

## PRODUCTS and SERVICES

Comprehensive tailor-made solutions in the fields of bioenergy and environment.

**PRODESA's** services and products include the following technologies;

### Biomass processing and handling

Raw material conditioning according to production requirements on site.

- Shredding and grinding of forage and alfalfa.
- Debarking of wood logs.
- Wood chipping.
- Woodchips milling.

### Thermal drying

High quality drying technology for all type of biomass (wood wastes, alfalfa, forage, fruit pulp, starch, livestock wastes, etc)

- Low temperature indirect drying; Belt dryer.
- High temperature direct drying; Drum dryer.
- High temperature indirect drying; EcoDry.

### Pellet production

Wood, forage and alfalfa.

- Dry product milling.
- Pelletizing.
- Cooling, conveying and storage of pellets.
- Pellet storage silos.
- Bagging and palleting lines.

### Biomass Cogeneration

Power production associated to the use of thermal energy in low temperature drying systems.

Integration on pellet production plants with a power production range from 600 kW to over 5.000 kW. Customized solutions according to every project demands.

### Gas treatment

Volatile organic compounds (VOCs), and odors management facilities for different application fields (chemical industry, automotive industry, printing and graphic industries, coating and drying processes, etc).

Gas treatment services:

- Risk assessment (HAZOP).
- Energy recovery systems.
- Revamping of existing facilities.
- Supply and sieving of active carbon.

Gas treatment technology:

- Recuperative Thermal Oxidation.
- Regenerative Thermal Oxidation.
- Catalytic oxidation.
- Rotoconcentrator.
- Solvent recovery.
- Gas washing.



# PRÜDESA

## COMPREHENSIVE TAILOR-MADE SOLUTIONS

Since 1999 **PRODESA** design and provide comprehensive tailor-made solutions for the production of solid bio-fuels and the protection of the environment, being a technological and innovating leader in the international arena.

**PRODESA** is a well known engineering company with its headquarters in Zaragoza, Spain. We cover all technological stages in the development of industrial plants such as design, manufacturing and supply under the concept of "Turnkey" or "EPC" projects. With over 15 years experience and many projects developed in Europe, Asia and America, we are a leading company in the field of bio-energies.

Our services include;

- Basic Engineering.
- Process and Manufacturing Engineering.
- Electrical and Mechanical Engineering.
- Manufacturing.
- Assembly.
- Commissioning and Start up.
- Maintenance services.
- After-sales services.
- Spare parts supply.

We keep a branch office in Atlanta (USA) under the name of **PRÜDESA** NORTH AMERICA from where we cover the American markets.

**PRODESA's** professional team consist of a multidisciplinary group of people which make possible to cover every stage of the projects, understanding every single need and reaching the best solution for our customers.

[www.prodesa.net](http://www.prodesa.net)

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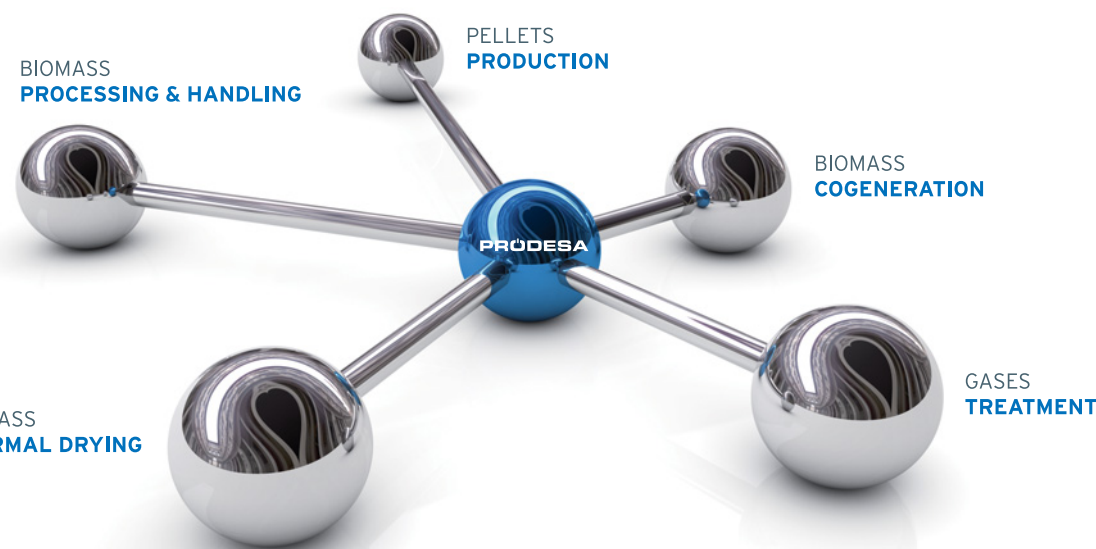


# PRÜDESA



FROM ROUND WOOD TO PELLETS

# PRÜDESA



BIOMASS  
THERMAL DRYING



**Tailor made solutions**  
for **BIOMASS PROCESSING, THERMAL DRYING**  
and **PELLETS PRODUCTION**

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## 1 biomass processing

### biomass handling

#### BIOMASS STACKING & RECLAIMING



#### MOVING FLOORS



#### TRUCK DUMPERS



### biomass processing

#### DEBARKING

- Log de-barking for different diameters, length and sizes.
- Low output bark content.
- Minimal fiber loss.



#### CHIPPING

- High quality chip for all kind of applications.
- Easy access to wear parts, including hydraulic opening.
- Optimized designs for each application.
- Productions up to 1,500 m³/h.



#### WET MILLING

- Double rotation sense.
- Easy access to wear parts, including hydraulic opening.
- Long life time of wear parts.



#### SCREENING

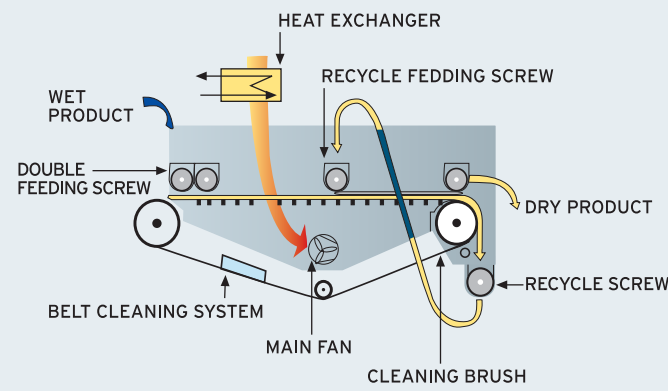
- Screen design according to each application.
- With three outlet sections, for large product quantities and different sizes.



## 2 biomass drying

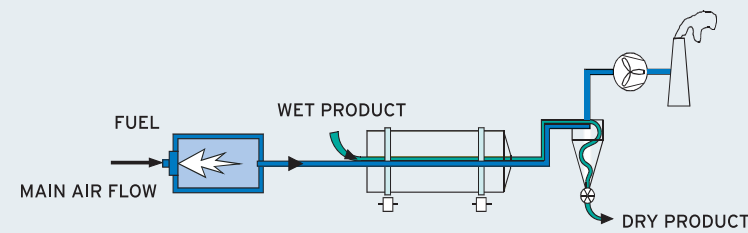
### belt dryer

- Water evaporation. Capacities from 0.5 to 25 ton/h.
- Modular design, easy to increase the drying area.
- Enables to use low temperature energies from other processes.
- Emissions below 5 mg/Nm³.
- High quality of dry product.
- Minimum fire risk.
- Automatic operation.



### drum dryer

- Water evaporation capacity up to 50 ton/h.
- High quality of dry product.
- Low energy consumption.
- Automatic operation.



Drying technology under license

## 3 dry milling and pelletizing

### dry milling

- Depending on the requested specs of pellets, different particle size distribution will be required and will be achieved by means of hammer mills.



### pelletizing

- Pelletizing lines from 2.5 ton/h. Production lines up to 1,000,000 ton/year.
- Pellet quality according to the specifications:
  - Domestic use (ENplus)
  - Industrial use
- After pelletizing, pellets are cooled down and screened in order to achieve the best quality.



## 4 storage



DRY PRODUCT STORAGE



PELLETS TRAIN LOADING



PELLETS STORAGE



BAGGING & PALLETIZING