



**ENHANCING TECHNICAL SERVICES  
FOR RENEWABLE ENERGIES**



**OCA Global** is a Spanish private business group dedicated to provide a wide range of technical services designed to help our clients to increase the efficiency and rentability of their assets, projects, products and processes, as well as to reduce risks, control and verify quality and quantity, and to comply with all relevant regulatory, legal and international standards and requirements.

The group currently employs more than **2,500 people** in our more than **80 offices** in worldwide **13 owned subsidiaries**. In collaboration with a wide network of partners, we offer our services in **more than 60 countries**.

Know more about us at [www.ocaglobal.com](http://www.ocaglobal.com)

The Group accounts for a 95 M€ budget in 2021 and is endorsed by more than 240.000 satisfied customers. We are certified **ISO 9001, 14001, 45001, 17020/21/25**.

*OCA Global is specialized in providing a **full scope of services** in the Renewable Energy market:*

- **Consulting & Technical Advisory**
- **Inspection, Testing, Quality Control and Certification**
- **Technical Assistance, Project Management and PMC**

With specific expertise in **all current technologies and project lifecycle** creating added value for:

- **Project development phase (resource, site, technology, production, bankability studies)**
- **Construction and Operational phase (PMC, inspection, Testing, QC and Certifications)**
- **Decommissioning and personalized Technical Assistance**



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### COLOMBIA

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111511 Barrio La Fragüita - Bogotá

# WHAT WE DO

## TECHNOLOGY EXPERTISE

- Solar Photovoltaic Plants (PV)
- Solar Thermoelectric Power Plants (CSP)
- On & Off Shore Wind Farms (WF)
- Mini-Hydro (MHPP)
- Combined Heat Power (CHPP)
- Biomass, Biogas and Biofuel Production Plants (BIO)



## KEY COMPETENCES

- Institutional Consultancy
- Project Development
- Project Implementation (PM)
- Construction Monitoring
- Commissioning
- Operation & Decommissioning



## INSTITUTIONAL CONSULTANCY

- Policy Design, Implementation and Evaluation of strategies, legislation, regulations and action plans for clean energy, climate change and sustainability policies,
- Project development at any of its stages PPTA, TA, PIC, PMU, etc.
- Technical assistance, capacity building and management services for comprehensive institutional strengthening projects and for sustainable infrastructures design and development.
- Construction Monitoring, Testing and Performance certification
- Legal & Regulatory reforms and arbitrations

## PROJECT DEVELOPMENT

### Technical Advisory and DD for Owners, Lenders and M&A processes

- Feasibility Studies & Measurement Campaigns
- Site Assessments
- Climate Risk Assessment
- Natural Resource and Energy Yield Assessment (EYA) and optimization
- Technical project evaluation and risks analysis for bankability.
- Tendering processes and procurement support (RfP, MFS)
- Contract definitions, analysis and evaluation (EPC, O&M and PPA)
- Grid access, permits and licenses identification and validation
- Financial Model parameter definition and validation
- Technical assistance until Financial Close (FC) and Ready to Built (RTB / NTP)

## CONSTRUCTION & COMMISSIONING

### Site and project monitoring & management, owners' engineer, LTA

- Project and Site Management till COD
- Main contract assessment (EPC, O&M, PPA)
- Project Design Review
- Procurement assistance, FAT and on-site inspections
- Health&Safety (HSE), Quality Control (QA/QC) resources and coordination
- Testing, Commissioning and Training
- Overall Technical Construction Management
- Mechanical Completion (MC) and Performance Test Certifications (PR) for Provisional and Final Acceptance certificates (PAC/FAC)
- Personalized engineering services and on-site technical personnel on demand

## OPERATION AND DECOMMISSIONING

### Technical asset management and operational monitoring

- Overall technical asset and O&M management
- Performance monitoring and improvement
- Site equipment, material and subcontractor procurement and management
- Statutory inspections (MV/HV) and certificates
- Failure and End of Warranty assessment
- Testing and drone flights
- Mobile laboratory (IEC 60904/61215)
- Electroluminescence (EL); Thermography (IR)
- IV-Curves; Flash tests; Photogrammetry
- Network analyzer; Inclinator; Torque measures
- Decommissioning assistance and/or management



## REFERENCES BY TYPE OF PROJECT AND SERVICES

### By type of Project / Technology

<u>Type</u>	<u>Technology</u>	<u>Nr. Projects</u>	<u>Capacity (MW)</u>
WF	Wind Farms	229	10.661
CSP	Thermosolar	64	5.110
PV	Photovoltaic	766	14.167
CHPP	Cogenerations	37	736
MHPP	Mini-Hydro Power	167	951
BM	Biomass Plants	12	121
TOTAL		1.275	31.746

### For Public Institutions / By Public tenders

More than 250 assignments in over 80 countries for the following multilateral organizations:

➤ EC – WB – ADB – AfDB – KfW – IADB – AFD – EIB – UNIDO – UNDP - AFREXIMBANK

as well as for national, regional and local governments worldwide.

### By type of Service

	<u>Nr. of Services</u>
Full Lender's Technical Advisory	610
Lender's Technical Advisory for refinancing	129
Technical Assistance and consultancy services	441
Owner's Engineer, H&S, EIA compliance	14
Expert Reports for arbitration / legal processes	44
Technical Assistance for Procurement	36
Operational Monitoring	343
Resource Studies and updates	143
Discipline engineers services	16
Technical Inspections, FAT and Quality Control	70

## LANDMARK CUSTOMERS OVERVIEW

### ➤ **IPPS, DEVELOPERS INVESTMENT FUNDS AND UTILITIES:**

- ACS COBRA, ACCIONA ENERGÍA, ACWA POWER, ABENGOA SOLAR, MARUBENI
- GALP, NATURGY, REPSOL, ENGIE, EDF-RE, EDPR, ENEL, IBERDROLA, ENDESA, DEWA, ENDE BOLIVIA, TOTAL SOLAR, REPSOL
- MASEN, MASDAR, AMEA POWER, IMPAX, HELIOS, CUBICO, SONNEDIX, FORESIGHT, MACQUARIE, RPI, NORTHLEAF CP, FOTOWATIO FRV, X-ELIO, SAETA YIELD, TRANSANTARTICA, ITOCHU, CAPITAL ENERGY, GCP, ENERFIN, IBEREÓLICA, IENOVA.

### ➤ **FINANCIAL INSTITUTIONS:**

- B. SANTANDER, BBVA, B. SABADELL, CAIXA BANK, BNP PARIBAS, NATIXIS, TRIODOS BANK, SOCIETE GENERALE, CALYON, SMBC SUMITOMO, BARCLAYS, UNICREDIT, HELABA, NORD LB, HVB, KKA, NADBANK, NATIONAL FINANCIERA, ITAU, CORPBANCA, STANDARD BANK, ABSA CAPITAL, NEDBANK, RMB, INVESTEC

### ➤ **MULTILATERAL ORGANISATIONS:**

- EC / WB / ADB / AfDB / KfW / AFD / IADB / EIB / OPIC / NADB / IDC / DBSA / UNIDO / UNDP / AFREXIMBANK

### ➤ **EPC CONTRACTORS & ASSET MANAGERS**

- COBRA, ACCIONA, ELECNOR, PRODIEL, ABENGOA, TSK, PRODIEL, SOLARIA, ELMYA, GRAN SOLAR, EIFFAGE, AES GENER, Q-ENERGY, QUALITAS

### ➤ **PUBLIC ADMINISTRATIONS**

- NATIONAL, REGIONAL AND LOCAL GOVERNMENTS WORLDWIDE

## NOOR I, II, III Ouarzazate (CSP) and NOOR Midelt (CSP+PV+BESS)

**CLIENT:** MASEN - Moroccan Agency for Solar Energy  
**LOCATION:** Ouarzazate / Midelt, Morocco  
**DATE:** since 2015 – ongoing  
**CAPACITY:** 160; 200; 150; 800 MWe

### SERVICES:

- ✓ Solar resource study and electricity production estimate.
- ✓ Technical evaluation of the project.
- ✓ Evaluation and Analysis of main contracts EPC / O&M / PPA.
- ✓ Verification & follow up of permits & licenses, EIA and follow up.
- ✓ Construction Monitoring.
- ✓ Disbursement Certificates.
- ✓ Provisional and final acceptance and performance test certificates.



### DESCRIPTION:

Full due diligence and technical assistance to MASEN and the involved IFIs for the Solar Thermal Power Plants NOOR I (160 MW), NOOR II (200 MW) parabolic trough solar collector technology, NOOR III – (150 MW) central Tower Receiver technology, all equipped with thermal energy storage, and Midelt 1 (190 MW CSP and 605 MW PV with thermal storage and BESS).

## SOLAR PHOTOVOLTAIC PLANT MULA - 493 MW<sub>DC</sub>

**CLIENT:** NORTHLEAF CAPITAL PARTNERS

**LOCATION:** Mula, Murcia (Spain)

**DATE:** 2018 - 2020

**CAPACITY:** 493.65 MW<sub>DC</sub>

**SERVICES:** Owners Engineer

### Phase I: Prior to Construction

- ✓ Site evaluation
- ✓ Energy Yield assessment
- ✓ Technology and design review
- ✓ EIA, social compliance and permitting
- ✓ EPC and O&M Contracts Review

### Phase II: Construction & commissioning

- ✓ Construction and schedule progress monitoring permanently on site.
- ✓ Mechanical completion, commissioning, PR-Tests and PAC surveillance and certificate.
- ✓ QC, visual inspection and testing
- ✓ Plant handover and punch list follow up



### DESCRIPTION:

Photovoltaic project of 493.65 MW of peak power, covering an area of approximately 1,000 hectares belonging to the municipality of Mula in the province of Murcia. The main characteristics of the Solar Power Plant are:

- Polycrystalline PV modules on ground in fixed structure
- 30 KV internal distribution network.
- Two interconnected 132 KV electrical substations
- 20 Km high voltage 400 kV grid connection line.

## SOLAR PHOTOVOLTAIC PLANT BONETE 146.4 MW<sub>DC</sub>

**CLIENT:** HELIOS ENERGY INVESTMENTS

**LOCATION:** Bonete, Albacete (Spain)

**DATE:** 2018 - 2020

**CAPACITY:** 146.4 MW<sub>DC</sub>

**SERVICES:** Owners Engineer & LTA

### Phase I: Prior to Construction

- ✓ Site evaluation
- ✓ Energy Yield assessment
- ✓ Technology and design review
- ✓ EIA, social compliance and permitting
- ✓ EPC and O&M Contracts Review

### Phase II: Construction & commissioning

- ✓ Construction and schedule progress monitoring permanently on site.
- ✓ Mechanical completion, commissioning, PR-Tests and PAC surveillance and certificate.
- ✓ QC, visual inspection and testing (EL)
- ✓ Plant handover and punch list follow up



### **DESCRIPTION:**

The Project is divided into 3 PV Plants. In total, the Project is defined by 424,350 photovoltaic modules and 13,700 strings. The support structures are Single Axis Tracker. From the inverters, the energy is conducted to twenty (20) power stations equipped with either one (1) or two (2) step-up transformer (0.66/30 kV).

From the power stations, the energy is collected through a three-phase buried medium voltage line to a 132 kV Collector Plant Substation.



## 914 MW<sub>DC</sub> SOLAR PHOTOVOLTAIC FARMS ON 4 SITES IN SPAIN

**CLIENT:** ACS COBRA / FINANCING ENTITIES

**LOCATION:** 4 sites in Spain

**DATE:** 2018 - 2020

**CAPACITY:** 914 MW<sub>DC</sub>

**SERVICES:** Lenders Technical Advisor

### Phase I: Prior to Construction

- ✓ Site evaluation
- ✓ Energy Yield assessment
- ✓ Technology and design review
- ✓ EIA, social compliance and permitting
- ✓ EPC and O&M Contracts Review

### Phase II: Construction & commissioning

- ✓ Construction and schedule progress monitoring permanently on site.
- ✓ Mechanical completion, commissioning, PR-Tests and PAC surveillance and certificate.
- ✓ Plant handover and punch list follow up



### **DESCRIPTION:**

The awarded order includes 18 sites distributed into 4 locations at Escatron, Alcázar de San Juan, Chiprana and Aragón. The plants are equipped with single axis tracker and central inverters technology.

- Alcazar de S. Juan: 189.74 MW<sub>DC</sub> with Canadian Solar and GCL PV Modules.
- Aragon 3: 199.44 MW<sub>DC</sub> with Hanwha and Astronergy PV Modules.
- Escatron: 325.36 MW<sub>DC</sub> with Canadian Solar and GCL PV Modules.
- Chiprana: 199.46 MW<sub>DC</sub> with Hanwha PV Modules.

## 50 MW SOLAR PV FARM IN TOGO

**CLIENT:** AMEA Power

**LOCATION:** Blitta. Togo

**DATE:** 2019 - 2020

**CAPACITY:** 50 MW

**SERVICES:**

- ✓ Technical, EIA and economic contract evaluations (EPC, O&M, PPA)
- ✓ Design Review and validation and approval of the Detailed Engineering
- ✓ Engineering support; Construction and Commissioning Monitoring&Control.
- ✓ Quality Control and PV modules Inspection

**DESCRIPTION:**

The Project is located on an 117 hectares site in Blitta Losso town, centre region of Togo.

The PV modules installed in the project are Jinko modules mounted on Game Change Solar trackers.



## Central Asia\_TA-9564 REG: Floating Solar Energy Development

**CLIENT:** Asian Development Bank

**LOCATION:** Afghanistan, Azerbaijan, Kyrgyzstan

**DATE:** 2018 - 2023

**CAPACITY:** 3 Pilot floating PV (FPV) plants <1 MW  
Feasibility of scaled-up floating PV plants over 5 MW

**SERVICES:** Technical Assistance

Build expertise on FPV technology, enhance knowledge and technical skills in designing, constructing and operating FPV plants, through pilot projects, commercial scale project feasibility studies, and hands-on institutional capacity building including in-depth study tours in leading FPV countries.

- ✓ **Component 1:** Design, procure and supervise implementation of three FPV pilot projects and develop corresponding FPV scaled-up projects in the three selected countries.
- ✓ **Component 2:** Analyze policies and tariff structures and recommend suitable for business models for the three selected countries.
- ✓ **Component 3:** Institutional Capacity Building for Stakeholders. Relevant capacity assessment. Design, organize and conduct a capacity building program in pilot countries and within CAREC to develop institutional capacity on FPV



### DESCRIPTION:

The TA will make a final evaluation of the following project sites to install three pilot FPV systems:

- ✓ Lake Qargha, Afghanistan. Located 15km west of Kabul city center, planned to supply additional drinking water to Kabul and provide irrigation to expand horticulture / Naghlu reservoir, Afghanistan. 2 km from the ADB funded Naghlu solar power plant site.
- ✓ Lake Boyukshor, the largest of 9 lakes in Azerbaijan's Absheron peninsula.
- ✓ The 284 km<sup>2</sup> Toktogul reservoir feeds a 1,200 MW HPP and provides 40% of power supply in the Kyrgyz Republic. FPV to balance the seasonality of the HPP with year-round generation, demonstrating synergy between PV and hydro.



## Technical Advisory for PV Implementation & Management

**CLIENT:** EUROPEAN COMMISSION

**LOCATION:** Several sites in INDIA

**DATE:** 2016 - 2020

**CAPACITY:** from 55 MW up to 2000 MW

**SERVICES:** Technical Assistance

- ✓ Grid studies for Andhra Pradesh, Kerala and Maharashtra. Review of grid stability/integration,
- ✓ Preparation of a Control Systems for Developers & Operating Manual and a Health and Safety Manual and a Centralized Solar Park Monitoring System,
- ✓ Review DPR of Solar parks for: 100 MW (Arunachal Pradesh), 55 MW (Haryana), 1000 MW (Odisha), 440 MW (Uttar Pradesh), 80 MW (Assam), 700 MW (Banaskanta Solar Park in Gujarat), 200 MW (Kasarogod Solar Park in Kerala), 260 MW (West Bengal), 2000 MW (Karnataka),
- ✓ PPR for 30 MW Nagaland Solar Park



### DESCRIPTION:

Advisory services to MNRE and Renewable Energy Corporation of India (RECI) to implement and effectively manage the identified solar parks in India, based on EU best practices:

- ✓ **Result 1:** Seamless grid integration for power generated from 20 GW PV solar parks to achieve grid stability,
- ✓ **Result 2:** Control and operating systems for PV plants for developers and park management,
- ✓ **Result 3:** Safety measures for construction & operation of PV solar power projects within the solar parks,
- ✓ **Result 4:** Centralized monitoring system for PV solar parks management with the support of software tools,
- ✓ **Result 5:** Increased capacity of stakeholders for the use and development of solar parks.

## 4 MINI-HYDRO POWER PLANTS

**CLIENT:** CITANIA RPI

**LOCATION:** Lugo (2), Álava, Córdoba

**DATE:** 2018

**CAPACITY:** 7.7 MW

### SERVICES:

- ✓ Description of the technical characteristics of the Plants and analysis of the current state of the assets, based on the information provided by the Property and the visit to the sites.
- ✓ Study of historical data.
- ✓ Review of the O&M scheme.
- ✓ Assignment of the IT code and expected revenues according to the remuneration regime.
- ✓ Review of the main aspects of the exploitation of the Power Plants
- ✓ Evaluation of the possible reinvestments required, in order to maximize the useful life of the facilities.



### DESCRIPTION:

These 4 plants were launched in 2003, 2003, 1997 and 2000 respectively. The river flow is converted into energy in all of them by means of: One Pelton turbine in one of them, one a Francis, one two Kaplan and one two Semi-Kaplan turbines.

In summary, the plants have a combined capacity of 7.7 MW and are located in Carballedo (Lugo), Saviñao (Lugo), Assa (Alava) and Montoro (Córdoba).



## 3 WIND FARMS – >100MW IN SPAIN

**CLIENT:** SAETA YIELD / COBRA / SATOCAN

**LOCATION:** Canary Islands, Huelva, Valladolid

**DATE:** 2017-2019

**CAPACITY:** >100 MW

### **SERVICES:**

#### Energy yield assessment

Wind resource assessment and energy yield calculation, including loss factors and quantification of uncertainty levels.

#### Technical projects evaluation

Review the technical design and quality control of the project, wind turbine characteristics, performance life cycle.

#### Technical analysis of the contractual documentation

EPC and O&M contracts review and implementation of risk mitigation aspects over the entire useful life of the wind farm.

#### Permitting and Environmental Issues

Review and validation of the required permits for the construction and continued operation of the Project.

#### Financial Model Review

Full review of CAPEX and OPEX assumptions and parameters according to industry standards and practices.



### **DESCRIPTION:**

The characteristics of the Projects are described below:

- Montegordo WF (48MW) in operation.
- Tadeas WF (40MW) in start-up process.
- Punta 2 and Punta Tenefé (15.4 MW) under development

## 3 MINI-HYDRO POWER PLANTS IN MEXICO AND PERU

**CLIENTS:** Minera Autlán, Generadora Eléctrica San Rafael, Bow Power

**LOCATION:** Mexico and Peru

**DATE:** 2012-Ongoing

**CAPACITY:** 35 MW – 28 MW – 20 MW

**SERVICES:**

- ✓ Technical and economical evaluation of the plants design
- ✓ Analysis of permits and licenses
- ✓ Analysis of historical data and future electricity production forecast
- ✓ Supervision and evaluation of the realized operation and maintenance works.



**DESCRIPTION:**

The plants located in Mexico (Atexcaco and Tepic) are in operation since about 2015. Hidromanta, in (Manta River) Peru started operations in March 2020.

All plants are considered as flowing water plants and the energy produced is sold according to PPAs signed with consumers like i.e. the mining company Autlán and Walmart in Mexico.

## 4 WIND FARMS AT OAXACA

**CLIENT:** ACS-Cobra / ACCIONA ENERGIA

**LOCATION:** Oaxaca, México

**DATE:** 2009 - 2013

**CAPACITY:** 408 MW

**SERVICES:**

- ✓ Wind resource study and electricity production forecast.
- ✓ Audits of permits and licenses.
- ✓ Technical, EIA and economic contract evaluations (EPC, O&M, PPA).
- ✓ Construction Monitoring & Control.
- ✓ Prov. Acceptance and Performance tests assistance and certificate.
- ✓ Annual performance and yield report for the 2 first operation years and ongoing.



**DESCRIPTION:**

Technical assistance for the financing, construction and operation of four wind farms of 102 MW each, located at the Istmo de Tehuantepec, in the state of Oaxaca (Mexico).

Complementary Due diligence for the financing with “Green Bonds” issued for the Wind Farms Oaxaca II/IV by its promoter Acciona Energía and the rating agency Standard&Poors.

## 3 WIND FARMS 100 MW AT CHILOÉ ISLAND

**CLIENT:** JEALSA, TRANSANTARTICA

**LOCATION:** Chiloé (Chile)

**DATE:** 2012-2017

**CAPACITY:** 100 MW in 3 phases

### **SERVICES:**

- ✓ Wind resource study and electricity production forecast.
- ✓ Audits of permits and licenses.
- ✓ Technical, EIA and economic contract evaluation (EPC, O&M, PPA).
- ✓ Construction Monitoring & Control.
- ✓ Prov. Acceptance and Performance tests assistance and certificate.
- ✓ Annual performance and yield report for the 2 first operation years.
- ✓ Audit and reporting of operational contingencies.



### **DESCRIPTION:**

The San Pedro wind complex was developed to produce enough power for the whole Chiloé Island demand. The project was initially divided into two phases, a first one composed by the installation of 16 Gamesa G90 - 2MW wind turbines and a second one that implemented 13 Gamesa G128-5 MW wind turbines. A third phase is under discussion.

## M&A PROCESS OF 43 WIND FARMS AND 7 SOLAR CSP PLANTS

**CLIENT:** GRUPO ACS / COBRA  
**LOCATION:** Spain  
**DATE:** 2010-2011  
**CAPACITY:** 1.400+330 MW, respectively

**SERVICES:**

- ✓ Resource study and energy production assessment.
- ✓ Technical, economical and contractual (EPC, O&M) projects evaluation.
- ✓ Operational data analysis and evaluation.
- ✓ Audits of existing permits and licenses.
- ✓ Review of construction process.



**DESCRIPTION:**

ACS decided to sell a part of its renewable assets in Spain and awarded to us a M&A due diligence and technical assistance in the sales process of the plants running under the Spanish Special Regime.



## 41 WIND FARMS + 24 MINI - HYDRO POWER PLANTS

**CLIENT:** ACCIONA ENERGIA  
**LOCATION:** Spain - several sites  
**DATE:** 2010 - 2011  
**CAPACITY:** 1.130+180 MW, respectively

**SERVICES:**

- ✓ Operational analysis and energy production evaluation.
- ✓ Technical, environmental, economic and contractual assessment.
- ✓ Audits of all permits and licenses.



**DESCRIPTION:**

Technical assistance for the negotiation and financial close with 9 international credit institutions for a package of 41 Wind Farms and 24 Mini-HPPs assets acquired from Endesa, operating under the Spanish Special Regime.

## MANCHASOL & EXTRESOL 5X50 MW SOLAR CSP PLANTS

**CLIENT:** GRUPO ACS / COBRA  
**LOCATION:** Badajoz and Toledo, Spain  
**DATE:** 2007- ongoing  
**CAPACITY:** 5 x 50 MWe

### SERVICES:

- ✓ Resource study and energy production assessment.
- ✓ Technical, economical and contractual (EPC, O&M) projects evaluation.
- ✓ Operational data analysis and evaluation.
- ✓ Audits of existing permits and licenses.
- ✓ Review of construction process.
- ✓ Yearly performance and yield certificates.



### DESCRIPTION:

The plants use cylinder parabolic collectors with mirrors to concentrate the heat for steam production to be used in a turbine. Each solar field covers a surface area of 510.000 m<sup>2</sup>.

The plants are equipped with a molten salt heat storage system, to maintain production for several hours after sunset with the captured energy surplus.

## SOLUCAR 4 CSP PARABOLIC THROUGH AND TOWER PLANTS

**CLIENT:** ABENGOA SOLAR  
**LOCATION:** Seville and Caceres, Spain  
**DATE:** 2007-2009 (PS10 and PS20)  
2012 (Solaben II and III)  
**CAPACITY:** 10/21 and 2x50 MWe

**SERVICES:**

- ✓ Solar Resource Studies & energy forecast.
- ✓ Analysis of Permits and Licenses.
- ✓ Technical, economic and contractual assessment and evaluation.
- ✓ Construction Monitoring.
- ✓ Acceptance tests, performance monitoring and yield certificates.



**DESCRIPTION:**

The PS10 and PS20 solar power plants are the first CSP with Central Tower Receiver technology to enter into commercial operation. The solar field of the PS10 consists of 624 reflector mirrors or heliostats, whereas the PS20 involves 1,255. The power plants have an output capacity of 11 and 20 MWe, respectively.

Solaben II and III plants consist of 360 parabolic collectors each with a total power output of 50MW and a 5 hours capacity thermal storage system.

## 2 BIODIESEL PRODUCTION PLANTS

**CLIENT:** INFINITA RENOVABLES  
**LOCATION:** Ferrol and Castellón, Spain  
**DATE:** 2006-2009  
**CAPACITY:** 300.000 + 600.000 tons/year

**SERVICES:**

- ✓ Technical and economic assessment of the Project design.
- ✓ Production capacity analysis.
- ✓ Due Diligence for financial close with a consortium of international financing.
- ✓ Evaluation of permits and licenses.
- ✓ Construction monitoring.
- ✓ Supervision and Certification of provisional and final acceptance tests.



**DESCRIPTION:**

Biodiesel production facilities using crude vegetable oils from rapeseed, palm, and soy. In addition to biodiesel, the plant produces also glycerin as a sub-product.

The plants use the so called DeSmet technology, with two main process phases: initial oil refining followed by a transesterification and further reconditioned to form the biodiesel.

## BIOETHANOL PRODUCTION PLANT

**CLIENT:** ABF ABENGOA BIOENERGY

**LOCATION:** Lacq, Pau, France

**DATE:** 2006-2008

**CAPACITY:** 200.000 m<sup>3</sup> + 50.000 m<sup>3</sup>/year

### SERVICES:

- ✓ Technical and economic assessment of the Project design.
- ✓ Production capacity analysis.
- ✓ Due Diligence for financial close with a consortium of international financing.
- ✓ Evaluation of permits and licenses.
- ✓ Construction monitoring.
- ✓ Supervision and Certification of provisional and final acceptance tests.



### DESCRIPTION:

Bioethanol plant to produce dehydrated alcohol (99.8%) for industrial use processing corn and winery alcohol as raw materials.

The plant consists of a 200,000 m<sup>3</sup>/year capacity corn processing unit, with and attached DDGS by-product unit (Dried Distillers' Grain with Solubles). A second process unit, with a design capacity of 50,000 m<sup>3</sup>/year, uses alcohol from wineries as raw material.





**CONSULTING & TECHNICAL ADVISORY DIVISION**

# THANK YOU

## Head Offices in Spain

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