

# IDOM

## **Engineering services for biomass plants**

# Detailed Engineering and Construction Supervision of a Spent Coffee Ground Boiler



**Customer:** NESTLE – GIRONA (SPAIN)  
**Date:** 2019 - 2020

## Description

Nestle – Girona Factory obtains as a by-product Spent Coffee Ground, with a lower calorific value within 7,5MJ/kg – 9,0MJ/kg.

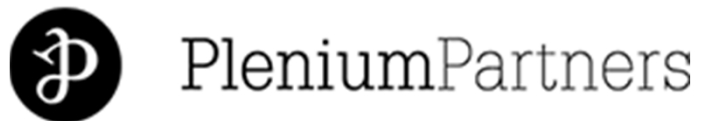
The biomass plant valorizes energetically 7.500kg/h of Spent Coffee Ground. The Boiler generates 22t/h of Saturated Steam with a pressure of 18,5barg, which is used in the thermal processes of the factory.

## Main characteristics

- SCG Silo Buffer: 100m<sup>3</sup>
- SCG Boiler:
  - Steam Production: 22tn/h (14,4MW)
  - SCG consumption: 7.500kg/h
- Flue Gas Treatment:
  - Urea – De Nox < 200mg/Nm<sup>3</sup>
  - Lime – De Sox < 133mg/Nm<sup>3</sup>
  - Bag Filer – De Dust < 12mg/Nm<sup>3</sup>

## Work performed

- Detailed engineering
- Project management
- Construction supervision and management



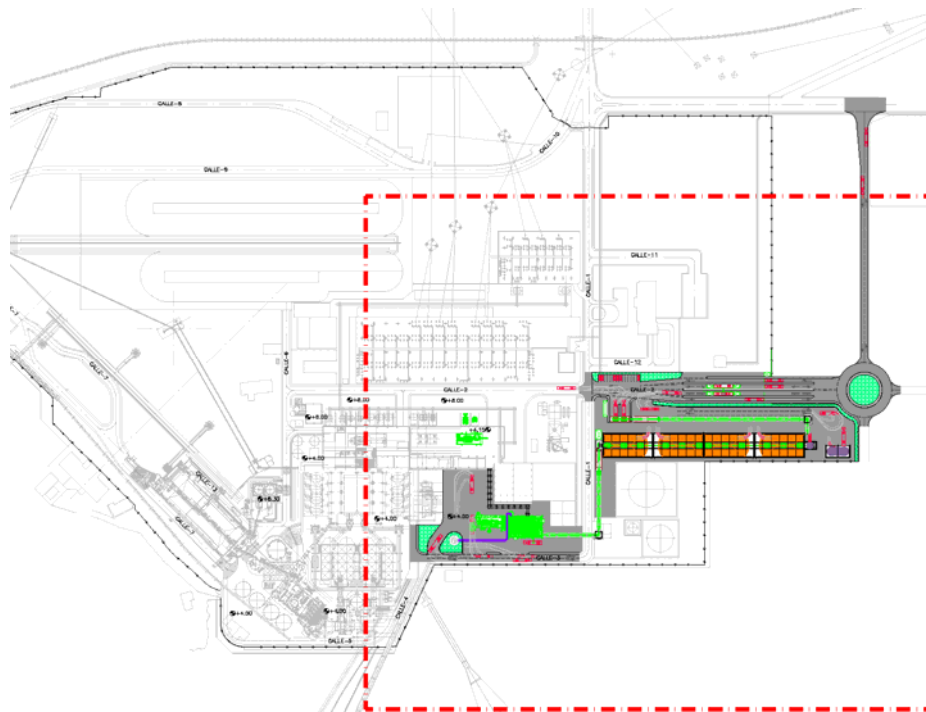
**TECHNICAL DUE DILIGENCE FOR NINE  
BIOMASS POWER PLANTS IN SPAIN**

**WORK PERFORMED**

Due diligence on the following biomass power plants under operation:

- La Loma, Jaén, 16 MWe
- Enemansa, Córdoba, 16 MWe
- HU-41, Huelva, 41 MWe
- Huelva 50, 50 MWe
- Huelva 46, 46 MWe
- Huelva 50, 50 MWe
- Mérida 20, 20 MWe
- Lucena-14, 14,3 MWe
- Lucena-13, 13 MWe
- Puertollano 50, 50 MWe

The work consisted on a technical assessment on the existing equipment paying special attention on bottlenecks, availability, required investements,...



**CONCEPT ENGINEERING OF A 50MW  
BIOMASS PLANT AS REPLACEMENT FOR THE  
340MW FOSSIL FUEL POWER PLANT OF  
*PUENTE NUEVO***

**Córdoba - Spain**

**DESCRIPTION**

As a result of the application of the European Emissions Directive (2010/75/EU), the plant of Puente Nuevo will be closed in 2020.

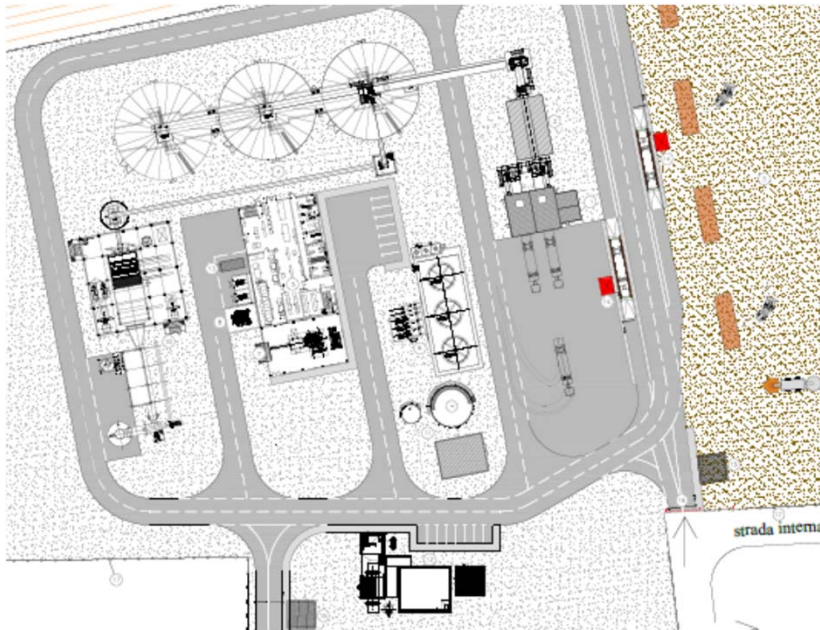
Under VIESGO request, IDOM performed a concept design for the erection of a 50MW Biomass plant in the current facilities.

Biomass power plant would use *orujillo* as fuel. *Orujillo* is the residual biomass resulting from olive pressing in alimentary olive oil production.

**WORKS PERFORMED**

Tasks performed during the project included:

- Layout & technological alternatives study
- Analysis of automated storage & handling facilities for the biomass (*orujillo*)
- Feasibility analysis for the revamp & reuse of existing facilities in the old *Puente Nuevo* plant
- Capex and planning evaluation of the whole project
- Legalization & permits roadmap



**CONCEPTUAL DESIGN FOR 2X5MW BIOMASS  
PLANTS IN SERBIA AND 1X10MW BIOMASS  
POWER PLANT IN ITALY**

**DESCRIPTION**

Windvision is developing 2x5MWe biomass power plants in Serbia and 1x10MWe biomass power plant in Italy.

The plants in Serbia are provided with a CHP for a district heating and will use straw as main fuel.

The plant in Italy will mainly use wood chips as fuel.

**WORKS PERFORMED**

Tasks performed during the conceptual design include:

- Layout & technological alternatives study
- Heat and Mass Balance Diagrams
- Water balances
- Process flow diagrams
- P&IDs
- Technical specifications for main mechanical and electrical equipment: boiler, steam turbine, feed water pumps, condensate pumps, step-up and auxiliary transformers
- Basic civil design
- Basic lines list, valves list
- Basic electrical and mechanical equipment lists
- I/O list
- Instruments list





**TECHNICAL DUE DILIGENCE FOR THREE BIOMASS POWER PLANTS IN SPAIN**

**WORK PERFORMED**

Due diligence on the following assets:

- Biomass power plant located in Burgos area, Castilla y León, Spain. Electrical Power Output 16 MW. Wheat Straw, corn stover and Wood chips as main type of fuels.
- Biomass power plant located in Cáceres area, Extremadura, Spain. Electrical Power Output 16 MW. Wheat Straw, corn stover and Wood chips as main type of fuels.
- Biomass power plant located in Pamplona area, Navarra, Spain. Electrical Power Output 30 MW. Wheat Straw, corn stover and Wood chips as main type of fuels.

The work consisted on a technical assessment on the existing equipment: biomass boiler, biomass handling system, fuel crushers, steam turbine, electrical generator, cooling water systems, auxiliary fuel system, wáter treatment systems, fire fighting system, HVAC system, electrical systems I&C systems.

The work included also an economic analysis of the existing assets.



**IBERDROLA ENGINEERING AND  
CONSTRUCTION**

**40 MW BIOMASS FIRED POWER PLANT**

**Merrit - Canada**

## DESCRIPTION

Dalkia and the Canadian fund Fengate Capital Management Ltd. are developing one of largest biomass plants in Canada. Dalkia will design, built and operate the plant, that is located in Merrit, British Columbia, Canada. Iberdrola Engineering & Construction have been contracted to construct the plant. The plant will operate in extreme weather conditions

Iberdrola has subcontracted IDOM to provide basic and detail design to support them in the development of the Balance of the Plant (BOP).

Year: 2014-2016

## MAIN CHARACTERISTICS

- Fuel: Sawmill, wood and bark residues, together with roadside debris
- Boiler: Vibrating grate
- Gross electrical power: 40 MW
- Back-up fuel: Diesel oil

## WORK PERFORMED

- Permitting assistance, partnering with a local engineering firm
- Basic design of the BOP
- Detail design of the BOP



**IBERDROLA ENGINEERING AND  
CONSTRUCTION**

**40 MW BIOMASS FIRED POWER PLANT**

**British Columbia - Canada**

**DESCRIPTION**

Dalkia and the Canadian fund Fengate Capital Management Ltd. are developing one of largest biomass plants in Canada. Dalkia will design, built and operate the plant, that is located in Fort St. James, British Columbia, Canada. Iberdrola Engineering & Construction have been contracted to construct the plant. The plant, located in First Nations areas of influences, will operate in extreme weather conditions

Iberdrola has subcontracted IDOM to provide basic and detail design to support them in the development of the Balance of the Plant (BOP).

Year: 2013-2015

**MAIN CHARACTERISTICS**

- Fuel: Sawmill, wood and bark residues, together with roadside debris
- Boiler: Vibrating grate
- Gross electrical power: 40 MW
- Back-up fuel: Diesel oil

**WORK TO BE PERFORMED (ONGOING)**

- Permitting assistance, partnering with a local engineering firm
- Basic design of the BOP
- Detail design of the BOP





**ISOLUX CORSAN**  
**43 MW BIOMASS FIRED CHP PLANT**  
**Meta - Republic of Colombia**

### **DESCRIPTION**

Biomass CHP plant in Meta (Republic of Colombia), included in a new bioethanol production plant for the company Bioenergy.

The biomass plant utilizes a mobile grate boiler that fires bagasse. The steam coming from the boiler is expanded in a steam turbine to generate electricity. Low pressure steam is used in the bioethanol production process.

The biomass CHP plant has been designed to operate in four possible scenarios: Normal operation, Maximum power, Maximum extraction and Off season mode.

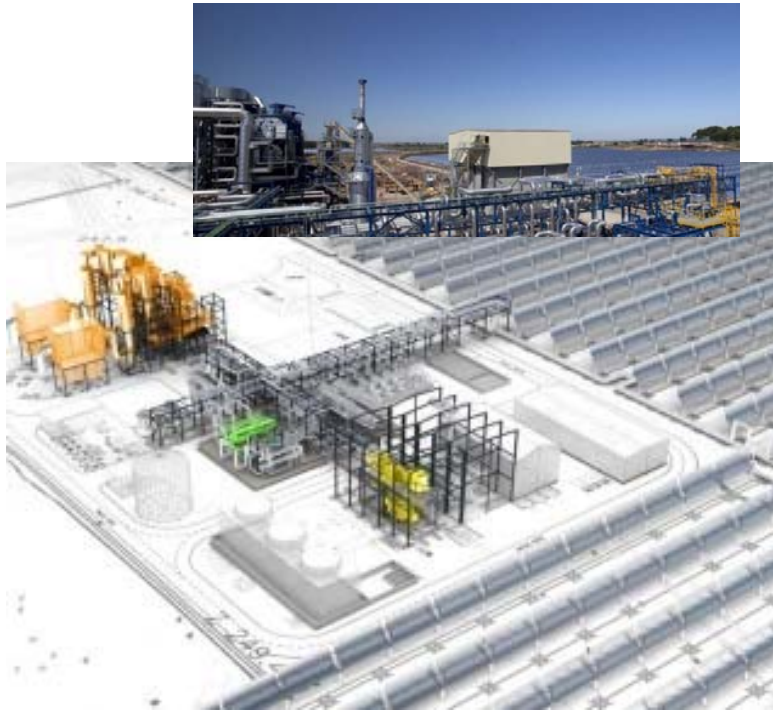
Year: 2011-2014

### **MAIN CHARACTERISTICS**

- Steam conditions: 70.2 bar, 520°C, 180 t/h
- Fuel: Bagasse (100%)
- Gross electrical power: 43.5 MW for maximum power mode
- Expected annual operation: 5,000 h/y

### **WORK PERFORMED**

- Conceptual engineering for FEED
- Basic design of the plant
- Technical assistance
- Detail design of the plant



**ABANTIA / COMSA EMTE**

**25 MW CSP POWER PLANT HYBRIDIZED WITH  
BIOMASS POWER PLANT**

**Lleida - Spain**

### **DESCRIPTION**

The joint venture between ABANTIA Instalaciones, S.A. and COMSA EMTE Medio Ambiente have constructed a 22.5 MW net Solar Parabolic Trough Power Plant hybridized with a biomass power plant. The project was developed on a turn-key contracting basis for the owner Termosolar Borges, S.L. This unique project is located at Les Borges Blanques, Lleida, Spain.

The solar field is composed by 56 loops of parabolic through solar collectors. Steam is expanded in a 25 MW Man turbine with 5 extractions. Main cooling is achieved by wet cooling towers.

By-passing the solar collectors, the biomass boiler directly heats the HTF during the periods when the solar field is not in operation.

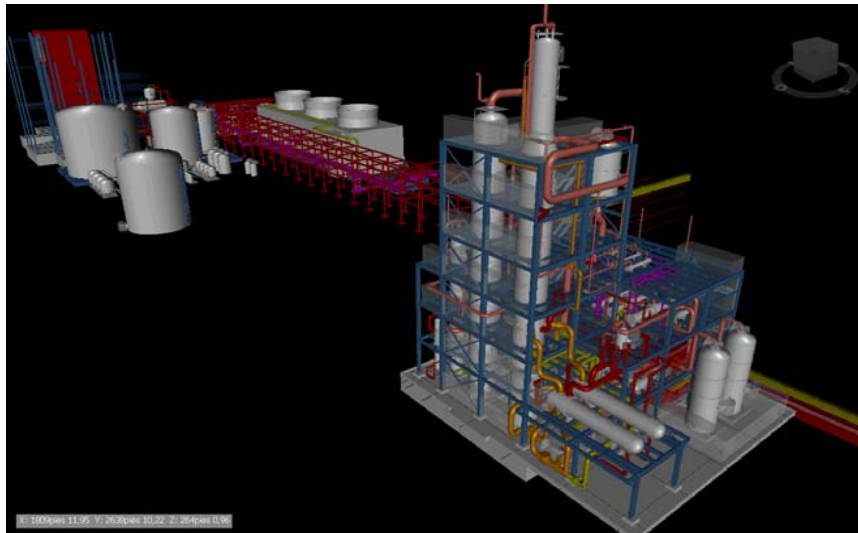
Year: 2010-2012

### **MAIN CHARACTERISTICS**

- Fuel: Forest wood, energy crops and olive oil wastes
- Biomass feeding: 85,000 t/y
- Gross electrical power: 25 MW

### **WORK PERFORMED (For the biomass boiler)**

- Integration with the plant
- Piping design up to the boiler
- Boiler island foundations



**ABENGOA**

**ABENER GHENOVA, INC.**  
**23 MWe Biomass Cogeneration Power Plant**  
**25 MG/y Ligno-Cellulosic Bioethanol Plant**  
**Hugoton – Kansas (US)**

**DESCRIPTION**

Abengoa Bioenergy (Abengoa Group) facility in Hugoton, Kansas. Abener Ghenova Engineering (Abengoa Group) is developing jointly with AEC Idom the detailed engineering for the entire plant. Project partially financed by US Department of Energy.

Year: 2011-2012

**MAIN FEATURES**

- 25 million gallon based on 365 operating days
- Third generation bio-ethanol facility using ligno-cellulosic feedstock materials, initially agricultural residues (corn stover and wheat straw) and in the future, switch grass and other warm season grasses will be the source of feedstock
- Residues from the distillation process, whole stillage, is separated into a liquid stream, thin stillage, and wet-cake. The thin stillage is evaporated to produce syrup which is burned in the on-site biomass burner along with the wet-cake. The biomass boiler system provides steam and power to the entire plant
- Steam conditions: 750F @ 900 psig 330 kpph
- Fuel: Wastes streams of the plant
- Gross electrical power: 23 MWe
- Fluidized bed biomass boiler

**WORK PERFORMED**

- Detailed engineering for 3 of the 6 plant packages:
  - 23 MW biomass cogeneration plant
  - Ethanol storage
  - Distillation unit



**SUNEDISON**  
**23 MW BIOMASS FIRED POWER PLANT**  
**Mulchen - Chile**

**DESCRIPTION**

23 MW gross power biomass plant in Chile. The boiler will fire a biomass blend based on pines, eucalyptus and native forest residue to produce steam that will be expanded in a condensation steam turbine.

Year: 2014 - 2015

**MAIN CHARACTERISTICS**

- Fuel: Pines, Eucalyptus and native forest residue
- Future fuel: Energy crops
- Gross electrical power: 23 MW
- Regenerative steam/water cycle

**WORK PERFORMED**

- Technical specification for the EPC RFP
- Heat & mass balances
- Conceptual engineering: Process flow diagrams, layout, single line diagram and control architecture
- Main equipment (boiler, steam turbine, cooling tower and biomass yard) technical specifications
- Detailed Project of the overhead electrical line for the connection of the facility with the electrical distribution grid
- Mechanical, Electrical, Civil and I&C design criteria
- Technical assistance to the Owner





**CONFIDENTIAL CLIENT**  
**THREE 70 MW BIOMASS FIRED POWER PLANTS**  
**Spain**

**DESCRIPTION**

Three 70 MW gross power biomass plant in Spain, based on a biomass boiler that burns forest wood.

The facility includes an shipment biomass system, unloading, handling and feeding system, as well as an intermediate biomass storage.

Year: 2014 - 2015

**MAIN CHARACTERISTICS**

- Fuel: Wood
- Gross electrical power: 70 MW

**WORK PERFORMED (For each plant):**

- Documentation for the permitting process
- Environmental Impact Assessment
- Basic Project for the administrative authorizations
- Detailed Project of the overhead electrical line for the connection of the facility with the electrical distribution grid
- Fuel source study
- Technical feasibility study



**SCHNEIDER ELECTRIC  
BIOMASS FEASIBILITY STUDY  
EASTERN USA MILITARY FACILITY**

**DESCRIPTION**

The United States military has an ongoing NetZero initiative in which select military bases are developing their own renewable energy power generation facilities to meet the power demand of the base. Schneider Electric has contracted IDOM to provide a feasibility study to determine the fuel available on the base and surrounding area. Once the fuel resource is determined the optimum technology will be selected and studied to determine financial options for the facility to generate 4 MWe to power the base.

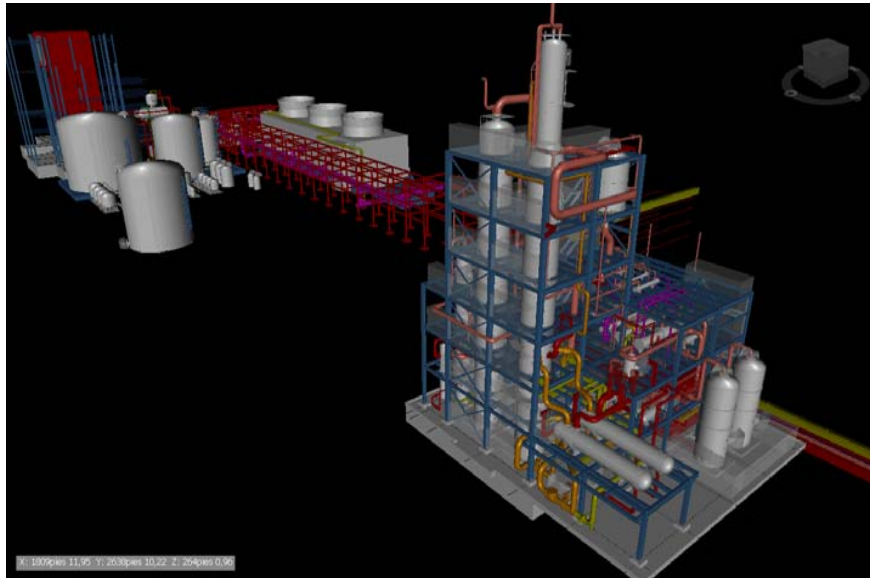
Year: 2013 - 2014

**MAIN CHARACTERISTICS**

- Fuel: Forest wood, fuel crop cultivation or solid waste
- Gross electrical power: 4+ MW

**WORK PERFORMED (ONGOING)**

- Fuel resource study
- Conceptual design
- Feasibility study
- Permitting assistance
- Interconnection study
- Life Cycle cost study



**ABENER GHENOVA, INC.**  
**23 MW BIOMASS FIRED CHP PLANT**  
**Kansas - USA**

**DESCRIPTION**

Abengoa is developing a 25 MGY ligno-cellulosic bioethanol plant in Hugoton, Kansas. Within this Project IDOM has collaborated with Abener Ghenova in the detail design of a new biomass CHP plant to provide electricity and steam to the bioethanol plant. The project was financed by US Department of Energy loan guarantee.

Year: 2011-2013

**MAIN FEATURES**

- Fuel: Corn stover, wood waste, syrup
- Gross electrical power: 23 MW
- Steam conditions: 400°C, 62 bar, 600 t/h
- Boiler: Water cooled vibrating grate

**WORK PERFORMED**

- Integration with the bioethanol plant
- Piping design
- Boiler island foundations



**E-ON**  
**15 MW BIOMASS FIRED POWER PLANT**  
**Spain**

**DESCRIPTION**

15 MW gross power biomass power plant in Spain. The boiler will fire forest wood and cultivated energy crops to produce steam that will be expanded in a condensation steam turbine.

Year: 2011-2013

**MAIN CHARACTERISTICS**

- Fuel: Wood (65%) / Energy crops (35%)
- Gross electrical power: 15 MW

**WORK PERFORMED**

- Technical feasibility study
- Life cycle cost analysis
- Conceptual engineering
- Basic project for permitting
- Technical specification for the EPC RFP
- Technical assistance to the Owner





**ENCE**  
**FOUR 20 MW BIOMASS FIRED POWER PLANTS**  
**Spain**

**DESCRIPTION**

Four 20 MW gross power biomass powers plant in Spain, based on a 70 MWth spreader stoker moving grate boiler that burns forest wood and cultivated energy crops. The generating steam is expanded in a condensation steam turbine. A cooling tower is used to condensate the exhaust from the turbine in the condenser. The facility also includes an outdoor reception and raw storage biomass yard with fuel preparation, handling and feeding system, as well as an intermediate biomass storage.

Year: 2010-2012

**MAIN CHARACTERISTICS**

- Fuel: Forest wood (40%) / Cultivated energy crops (60%)
- Gross electrical power: 20 MW

**WORK PERFORMED (For each plant):**

- Conceptual engineering: Heat and mass balances, water balance, PFD, basic layout, single line diagram, plant description, balance of utilities
- Main equipment (boiler and steam turbine) technical specifications
- Documentation for the permitting process: Environmental Impact Assessment, documentation for the 'Autorización Ambiental Integrada' request, Basic Project for the 'Autorización Administrativa'
- Detailed Project of the overhead electrical line for the connection of the facility with the electrical distribution grid

## DESCRIPTION

Basic design of a new gasification to energy facility in Campbell Industrial Park, 'Ewa, O'ahu, Hawaii (USA). Fuel includes mostly construction & demolition debris.

Gasification technology will be utilized to produce the syngas fired in the boiler, whose steam will be employed in the steam turbine generator.

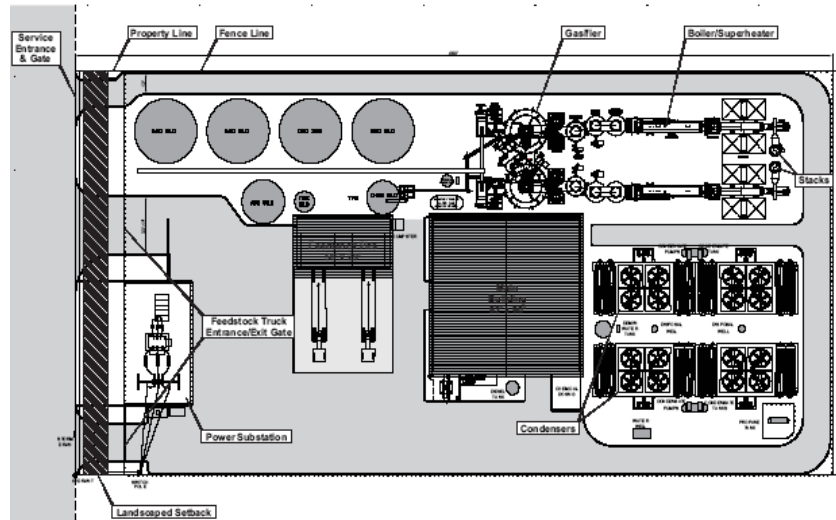
Year: 2009-2010

## MAIN CHARACTERISTICS

- Fuel: Mostly C&D debris
- Gross electrical power: 8.5 MW
- Technology: Gasification

## WORK PERFORMED

- Basic engineering covering all the disciplines (process, mechanical, civil, structural, electrical, I&C) and including, among others, heat and mass balances, design criteria, P&IDs, layout, single line diagram, system descriptions, control architecture, etc.
- Technical specifications of main equipment



## HONUA POWER

### 8.5 MW BIOMASS GASIFICATION POWER PLANT

Oahu, Hawaii - USA



**ENDESA GENERACIÓN**  
**DIRECT (BIOMASS) AND INDIRECT**  
**(SYNGAS) COFIRING POWER PLANTS**  
**Spain**

**DESCRIPTION**

Direct biomass - coal cofiring / indirect syngas (coming from biomass and coal gasification) cofiring studies for the currently operating coal fired power plants of Endesa Generacion in Spain.

Biomass storage, pretreatment and drying plant to be used for cofiring in the 'Litoral' power station of ENDESA in Almeria, Spain.

Year: 2008-2009

**WORK PERFORMED**

- Basic design for the EPC process of the biomass storage, pretreatment and drying plant
- Technical assistance in the development of simulation studies of biomass direct cofiring in the Litoral 1 (Carboneras, Almeria, Spain), Teruel (Spain) and As Pontes (La Coruña, Spain) power plants
- Technical assistance in the development of simulation studies of biomass indirect cofiring (gasification) in the Litoral 2 (Carboneras, Almeria, Spain) and Los Barrios (Algeciras, Cádiz) power plants



**ACCIONA**  
**16 MW BIOMASS FIRED POWER PLANT**  
**Burgos - Spain**

### **DESCRIPTION**

16 MW gross power biomass power plant for Acciona Energía in Briviesca, Burgos, Spain. The plant is based on a 50 MWth grate boiler that burns straw and forest wood to produce steam, that is expanded on a condensing steam turbine.

A cooling tower is used to condensate the exhaust steam from the turbine in the condenser. The facility also includes an outdoor and an indoor biomass yard.

Year: 2007

### **MAIN CHARACTERISTICS**

- Fuel: Straw and forest wood
- Boiler thermal power: 50 MWth
- Gross electrical power: 16 MW

### **WORK PERFORMED**

- Basic engineering: Heat and mass balances, water balance, P&IDs, layout, single line diagram, system descriptions, control architecture, etc.





**ACCIONA**  
**15 MW BIOMASS FIRED POWER PLANT**  
**Cáceres - Spain**

### **DESCRIPTION**

15 MW gross power biomass power plant for Acciona Energía in Miajadas, Cáceres, Spain. The plant is based on a 50 MWth grate boiler that burns straw and forest wood to produce steam, that is expanded on a condensing steam turbine.

A cooling tower is used to condensate the exhaust steam from the turbine in the condenser. The facility also includes an outdoor and an indoor biomass yard.

Year: 2007

### **MAIN CHARACTERISTICS**

- Fuel: Straw (80%) and forest wood (20%)
- Boiler thermal power: 50 MWth
- Gross electrical power: 15 MW

### **WORK PERFORMED**

- Basic engineering: Heat and mass balances, water balance, P&IDs, layout, single line diagram, system descriptions, control architecture, etc.



**SONAE TAFISA (ISOROY)**  
**BIOMASS CHP PLANT**  
 Lure - France

**DESCRIPTION**

Biomass CHP plant in Lure, France, that provides electricity and steam for a new agglomerate board (chip board) production plant.

The biomass plant includes a 50 MWth mobile grate boiler which burns bark and sawdust. The exhaust gases of the boiler are sent to the wood dryers of the facility and is also used in a heat exchanger to heat a HTF, that is sent to the presses of the plant and to a steam generator. The produced steam is expanded in a steam turbine that generates 4 MW electrical power. The facility also includes a wood yard.

Year: 2001 - 2002

**MAIN CHARACTERISTICS**

- Fuel: Bark and sawdust
- Boiler thermal power: 50 MWth
- Gross electrical power: 4 MW
- Back-up fuel: Fuel gas

**WORK PERFORMED**

- Project management
- Construction management



## ENDESA COGENERACIÓN Y RENOVABLES

### 16 MW BIOMASS FIRED POWER PLANTS: ENEMANSA Ciudad Real – Spain, and LA LOMA Jaén - Spain

#### DESCRIPTION

Technical assistance to the Caja Madrid bank for the technical assessment for financing of the construction of two 16 MWe biomass power plants firing 'orujillo'.

The first one is the ENEMANSA power plant, in Ciudad Real, Spain and the second one is La Loma, in Jaen, Spain.

Year: 2001-2002

#### MAIN CHARACTERISTICS

- Fuel: 'Orujillo' (dry residue obtained from the olive), with a relative humidity of 10%, crushed to reach a size of 1 mm
- Gross electrical power: 16 MW
- Boiler: Suspended
- Steam conditions: 60 bar, 450°C

#### WORK PERFORMED

- Technical evaluation reports
- Technical assistance during the plant acceptance



**TAFISA**  
**4 MW BIOMASS CHP PLANT**  
**Jaén - Spain**

### **DESCRIPTION**

Biomass CHP plant in Linares (Jaén), built to support the new agglomerate (chip board) production plant of the 'Olivo' Project.

The biomass plant includes a 50 MWth mobile grate boiler which burns bark and sawdust. The exhaust gases of the boiler are sent to the wood dryers of the facility and is also used in a heat exchanger to heat a HTF up to 280°C, that is sent to the presses of the plant and to a steam generator. The produced steam is expanded in a steam turbine that generates 4 MW electrical power. The facility also includes a wood yard and a wet ESP for emission control.

Year: 1999 - 2001

### **MAIN CHARACTERISTICS**

- Fuel: Bark and sawdust
- Boiler thermal power: 50 MWth
- Gross electrical power: 4 MW
- Back-up fuel: Fuel gas

### **WORK PERFORMED**

- Detail engineering (civil, mechanical, electrical, etc.)
- Project management
- Construction supervision and management
- Commissioning and start-up assistance





**TRADEMA TAFISA  
BIOMASS CHP PLANT  
Valladolid - Spain**

### **DESCRIPTION**

Biomass CHP plant in Valladolid, Spain, included for the new MDF board production plant under the 'Duero' Project.

The biomass plant includes a 44 MWth mobile grate boiler which burns bark and sawdust. The exhaust gases of the boiler are sent to the wood dryers of the facility and is also used in a heat exchanger to heat a HTF, that is sent to the presses of the plant and to a steam generator. The produced steam is expanded in a steam turbine that generates 2 MW electrical power.

Year: 1998 - 2000

### **MAIN CHARACTERISTICS**

- Fuel: Bark and sawdust
- Boiler thermal power: 44 MWth
- Gross electrical power: 2 MW
- Back-up fuel: Fuel gas

### **WORK PERFORMED**

- Detail engineering (civil, mechanical, electrical, etc.)
- Project management
- Construction supervision and management
- Start-up assistance



**SOME RELATED STUDIES**

**KURSALL**

Study of a cogeneration plant with a back pressure turbine and a boiler fed by barks.

**MINERSA**

Alternatives study for a cogeneration plant with a back pressure turbine and a boiler fed by timber residues or crusts.

**IDAE**

100 feasibility studies of centralized heating networks (district heating) using biomass.

Technical assistance in the development of the National Plan of Promotion of the Biomass.

**ABENER**

Efficiency test for the Sangüesa (Navarra) biomass power plant

**AGENCIA D'ENERGIA DE BARCELONA**

Basic engineering and technical specifications for the RFQ of a biomass power plant in Barcelona.

**INSTITUTO DE CREDITO OFICIAL - ICO**

Feasibility study for electricity generation using biomass in Panama and generation of carbon credits.

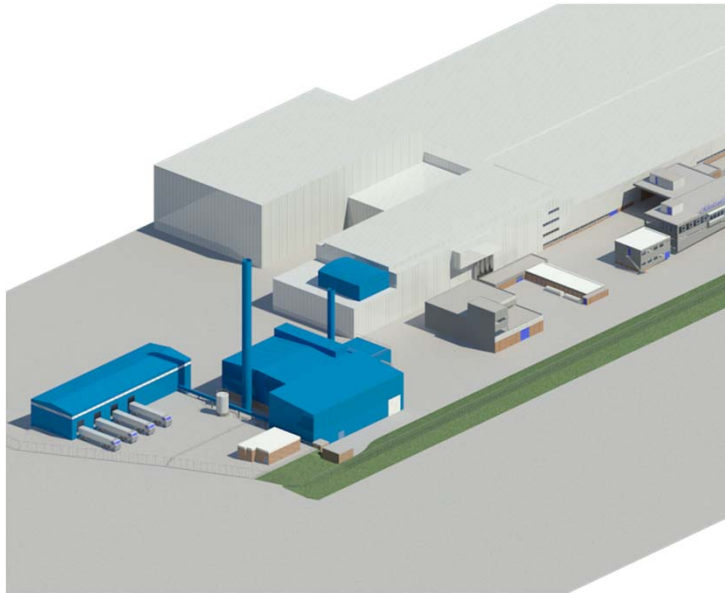
**AGENCIA DE GESTION DE LA ENERGIA – AGE CAM**

Inventory and energetic valuation of the residues generated by the wood industry in Castilla La Mancha.

UK- 19298

## Preliminary Engineering Services for a Biomass Steam plant at Barrow, UK

---



**Customer:** KIMBERLY CLARK Barrow, Cumbria, United Kingdom

**Date:** 2015

KC is making a feasibility study for the installation of a 30 ton steam Boiler in the Mill of Barrow (UK). The Boiler will burn chips from wood to produce saturated steam used in the process. IDOM will develop the following tasks in this preliminary stage:

- P&ID's
- Preliminary design of piping and electrical interplant
- Preliminary design of civil works
- Layout consolidation
- Installation cost estimate

Colombia - 19108

## Pre-Basic engineering Cogeneration plants in Barbosa and Cauca paper Mills (Colombia)



**Customer:** KIMBERLY CLARK BARBOSA, KIMBERLY CLARK PAPELES DEL CAUCA

**Date:** 2015 -

KIMBERLY CLARK COLOMBIA plans to build two cogeneration plants at two different Mills in Colombia: Papeles Del Cauca and Barbosa. In the first installing a plant 14,2MWe composed by two engines 16V34SG Wartsila and generating with two HRSG saturated steam at 230 psig. In the second Mill installing a plant 9,2MWE composed by a 20V34G Warstila engine and associated HRSG to generate saturated steam at 130 psig. The scope of IDOM comprises determining the estimated budget of the investment. To have this information IDOM will develop the following items:

- Interconnections CHP manufacturing plant.
- Layout.
- Civil Engineering.
- Auxiliary equipment.



El Salvador - 19001

## Detail Engineering for gas engines CHP plant in El Salvador



**Customer:** KIMBERLY CLARK CENTROAMÉRICA  
**Date:** 2014 - 2016

IDOM develops the detail engineering for the implantation of a CHP plant 14MWe based on the Gas Cube of Wartsila. Wartsila makes the detail engineering for the Gas Cube plant, thus IDOM scope includes the integration of the plant with the paper factory of Sitio del Niño in El Salvador. The detailed scope is:

- Technical support for feasibility study (EDR)
- Specification for:
  - HRSG's at 225 psig with the pumps.
  - Vaporization station for GLP.
  - Piping routing between factory and CHP plant.
  - Complete civil engineering except by the Gas Cube Building.
  - I&C except the Gas Cube.
  - Low voltage for auxiliaries.
- Technical assistance onsite.