



Bectel Group

- The Company

BECTEL is a Spanish Company for Consulting, Process Engineering, Project Management, General Contractor and Equipment Supplier.

The Company was born in 1986 and today is active in a wide range of Technical and Management Services acting in the Industrial Sectors of **Chemical** & Petrochemical, Pharmaceutical & **Biotechnology**, **Food** Industry and **Power** & **Renewable energies**.

Quality and Safety Assurance through skilled resources within the Bectel Group and integrated with all the above activities.

- Corporate Offices

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Bectel Group

- Resources

Actually, **BECTEL** can manage over 100,000 hours in **Consulting**, **Engineering**, **Construction** and **Start-Up** services.

80% of **BECTEL** workforce are skilled engineers, designers and draftman, and the rest of the staff are Administration, Computing and Purchasing specialists.

- Software and Hardware

AT **BECTEL** we think and act in accordance with our commitments. For this reason we invest in the latest generation computer equipment on an annual basis, enabling us to continuously maintain our high standards of quality.

Our Engineers, use the latest international tools to carry out the design, development and simulation of process. These include **INTERGRAPH**, **ASPENTECH**, **ORACLE**, **AUTOCAD**, **SCRI** (Simulation of Contamination Risk and Industrial Facilities), **PHA** among others.

- Certifications



BECTEL is ISO 9001:2000 certified (No. 0.04.03297) by TÜV INTERNACIONAL as a Consulting and Engineering company for the **CHEMICAL**, **PHARMACEUTICAL**, **FOOD INDUSTRY** AND **INDUSTRIAL** sectors.

- Sales Representatives

BECTEL Group – Sales Manager

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Areas of Activity

- Chemical & Petrochemical

BECTEL, with over 20 years experience in these areas, offers a wide range of services to our Clients. This includes Consulting, Engineering, Erection, Start-up operations as well as health safety & environmental disciplines.

- Pharmaceutical & Biotechnology

BECTEL has developed and continues developing specific solutions for the **Pharmaceutical & Biotechnology** Industry.

Our engineers are experts in the application of the **FDA: GMP / GLP / GEP y CFR21 part. 11** regulations for the validation of processes and control of the corresponding documentation.

Our technical procedures and experience enable us to ensure that all your processes are stable and comprehensive.

We also have extensive experience in using our client's technologies.

- Food Industry

At **BECTEL** we are aware of the difficulties in achieving reproducible and repetitive processes over time, for each batch, and complying with the limitations established by the regulations governing substances for human consumption.

With **BECTEL** you will have a team of experts who will collaborate with your Technical Staff for Production and Quality Control, and will help you to achieve the stability and control that your process requires.

BECTEL offers a complete range of services for **HACCP** and **ISO 22000** control

We also give you know-how and solutions for **Time Optimization** in the **Enzymatic Technologies** applied to your processes.

Areas of Activity

- Renewable Energies

Citizens and companies need a secure supply of energy at affordable prices in order maintaining our standards of living.

Renewable energy increases diversity of energy supplies and reduce dependence on imported fuels. Their use can replace diminishing fossil fuel resources over the long run and can substantially reduce greenhouse gases and other pollutants.

Bectel works for the clean energies, environment conservation and value recovery for waste. Bectel has collaborate in projects and it has developed Know-How in several areas and technologies related to renewable energies:

- VEB biomass or by-product process plants
- Solar hybridization power plants
- WTG processes - waste to gas, available for:
 - Fleet consumption and Power generation
 - Power generation
 - GTL process – Gas to Liquid
 - 2G biofuels (Fischer Tropsch)

- Biofuels - Biodiesel

Biodiesel refers to a non-petroleum-based diesel fuel consisting of long-chain alkyl (methyl, propyl or ethyl) esters. Biodiesel is typically made by chemically-reacting lipids (e.g., vegetable oil, animal fat (tallow)) and alcohol. It can be used (alone, or blended with conventional petrodiesel) in unmodified diesel-engine vehicles.

Bectel has developed technologies to offer following services:

- Bio-diesel plants with HBC process technology
- Optimisation of existing biofuel Plants
- Algae upstream & downstream processes
 - Stack Gases treatment and CO2 capture
 - Biomass-Water separation
 - Direct Transesterification
 - Oil extraction
 - Drying biomass
- Biofuel adjustment to EN14214 / ASTM D6751 plant
- Crude Glycerine valuation solutions

Areas of Activity

- Industrial

All **Chemical, Petrochemical, Pharmaceutical, Food Industry** and **Biofuels** processes rely on procedures and substances to synthesis and transformation of Raw Materials.

We are aware that you desire safety, energetic optimization and fine work processes in your plant, therefore, you need the best solutions for off-sites, services and utilities.

In **BECTEL**, we are specialists in Storage, Waters, Steam, Thermal Oil, Inertisation of vessels, Air, CIP, Waste treatment, Energy saving, Environmental Contamination etc.

In addition we know perfectly the Rules and Regulations which govern the design and the application of these resources.

Engineering Services

Bectel is fully aware of the specific needs of **Chemical, Pharmaceutical, Food** Industrial sectors, and **Power & Renewable Energies**. Based on his own Know How, together with third parties one, Bectel is ready for the development of Process projects of Production, Services and Energy Plants.

- Production

- **Batch** and **Continuous** Processes
- Feed Tanks and weigh **Dosing**
- **Distillation** and Rectification
- Thermal **Exchange**
- Chemical **Reactions**
- Sub-products **Valorisation**, transforming them to provide energy or commercial exploitation solutions.

- Energies and Services

- Onshore and offshore terminal facilities and storage tanks
- Raw Material / Finished Product **Tank** Installations
- **Electrical** distribution Optimisation
- Process **Cooling systems** generation and distribution
- Heating systems generation and distribution
- N2 Blanketing
- Piping and equipment automatic **CIP/SIP** system
- **Plant Energy optimisation**.
- Reduction and Treatment of **VOC's** by:
 - Active carbon filters
 - Thermal Oxidation
 - Catalytic Oxidation
 - Cryogenic Recovery
 - Ozone Oxidation

One of our concerns and objectives has always been the design of **Safe environmentally-friendly Plants**. For this reason, BECTEL has created a supervising group to verify that all projected installations achieve these qualities. That is why your processes are safe under Bectel' design.

Engineering Services

- Specialities

In any Process Engineering project development, various technical specialities are involved. At **Bectel** we have teams of specialists for each of the following areas:

- Process
- Mechanics and Equipment
- Electricity
- Instruments and Control
- Piping
- Civil Work
- 3D Models
- Process risks: Safety and Environment (**Process Risk Management**)

- Project Stages

Our over 20 years of Engineering experience has allowed us the completion of a project file with more than 1,000 references.

This experience allows us to fully understand your specific needs and to apply the most suitable solutions to your project.

The Following Process Engineering services can be offered individually by **Bectel**:

- New Processes Development
- Viability Study
 - Administration (legal)
 - Technical
 - Investment and Exploitation Economic study
 - Health and Safety and Environmental
- FEED (Front End Engineering Design)
- Pre-project
- Basic engineering
- Detail engineering

- Purchase and Contracting management
- Supervision and Work Management
- Commissioning and Start-up
- Operation and safety Training
- As-Built documentation
- EPC / EC: Turn-Key plant (Engineering, Procurement and Construction)

Process Risk Management

Due to the growing importance of Health and Safety and Environmental issues, and to the increasing concern of the entrepreneurs and regulating authorities in these fields, BECTEL has created **Process Risk Management** services, with the main objective of determining, regarding risk, the measures and activities to be established and co-ordinately carried out to ensure that production and storage premises are in adequate **condition for acceptable safe operation**.

Process Risk Management activities performed by Bectel are the following:

- Establishment of context
- Hazard's identification by application of **HAZOP, FMEA, What-if**, etc.
- Consequences Analysis, using models for effect and vulnerability studies (leakages, fire, etc.)
- Estimation of incident probability
- Risk Assessment (**SIL** estimate, etc.) by means of Qualitative (risk matrices or graphs), Semi-quantitative (**LOPA**) or Quantitative (Fault tree, Markov, **Purple Book**, etc.) Analysis
- Risk treatment (**SIS / SRS / S ext.**) with analysis of the elimination options or risk decrease and proposal of solutions.
- Implementation of solutions.
- Characterisation and testing of chemical products in relationship with explosion risks and/or process risks.
- Training courses

Process Risk Management is applicable to reach the solutions of problems such as the following:

- **SEVESO** and serious accidents
- **RUNAWAY** of out of control Chemical Reactions
- **ARC FLASH** intervention in electrical equipment (NFPA 70E 2004)
- **ATEX** of Explosive Atmospheres
- **VOCs** Volatile Organic Compounds
- Static electricity
- Accident' causes Determination

Our Clients - References

BECTEL has over 20 years of experience in **Chemical**, **Petrochemical**, **Pharmaceutical** and **Food Industry**, as well as **Power** and **Biofuels**. We've completed about 1000 projects, from consultancy and small process unit revamps to large integrated plants.

Some **BECTEL** Clients (years 2000÷2008).

- KAO CORPORATION S.A. (Barcelona-Spain)
Toner, Barberà del Vallés Factory
- GIVAUDAN IBÉRICA S.A. (Barcelona-Spain)
Aromas Distilled, Sant Celoni Factory
- UNILAND CEMENTERA S.A. (Barcelona-Spain)
Cement Santa Margarida I els Monjos Factory
- QUÍMICA BÁSICA S.A. (Barcelona-Spain)
Castellbisbal Factory
- BAYER-NEDDERMANN (Barcelona-Spain)
Pigments Vilassar de Mar Factory
- PURATOS/MdE (Belgium)
New Dry Yeast Plant, Andenne Factory
- BF GOODRICH S.A. (Barcelona-Spain)
Revamping Sant Cugat Factory
- FRIMON/MdE (Belgium)
New Dry Yeast Plant, Namur Factory
- INTERQUIM S.A. (Barcelona-Spain)
Chemical Sant Cugat Factory
- CEMENTOS MOLINS INDUSTRIAL S.A. (Barcelona-Spain)
Sant Vicenç dels Horts Factory
- IFF BENICARLO S.A. (Castellón-Spain)
Aromas Distilled, Benicarló Factory
- HUBEI ANGEL YEAST/MdE (China)
New Dry Yeast Plant, Yichang Factory
- DSM RESINS ESPAÑA S.A. (Barcelona-Spain)
SIL/SIS Project, Santa Margarida i els Monjos Factory

Our Clients - References ***(Continue)***

- MORCHEM S.A. (Barcelona-Spain)
Les Franqueses del Vallés Factory
 - LUCTA S.A. (Barcelona-Spain)
Aromas Distilled Montornés del Vallés Factory
 - UBE CHEMICAL EUROPE S.A. (Castellón-Spain)
Petrochemical Castellón Factory
 - BASF ESPAÑOLA S.A. /MdE (Tarragona-Spain)
New C3 Propane Cold Storage, Tarragona Factory
 - SYNTHESIA ESPAÑOLA S.A. (Barcelona-Spain)
Castellbisbal Factory
 - DSM RESINS ESPAÑA S.A. (Barcelona-Spain)
Resins, Santa Margarida i els Monjos Factory
 - SOLVAY PHARMA S.A. (Barcelona-Spain)
Barcelona Laboratory
 - FURFURAL ESPAÑOL S.A. (Murcia-Spain)
Vegetable Extract, Alcantarilla Factory
 - HONGHE CHEMICAL CMS PLANT/MdE (China)
New Chloromethanes Plant, Honghe Factory
 - NUTREXPA S.A. (Barcelona-Spain)
Cola Cao, Parets del Vallés Factory
 - AMILUM IBÉRICA S.A. (Zaragoza-Spain)
Tate Lile, Zaragoza Factory
 - MERCK S.A. (Barcelona-Spain)
Laboratory and Chemical Plant, Mollet Factory
 - EXQUIM S.A. (Barcelona-Spain)
Liquid Barcelona Factory
 - DERIVADOS FORESTALES (Barcelona-Spain)
Formol Plant, Sant Celoni Factory
 - LABORATORIOS VITA S.A. (Barcelona-Spain)
Barcelona Laboratory
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Our Clients – References ***(Continue)***

- INSTITUTO GRIFOLS S.A. (Barcelona-Spain)
Parets del Vallés Laboratory
- ASHLAND CHEMICAL IBERICA S.A./MdE (Castellón-Spain)
Revamping Benicarlo Factory
- FMC-FORET S.A. (Barcelona-Spain)
Zona Franca Barcelona Factory
- FENOCAST S.A. (Barcelona-Spain)
Montornés Factory
- MERQUINSA S.A. (Barcelona-Spain)
Montornés del Vallés Factory
- SOMADIR/MdE (Casablanca-Morocco)
Revamping Yeast Plant, Casablanca Factory
- PRODUCTOS DEL CAFÉ/NESTLE (Tarragona-Spain)
Reus Factory
- AFFINITY PETCARE/GALLINA BLANCA (Barcelona-Spain)
Santa Margarida i els Monjos Factory
- AKZO NOBEL CAR REFINISHES S.L. (Barcelona-Spain)
Zona Franca Factory
- UNIFERM/MdE (Germany)
Revamping Yeast Plant, Monhein Factory
- SCA HIGIENE PAPER ESPAÑA S.L. (Tarragona-Spain)
Puigpelat Factory
- LAB.DOCTOR ESTEVE S.A. (Barcelona-Spain)
Martorelles Factory
- SURFACE SPECIALITIES IBERICA S.L. (Barcelona-Spain)
La Llagosta Factory
- 10 OF RAMADAN/MdE (Egypt)
New DOP Plant, Cairo Factory

Our Clients – References ***(Continue)***

- MIQUEL JUNCA S.A. (Iceland)
New Hydrolyzed Fish Factory
- INDUSTRIAS QUÍMICAS DABEER S.A. (Barcelona-Spain)
Santa Perpetua de la Mogoda Factory
- NALCO ESPAÑOLA S.A. (Girona-Spain)
Celrá Factory
- RECKITT BENCKISER S.A. (Barcelona-Spain)
Granollers Factory
- APV/MdE (China)
New Dry Yeast Plant, Shanghai Factory
- IPSEN PHARMA (Barcelona-Spain)
Laboratory Factory
- CAMPI Y JOVE S.A. (Barcelona-Spain)
Sant Vicenç de Castellet Factory
- CAFOSA GUM S.A. (Barcelona-Spain)
Barberá del Vallés Factory
- LABORATORIOS LESVI S.L. (Barcelona-Spain)
Sant Joan Despí Factory
- FERRER INTERNACIONAL (Barcelona-Spain)
Sant Cugat Factory
- ZOSTER (Murcia-Spain)
Laboratory Beniel
- SARA LEE SOUTHERN EUROPE S.L. Coffe & Tea España (Barcelona-Spain)
Mollet del Vallés Factory
- CANDY SPAIN S.A. (Albacete-Spain)
Hellín Factory
- VIDAL GOLOSINAS S.A. (Murcia-Spain)
Molina de Segura Factory

Our Clients – References ***(Continue)***

- AKZO NOBEL INDUSTRIAL PAINTS S.L. (Barcelona-Spain)
Vallirana Factory
- ALMIRALL/RANKE (Barcelona-Spain)
Sant Celoni Factory
- ALMIRALL/RANKE (Barcelona-Spain)
Sant Andreu de la Barca Factory
- PRODUCCIÓN Y MANIPULADOS S.A.U. (FORQUISA) (Murcia-Spain)
Las Torres de Cotillas Factory
- CLARIANT IBERICA S.A. (Barcelona-Spain)
Castellbisball y el Prat Factory
- DISPER S.A. (Barcelona-Spain)
Sant Andreu de la Barca Factory
- LABORATORIOS ORDESA S.L. (Barcelona-Spain)
Sant Boi de Llobregat Factory
- EKA CHEMICALS IBÉRICA S.A. (Navarra-Spain)
Estella Factory
- TICSA (TAKASAGO INTERNATIONAL CHEMICALS EUROPE S.A.) (Murcia-Spain)
El Palmar Factory
- DISTILLER S.A. (Barcelona-Spain)
Santa Perpetua de la Mogoda Factory
- INDUSTRIA JABONERA LINA S.A. (LINASA) (Murcia-Spain)
Las Torres de Cotillas Factory
- ZODIAC ESPAÑOLA S.A. (Girona-Spain)
Roses Factory
- HERA HOLDING (Barcelona-Spain)
Cerdanyola del Vallés Factory
- HERA AMASA – Plta.Piloto (Barcelona-Spain)
Castellgalí Factory

Our Clients – References ***(Continue)***

- CYTEC SURFACE SPECIALITIES IBÉRICA S.L. (Barcelona-Spain)
La Llagosta Factory
 - BAYER POLIMEROS S.L. (Tarragona-Spain)
Tarragona Factory
 - BAYSYSTEMS IBERIA S.L. (Tarragona-Spain)
Tarragona Factory
 - LANXESS STYRENICS S.L. (Tarragona-Spain)
Tarragona Factory
 - MERCK FARMA Y QUÍMICA S.A. (Barcelona-Spain)
Mollet del Vallés Factory
 - JOTUN IBERICA S.A. (Barcelona-Spain)
Castellbisbal Factory
 - DSM NeoResins (Barcelona-Spain)
Parets del Vallés Factory
 - LAINCO S.A. (Barcelona-Spain)
Rubi Factory
 - ROUSSELOT GELATIN, S.L. (España)
Mejora Extracción Gelatina derivada de cerdo, Factoría de Sarriá de Ter
 - UNIFERM (Alemania)
Nueva Planta Levadura, Factoría de Alemania
 - GIVAUDAN FRANCE FRAGRANCES SAS (Francia)
Factoría de Lyon
 - CROMARESME, S.A. (Barcelona-España)
Factoría de Dosrius
 - DECAL ESPAÑA, S.A. (Huelva-España)
Terminal de Palos de la Frontera
 - DSM Anti-Infectives Chemferm, S.A. (Barcelona-España)
Factoría de Santa Perpetua de la Mogoda
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Our Clients – References ***(Continue)***

- EUROMED, S.A. (Barcelona-España)
Factoría de Mollet del Vallés
- ALPETROL TERMINAL, S.A. (Cádiz-España)
Terminal de Algeciras
- ASTUR-PHARMA, S.A.
Factoría de Silvota (Asturias)
- DIESEL ENERGY S.L.
Planta de Sevilla
- ISOLUX CORSAN - INFINITA RENOVABLES
Muelle-Planta de El Ferrol (La Coruña)
Muelle-Planta de Castellón (Castellón)
- ABENGOA SOLAR
Planta termoeléctrica de Sanlucar la Mayor (Sevilla)
- BIONET EUROPA, S.L.
Factoría de Reus (Tarragona)



CERTIFICATE

The Certification Body of Quality Management Systems
TÜV Internacional Grupo TÜV Rheinland, S.L.

hereby certifies that the company

BECTEL INGENIEROS, S.L.

for their location in

**Passeig de Gràcia, 81 Ent.
E-08008 Barcelona**

has established and applies a Quality Management System for the
activities of

**Engineering and consulting services for the chemical,
pharmaceutical, food and industrial sectors**

in accordance with the requirements of the standard

UNE – EN ISO 9001:2000

This certificate is valid until: **2010-07-13**
Certification Registration No: **0.04.03297**

Madrid, 2007-07-18



Head of the Certification Body
of Quality Management Systems
TUV Internacional Grupo TÜV Rheinland, S.L.



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