



## **Torr-Coal Group**

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# **Torr-Coal Torrefaction technology**



## Basic principles RDE Torrefaction process

- **Choice for torrefaction of a**
  - **wide range of biomass.**
- **Development of a new process with**
  - **Use of existing machines to**
  - **Lower the present risks of an innovative process.**



## Torrefaction technology

- **Torrefaction technology for pure biomass**
  - Woodchips
- **Torrefaction technology for impure biomass**
  - SRF



## Torrefaction process for pure biomass

- **Pre-treatment**
  - Sieving
  - Sizing
  - Drying
- **Torrefaction**
- **Final treatment**
  - Pelletizing



## Torrefaction process for pure biomass

- **Demonstration production line for the torrefaction of woodchips in operation since October 2010.**
- **Capacity input 80.000 t/y and output 35.000 t/y**





## Torrefaction process for SRF

- **Purchase of SRF**
- **Torrefaction**
- **Final treatment**
  - Dechlorination
  - Pelletizing



## Production plant SRF

- **Municipal Solid Waste**
- **SRF production plant**
  - Non combustible materials (recycling)
  - **SRF (CEN/TS 15359)**
    - High calorific value: 16-18 MJ/kg
    - High biomass share: 60-65%
- **Current applications:**
  - Cement
  - Lignite power plant
- **Future applications:**
  - **Torrefaction**

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## Characteristics SRF

- Fluffy
- Low bulk weight
- Tough / fibrous
- Not millable
- Moist
- Inhomogeneous physical composition
- Biological active
- Limited storage possibilities
- Not applicable in existing infrastructures





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## Characteristics torrefied SRF

- Biomass-share 60% - 100%
- High calorific value (>23 MJ/kg)
- Millable (HGI 40-60)
- Homogeneous composition
- Low chlorine- and sulfur content
- Biological inactive
- Almost odourless
- Increased bulk weight
- Applicable in existing infrastructures





## Challenges in general

- **Torrefaction unknown**
- **Legal framework**
- **Each country own regulations**
- **No common understanding of product, process and sustainability**
- **Supply chain raw materials**



## Challenges process

- Different types of raw materials
- Changing process conditions
- Hot spots
- Various requirements customers



**Thank you for your attention**



## Contact

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