

Advanced Technology for Thermal Treatment Energy and Recycling of Organic Material

ATTEROM BIOCHAR 1000

Rotating drum pyrolysis reactor for the production of Biochar. Slow and continuous process to improve product uniformity; great operational flexibility and ability to work with heterogeneous and low quality woody materials. Precise control of the process parameters to optimize the chemical-physical characteristics of the final product; on-site and remote monitoring system; intrinsically safe, self-regulating logics control.



BIOCHAR PRODUCTION

- Residual biomass usage
- Slow and continuous process
- Temperature control
- Product uniformity
- On-site & remote control
- Process optimization

MAIN TECHNICAL DATA

- Capacity: 2'000 kg/h (biomass 15% u.r.)
- Fuel inlet power: 10'000 kW
- Max biomass size: 50 mm
- Min biomass size: dust
- Residence time: 45 min
- Process temperature: 250-500 °C
- Start up time: 40 minutes
- Start up fuel: LPG or GN
- Self consumptions: 140 kW
- Available thermal power: 4'000 kW



MAIN COMPONENTS

- Biomass feeding hopper
- Pyrolytic reactor
- Start up burner
- Pyrogas burner
- Biochar discharge system
- Thermal recovery (option)
- Exhausts chimney (option)

Rotating drum pyrolysis
reactors design

Feasibility studies

Projects

Experimental campaigns
in dedicated Test Facility

Turn-key plants supply

Existing plants retrofit

O&M services

R & D programs

PYROLYTIC PLANTS

TORREFACTION

CARBONIZATION

PYROLYSIS

PYRO-COMBUSTION

PYRO-GASIFICATION

PYRO-DECARBURATION

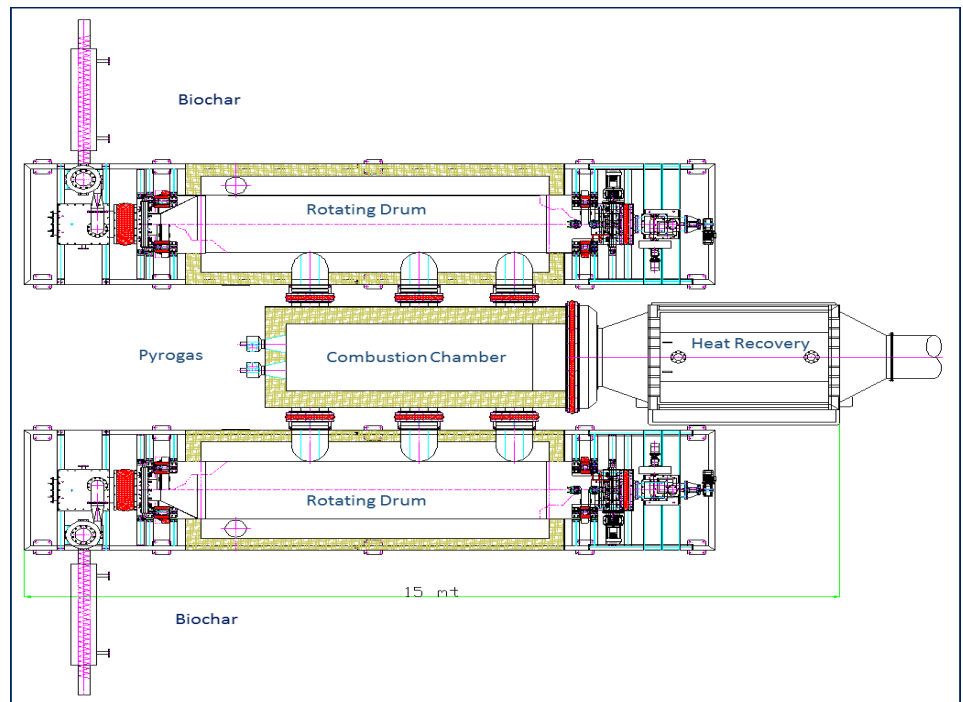
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ATTEROM BIOCHAR 2000

LAY-OUT



DATA SHEET

| Item | Unit | Value |
|----------------------------------|--------------------|-----------|
| Feeding material | woody biomass | |
| Biomass Inlet Flow (1) | kg/h | 2'000 |
| Biochar Outelt Flow (mean value) | kg/h | 600 |
| Minimum bulk density | kg/m ³ | 250 |
| Biomass Inlet Power | kW | 10'000 |
| Max biomass dimensions | mm | 50 |
| Min biomass dimensions | mm | dust |
| Residence time | min | 45 - 60 |
| Start-up time | min | 40 |
| Start-up burner | | |
| fuel | type | NG or LPG |
| power | kW | 4'000 kW |
| Pyrogas combustion temperature | °C | 1250 |
| Exhausts gas temperature | °C | 900 |
| Exhausts gas flow | Nm ³ /h | 86'400 |

EMISSIONS

| Material | Woody Biomass |
|---|--------------------------|
| Exhausts flow | 8'640 Nm ³ /h |
| Thermal power | 8'800 kW |
| %vol N ₂ exhausts t.q. | 68.79 |
| %vol O ₂ exhausts t.q. | 7.77 |
| %vol CO ₂ exhausts t.q. | 11.68 |
| %vol. H ₂ O exhausts t.q. | 11.76 |
| Contaminants | |
| (ref: 11%vol O ₂ , dry exhausts) | |
| dusts | < 50 mg/Nm ³ |
| CO | < 200 mg/Nm ³ |
| NOx | < 400 mg/Nm ³ |
| SOx | < 200 mg/Nm ³ |

(1): indicative woody biomass characteristics

4.6% ashes, 15% relative humidity, LHV 15'760 kJ/kg