



Torr-Coal Group

JJM Brouwers MBA
Managing Director



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



TORR COAL

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**

TORR COAL

Characteristics SRF

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





TORR COAL

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

JJM Brouwers MBA

**Torr Coal Group
Nusterweg 69
NL - 6136 KT Sittard
Tel.: +31 - 46 - 4775170
Mob.: +31 - 651 - 989938
Email: j.brouwers@torrcoal.nl**