC.
    - High Efficiency Rectifier (>96%).
  - Diesel Generator Group:
    - Automatic start up, for unfavorable solar radiation conditions.
    - Increased energy availability, up to 100%.
  - Air Conditioning Equipment:
    - Redundancy with alternating operational capabilities.
    - Individual Regulation of power equipment and battery temperature.
    - Smart management of cooling in order to raise total system efficiency.
  - Fire Extinguish System:
    - Fire detection alert.
    - Safety disconnection of the power system.
    - Gas FM-200 for fire extinction.
  - Screen of the monitoring system installed on the control cabinet.
    - Displays both the operational and stored historical data of each of the parameters. It can also generate graphics from any of the monitored data, and can be configured by the user.

Control System:
- Power Equipment:
  - Diesel Generator Group:
    - Air Conditioning Equipment:
      - Fire Extinguish System:
        - Software with Internet connection:
Airconditioned Bus Shelters

Design of the latest generation of bus shelters for different Middle Eastern cities, cooled by solar and geothermal energy. The shelters are equipped with temperature control systems, GPS bus localizers, touch screens for tourist information and bus schedules, ticket dispensers, Wi-Fi / Internet networks, drink machines and LED lighting. They are constructed of high quality materials, combined with thermal and photovoltaic solar panels.
Geothermal System

WHY SHALL WE PAY FOR SOMETHING THAT NATURE OFFERS FOR FREE?

Geothermal energy is the most efficient and inexpensive renewable energy as it allows saving up to an 80% on energy bills and the integral air conditioning on our house, i.e. having a single installation of heating, hot water and air conditioning in summer.

Our planet is changing and has already begun to give signs of the dangerous situation that we are underestimating polluting our environment more and more while we burn its fuel reserves to increasing prices.

Meanwhile, an unlimited amount of energy, renewable and totally free, is stored at our feet, waiting to be exploited.

By using geothermal heat pumps we can capture this energy and use it to heat our homes in the most inexpensive way, while contributing to solve the serious problem of the environmental degradation of our planet. Thus, geothermal heat pumps clearly represent the future, a future that brings Melfosur & Ecoforest at your disposal from now on.
Geothermal resources can deliver clean and sustainable energy that could act as a base-load supplying power plant (just like coal fired or nuclear power plants). In addition, geothermal energy is renewable and unlimited (or almost unlimited) source of electricity and heat.

We are experts in Research Methodology

To provide a thorough analysis of each topic, Technical Insights' analysts perform a review of patents to become familiar with the major developers and commercial participants and their processes.

Building on the patent search, the analysts review abstracts to identify key scientific and technical papers that provide insights into key industry participants and the technical processes on which they work.

The analysts then create a detailed questionnaire with content created to address the research objectives of the study, which functions as a guide during the interview process. While the analysts use structured questionnaires to guarantee coverage of all the desired issues, they also conduct interviews in a conversational style. This approach results in a more thorough exchange of views with the respondents, and offers greater insight into the relevant issues than more structured interviews may provide.

The analysts conduct primary research with key industry participants and technology developers to obtain the required content. Interviews are completed with sources located throughout the world, in universities, national laboratories, governmental and regulatory bodies, trade associations, and end-user companies, among other key organizations. Our analysts contact the major commercial participants to find out about the advantages and disadvantages of processes and the drivers and challenges behind technologies and applications. Our analysts talk to the principal developers, researchers, engineers, business developers, analysts, strategic planners, and marketing experts, among other professionals.

The project management and research team reviews and analyses the research data that are gathered and adds its recommendations to the draft of the final study. Having conducted both published studies and custom proprietary research covering many types of new and emerging technology activities as well as worldwide industry analysis, the management and research team adds its perspective and experience to provide an accurate, timely analysis. The analysts then prepare written final research services for each project and sometimes present key findings in analyst briefings to clients.

Geothermal Power Plant
Large Projects

The EOLO project

The EOLO project applies the most advanced renewable energy technology, with the dual aim of using and interpreting natural resources.

The project consists of a complex of buildings harmoniously arranged over a total surface of 376,545 m², which surrounds a main building, Torre Eolo. Thanks to the use of a photovoltaic panel surface that acts as a cover, the spaces between the buildings become a succession of parks, gardens, artificial lakes, promenades and recreation areas, which add value and human warmth to the complex.
Large Projects

ECOCCELL PROJECT. A project for the creation of a sustainable city
An area of 1,000,000 m² has been projected for a photovoltaic installation.

ECOCCELL is a project for the design and construction that will be sustainable and respectful of the environment. It is characterized by an innovative, 100% sustainable, bioclimatic architecture and by a roof of photovoltaic and thermal solar panels which handle the production of electricity and cooling and which fully meet all energy needs.
ECOSTADIUM. A project for the creation of a sustainable stadium

Qatar is committed to a respectful environment air conditioning system for its 12 soccer stadiums.

Before using the technologies and conventional cooling systems for air conditioning of spaces. It is very important to play with the design, materials and environment of a building to minimize the energy demands of the enclosure with passive systems.

Bioclimatic architecture or passive solar architecture is the fusion of the knowledge acquired by the traditional architecture over the centuries with the most advanced techniques in the comfort and energy savings. The purpose of it is to meet the needs of its residents with less energy expenditure, regardless of the outside temperature. For this, it is thoroughly studied both building design and materials to be used in order to bring about a saving and comfortable building.
OUR HUMAN RESOURCES DISTRIBUTION

- Production managers (19)
- Engineering and development (21)
- Administration and documentation (16)
- Safety, quality and environment (5)
- Skilled workers and assembly staff (296)
Singular Installations

INSTALLATION OF TDT INFRASTRUCTURE IN ALHAURIN PRISON.
DIAGNOSIS AND TESTING OF MV-LV ISOLATION AT MÁLAGA AND GRANADA AIRPORTS.
MV-LV INSTALLATION AT GRANADA UNIVERSITY.
MV-LV INSTALLATIONS AT MALAGA UNIVERSITY.
UNDERGROUND PARKING IN RINCON DE LA VICTORIA, MALAGA.
INSTALLATIONS AT THE MEDICAL CENTRE IN CALA DEL MORAL, MALAGA.
MULTIBUSINESS BUILDING IN P.T.A. DE CAMAPANILLAS, MALAGA.
PUMPING ELECTRIFICATION AND AUTOMATION AT LAS CRUCES COPPER MINE, SEVILLE.
INSTALLATION OF LINKS, MARINA BANUS SHOPPING CENTRE.
ALHSUR SHOPPING CENTRE, LA ZUBIA, GRANADA.
12 MW PV ROOF TOULOUSE, FRANCE.
Some of these projects are:

**Solar Energy Water Desalination Plants**

The MED sea water desalination and general concentration processes for the chemical industry was designed, through the MED plant with solar thermal energy generation.

**Thermal Solar Collector Development**

R&D+i project in which an optimal thermal solar collector has been designed to generate steam.

**OCR optimized cycle**

**Energy storage in photovoltaic plants**

A study on current stabilization using flywheels and their application in the field of generated energy stabilization for injection into the network via renewable energies, and their possible application to energy accumulation to offset the inertia existing in the network.
Melfosur & Oritia offer applied investigation, technological development and advanced consulting services for wind effects on tall buildings and singular structures, bridges, stadiums, renewable energy systems and sports science. For singular structures which are outside the limits of application of the national standard, our team works in collaboration with architects and engineers for optimizing the design of structures to wind loading, reducing the risk of failure and promoting cost savings in the construction process.

M&O compliments its core division with two services intimately related to wind engineering, the remote monitorization and control of structural dynamics during construction and in service; and Social Aerodynamics, orientated to improving aerodynamic performance of elite and semi-professional cycling and ski athletes.

O&B has 14 years of experience in the sector, is a spin-off of the University of Granada and technological partner of Western University, Canada.
The last decade has seen a notable increment in the demand of wind studies related to increasingly flexible structures and of complex architectural form. Light and flexible systems can be commonly observed in a diverse range of sectors including public and industrial buildings, stadiums, bridges and renewable energy systems, whose design are governed by wind loading.

Many situations exist where the national standard cannot adequately predict the structure aerodynamic loading and dynamic response, normally because its shape does not comply with the basic forms contemplated in the standard. As such, detailed studies in a boundary layer wind tunnel are commonly preferred for optimizing tall or complex shaped buildings for wind effects.
KEY SERVICES

The range of services includes wind climate studies, desktop calculations following the national standard, numerical simulations (CFD), physical simulation in a boundary layer wind tunnel, building health monitoring and control system design.

Correct consideration of the atmospheric boundary layer through physical modeling provides estimates of wind loads and effects with greater precision, leading to savings in building construction, increased occupant safety and a greater knowledge of torsional effects. Research in the boundary layer wind tunnel provides the following:

Global loading on the structure, including the dynamic component in the form of equivalent static loads and load combinations. Surface pressure distribution and local loading for facade design. Interaction between multiple structures, either joined or independent. Aeroelastic phenomena.

- Maximum accelerations and displacements for serviceability.
- Prediction of real life from fatigue due to dynamic excitation.
- Local wind speeds and human comfort.
- Wind field studies for urban planning.
- Natural ventilation.

Additional services and design tools for the monitoring and remote supervision of environmental conditions and structural health during construction and the dynamic response of the structure during service (load, deformation, temperature, relative motion, etc).
Constructive Solutions
Medium and Low Voltage

ELECTRIFICATION OF METROPOLITAN PARK GRANADA (ESCÚZAR INDUSTRIAL AND TECHNOLOGICAL ESTATE), GRANADA.

ASSEMBLY OF MEDIUM VOLTAGE REGULATOR IN CAMPILLOS, MALAGA.

ELECTRIFICATION OF MARCHAL-ALHENDÍN INDUSTRIAL ESTATE.

ELECTRICAL INSTALLATION OF SR20 HOUSING DEVELOPMENT IN ATAFA, GRANADA.

HOUSING DEVELOPMENT SUP A-7 LAS CANTERAS ALMAYATE, MALAGA.

MV DIVERSIONS AT THE OF MALAGA.

MV AND TRANSFORMER CENTRE, SWIMMING POOL COMPLEX IN MALAGA AND TORREMOLINOS.

MT UNDERGROUNDING AND NEW CT PARADOR OF ANTEQUERA.

ELECTRIFICATION OF PARTIAL PLAN Pp7 OF GRANADA.

MEDIUM VOLTAGE AERIAL LINE SUBSTATION LAS GABIAS, ARMILLA.

ELECTRIFICATION SAN PEDRO SUR, MALAGA.

ELECTRIFICATION OF EL PATO LITORAL HOUSING DEVELOPMENT, MALAGA.

MV AND CT INSTALLATION IN SOTOGRANDE, CADIZ.

HOUSING DEVELOPMENT, SUP C-23 MIJAS COVE, MALAGA.

REPLACENT OF AFFECTED SERVICES IN TWO HIGH SPEED SERVICES.
Our Credentials

ISO 9001
ISO 14001
OHSAS 18001
CLASSIFIED AS STATE CONTRACTORS
OWN ETHICAL CODE
SUPPLIER REGISTRY REPRO
REGISTRY OF AUTHORIZED COMPANIES "REA"
QUALIFIED SUPPLIER OF ENDESA
QUALIFIED SUPPLIER OF ENDESA HIGH VOLTAGE AERIAL LINES
QUALIFIED SUPPLIER OF ENDESA MV-LV
QUALIFIED SUPPLIER OF ENDESA SUBSTATIONS
MEMBERS OF GRANADA CHAMBER OF COMMERCE