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EXERGIA



EXERGIA

Ingénierie de l'énergie et du
développement durable



COMPAGNY PROFILE



Liberté • Égalité • Fraternité

RÉPUBLIQUE FRANÇAISE

MINISTÈRE DE L'ÉDUCATION
NATIONALE, DE L'ENSEIGNEMENT
SUPÉRIEUR ET DE LA RECHERCHE

JEI

**Jeune Entreprise
Innovante**

BY MICHEL LEFORT, EXERGIA CEO

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Non contractual document

- EXERGIA is an independent engineering office specialized in energy efficiency founded in 2011 to advice and follow industries on energy bill handling.
- EXERGIA headquarters are settled at GENLIS in Burgundy (21). Its work team is composed by its CEO (ESSTIN engineer, PHD, Master degree in Renewable Energy), two project managers (ESSTIN and ENSTIB engineers), and two intern engineers each year.
- Skills and expertise in energy efficiency are guaranteed with the OPQIBI certification “Industrial works and systems, energy audits in industry”. Moreover, EXERGIA is RGE certified “Project management assistance in realization of energy production facilities using biomass”.
- Within its research activities, EXERGIA obtained the status of Young Innovative Company from French Ministry of National Education, Higher Education and Research.
- 8 years review: about ten energy diagnostics in industry, fifteen feasibility studies in biomass projects, five missions of project management assistance in biomass thermal boiler plants from 2,5 t/h to 6 t/h (range of 2M€-4M€), winner of the CRE5 call for projects in 2018 for the construction of three biomass cogeneration plants using an innovative biomass gasification technology, two feasibility studies in biogas plants projects, two R&D projects (PROFIDEA: Wood fiber production from torrefied furniture elements wastes and CHARBONBIO : Charcoal production from diverse low-cost biomass for metal industries) leaded by EXERGIA in partnership with University of Lorraine, Public Investment Bank (BPI) and Environment and Energy Management Agency (ADEME)

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EXERGIA SUPPORTS COMMUNITIES AND INDUSTRIALISTS IN CONTROLLING THEIR ENERGY BILLS THROUGH THE FOLLOWING ACTIVITIES:

- ✓ **Conducting energy audits in industry and in the building industry to propose and implement concrete solutions for reducing energy bills;**
- ✓ **Feasibility studies of biomass thermal power plants and energy distribution networks (process, heating). Management of technical aspects, biofuel supply, regulations (ICPE), grants and economic analysis;**
- ✓ **Assistance to Master of Work when the client decides to carry out his project:**
 - **Preparing EPC contracts, launching consultations and selection processes, operations and maintenance;**
 - **Legal and financial structuring of projects: choice of partners, contracts, mastery of the regulatory framework, search for investors, fundraising with associated contracts.**
- ✓ **Strategic studies on energy control;**
- ✓ **Implementation of biomass supply plans;**
- ✓ **Design of solar fields.**

OUR CUSTOMERS

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EXERGIA Compagny Profile



SAINT-GOBAIN
PAM

LE GAEC DE LA
MONTBELIARDE

in vivo


gambini group
industrie ceramiche

LE GAEC
SCHNEIDER



DISTILLERIE DU
BOIS DES
DAMES

GRUPE
uodm
Union des Distilleries
de la Méditerranée



L'HÉRITIER-GUYOT



valdelia



SCHOTT
glass made of ideas



UTC Aerospace Systems



EUROSIT

arkolia
ENERGIES

DISTILLERIE DU
SANCERROIS

éco-mobilier



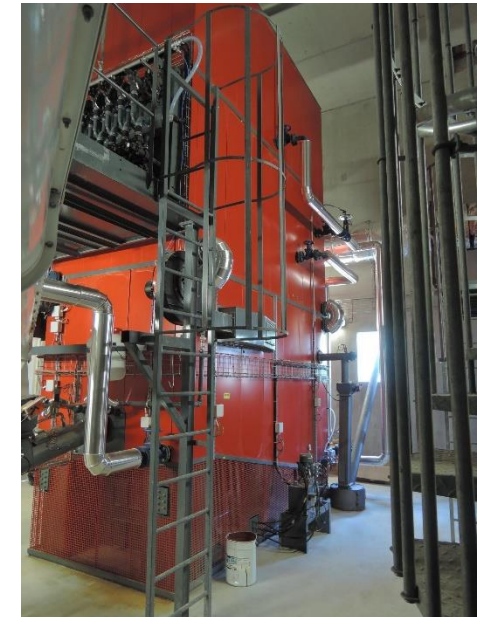
 **DANZER**

BRESSON SAS



Biomass Boiler design for an industry in Aveyron specialized in cattle feed production (Fuel: agropellets).

- ✓ Full feasibility study;
- ✓ Final draft;
- ✓ Heat customers sourcing;
- ✓ Grant application management;
- ✓ Full project management assistance: Technical Specifications Requirements (CCTP), applicants selection, contracting and administrative procedures management;

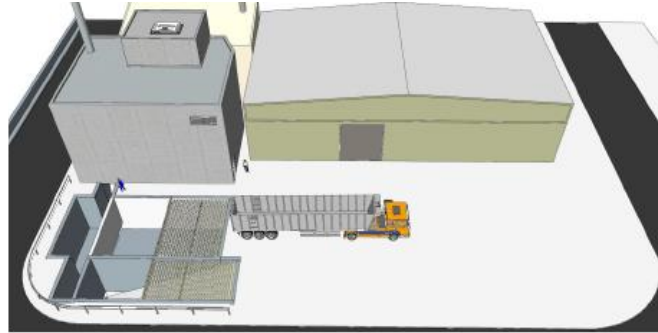
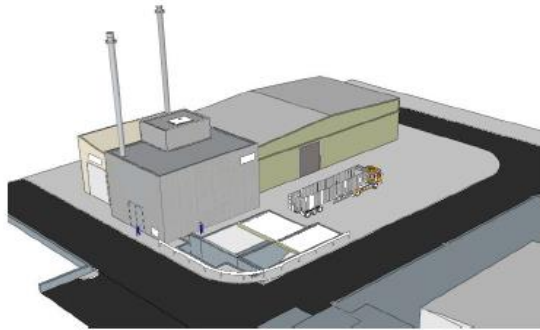


BOILER COMMISSIONING REALIZED IN OCTOBER 2014.

2016/2017 EXERGIA PROJECT REALIZATION: DISTILLERY IN OCCITANIE REGION (6T/H STEAM)

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EXERGIA Company Profile



**Planned
commissioning for
April 2017**

EXERGIA ENGINEERING MISSION COVERS ALL SCALE OF THE PROJECT FROM FEASIBILITY TO BOILER OPERATION PLANNED IN APRIL 2017



STORAGE SYSTEM ELEMENTS

- ✓ Underground (recoverable)
- ✓ Ground floor

FUEL TRANSFER TO BOILER:

- ✓ Feeding screw (cheap)
- ✓ Scraper conveyors



PURIFICATION SYSTEM ELEMENTS

- ❖ Filtration: Dust collectors multicyclones ($150\text{mg}/\text{Nm}^3$) + ceramic, baghouse or electrostatic filters ($20\text{mg}/\text{Nm}^3$)
- ❖ Flue gas evacuated through the stack
- ❖ Automatic removal of ashes and soot by conveyor to ash container

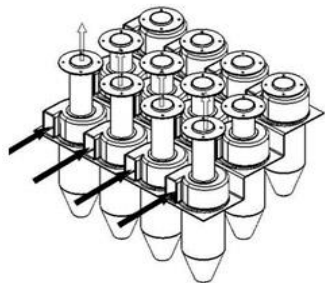
Ash containers



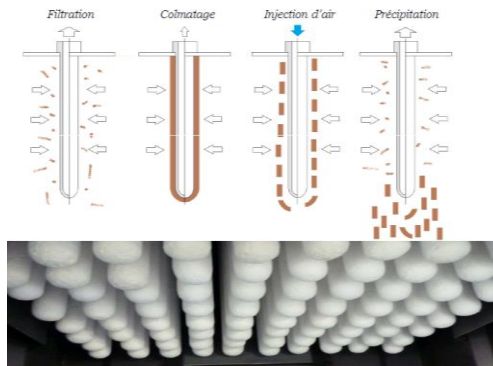
Stack



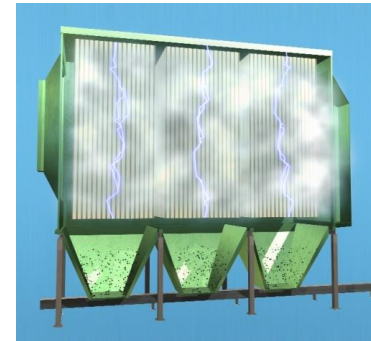
Multicyclones



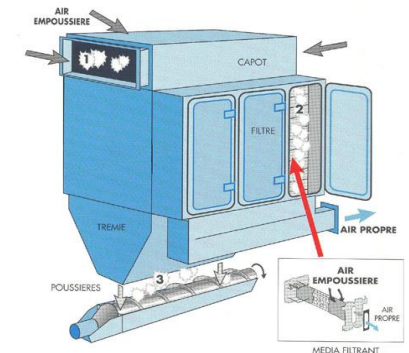
Ceramic filter



Electrofilter



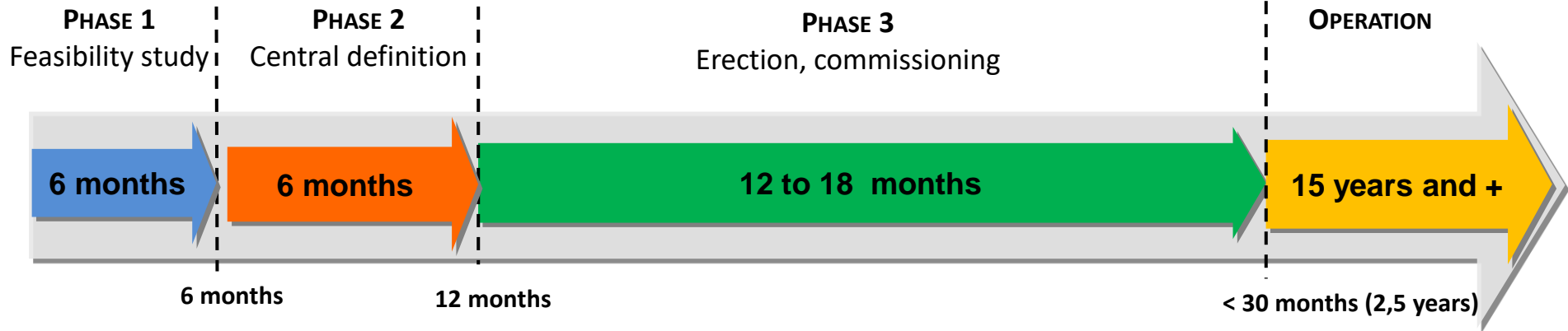
Baghouse filter



ENERGY PROJECT MILESTONES

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EXERGIA Compagny Profile



PHASE 1: Power plant technical definition (study of different scenarios), fuel choosing (biomass, solar, wind...), supply chain validation, administrative procedures and grants sourcing. If this study appears to be positively conclusive, next step to project development.

PHASE 2: Including pre-draft studies, call for projects (CCTP, provider selection), works contracting and administrative procedures management (grants application, Building Permit, Application for operating permit/Environmental management ICPE).

PHASE 3: Works contracts Execution management, Scheduling Management, Works Management and Coordination, Reception operations management and making up the file of Executed Works.

OUR ENGINEERS CAN ASSIST CUSTOMER OVER ALL PROJECT STEPS: FEASIBILITY, FUEL SUPPLY, GRANTS APPLICATION, ADMINISTRATIVE PROCEDURES, ERECTION WORKS AND COMMISSIONING. EXERGIA CAN ALSO PROPOSE TO CUSTOMER A FULL ENGINEERING ASSISTANCE MISSION (AMO) FOR THE ENERGY POWER PLANT IMPLEMENTATION.

ON FACILITIES:

- BOILERS
- ENGINES
- COOLING
- COMPRESSIVE AIR - VACUUM
- ATMOSPHERE CONDITIONING
- LIGHTING



ON PROCESS :

- OVENS
- DRYING, CONCENTRATION...
- PROCESS: CHEMISTRY, PLASTICS, AGRI-FOOD INDUSTRY...



EXISTING FACILITIES OPTIMIZATION:

- ✓ Settings: burners, requirements
- ✓ Limiting loss

IMPROVE ENERGY MANAGEMENT:

- ✓ Regulation et optimized management
- ✓ Energy supervision

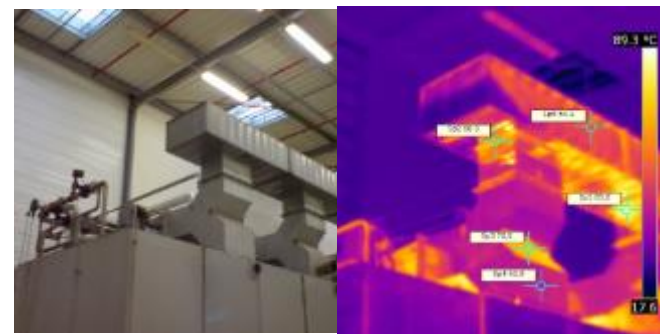
HIGH-PERFORMANCE EQUIPMENT IMPLEMENTATION:

1 - Facilities :

- ✓ High-performance engines, ESC
- ✓ HP lighting (T5, LED)
- ✓ Boilers: exchangers...
- ✓ Heat recovery

2 – High-performance process:

- ✓ Best available technologies
- ✓ Ovens, dryers, concentration, presses...





Mobile recorder thermo-Anemo-Manometer with backlit graphic display. Functions: Pressure, Temperature, Speed and Flow by Pitot tube



3 Temperature recorders, Humidity, memory 100000 points with INOX remote probe interchangeable lenght 150 mm, cable lenght 10 m.



Infrared thermometer, thermal infrared camera.

IT equipments:

- ✓ Network server with daily backup;
- ✓ Microsoft Office (Word, Excel, Power Point);
- ✓ Modeling and simulation platform : Microsoft Visual Basic;
- ✓ Thermal modeling software: Coolpack, Thermoptim, SimSol, RETScreen International, Kalibat, Sunny Design, PVsyst;
- ✓ DAO software: DraftSight;
- ✓ A0 printing, color laser printing.

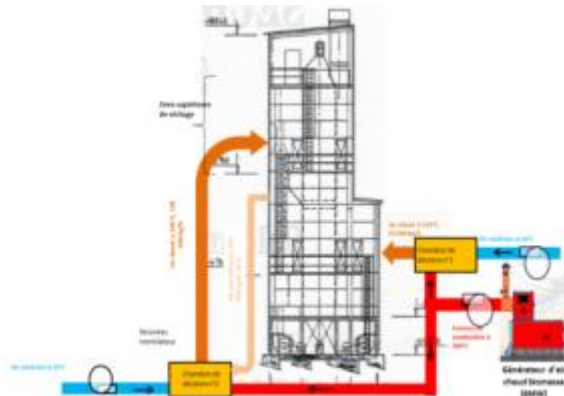
EXERGIA has a strong willingness regarding research and innovative technology in energy efficiency of industrial process.

In partnership with the University of Lorraine, EXERGIA is carrying a project of wood fiber production from waste furnishing elements Wood treatment by selective pyrolysis (Laureate of ADEME R&D call for projects « Sorting and Recycling ».)

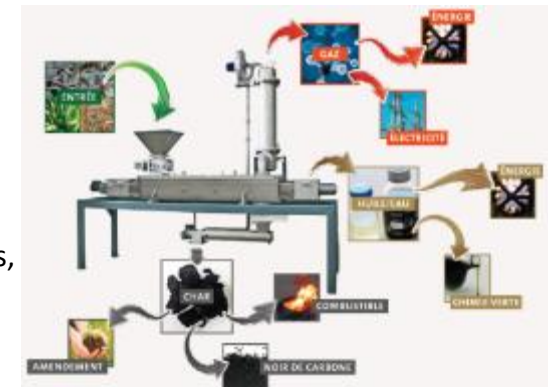


Innovative solutions development of high environmental quality allowing **heating and cooling of large sets** (combination between sorption cycles and biomass boilers).

Research and start-up of technical solutions allowing **process heat waste valuation** (Dehydration industry, gains drying...). One patent filing in process (cereals drying process with heat generator supplied with biomass).



CHARBONBIO: Biomass pyrolysis implementation project for metal industry utilities (Partners: BPI, Bourgogne Innovation, LERMAB, energy companies, potential customers)





THANK YOU FOR YOUR ATTENTION ...

CONTACT :

EXERGIA SAS

PARC TECHNOLOGIQUE DE GENLIS

54 AVENUE DU GÉNÉRAL DE GAULLE

21110 GENLIS - FRANCE

TÉL +33 (0)3 45 18 33 10

FAX +33 (0)9 74 44 58 22

www.exergia.fr

EMAIL : contact@exergia.fr