

Bioenergy from WOOD

Efficient conversion of biomass to heat and power

Werner EMHOFER, www.froeling.com

Fröling biomass boilers

- One of the largest industry players— *output from 10-1500kw*
- More than 60 years of experience – *family owned company*
- Globally successful – *active in 35+ countries worldwide*



Energy from Biomass – the neglected child?

Solar, wind, ...

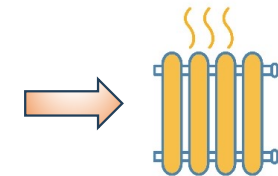
...are very popular and in every media

Energy from Biomass especially **HEAT** is neglected

Heat is still a huge part of energy consumption, not only for **room heating & DHW** but also **industrial processes**.

One transformation process with an efficiency of ~95%

High temperatures: 90° / 130° / steam / thermal oil
















Advantages of biomass

- *Renewable* just like sun and wind
- CO2 *neutral* / climate goals
- On top of that we can:
 - ⇒ *Stock it*
 - ⇒ *Transport it*
 - ⇒ *Turn it on / off*
 - ⇒ *Grow it on purpose*
- ⇒ *advantages like fossile fuels*
- ⇒ *customer can buy it directly at low level (democratic & local)*

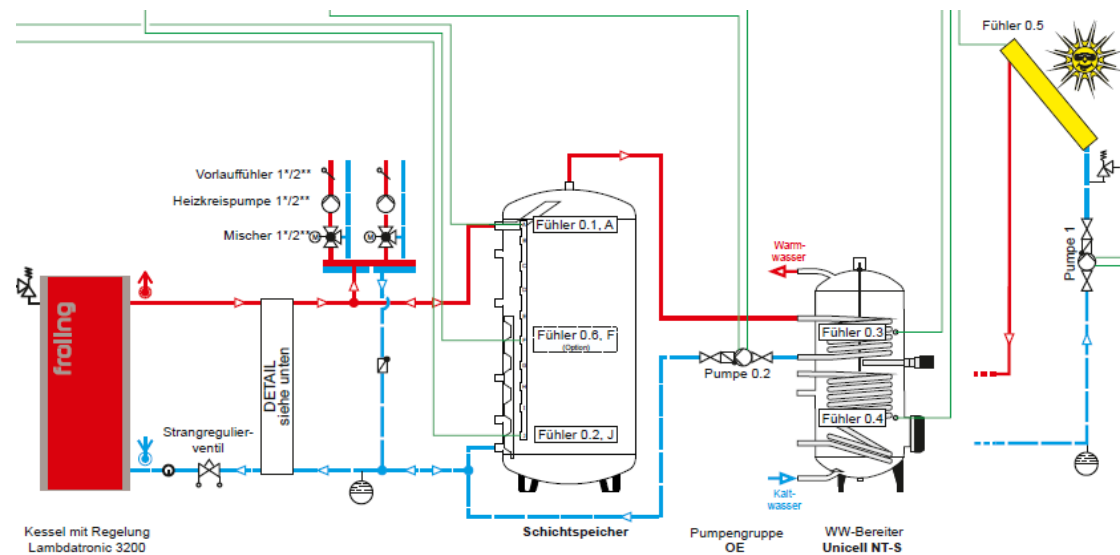
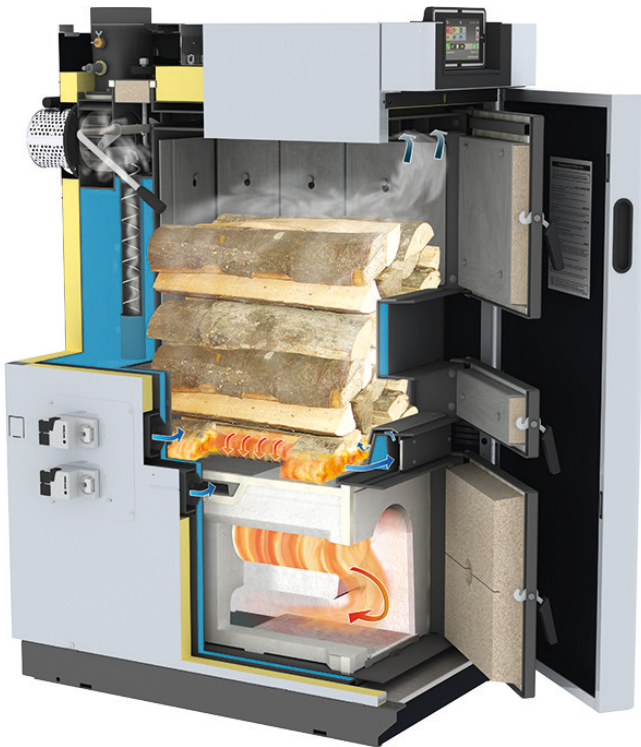


Fröling Solutions – Fröling Products

| | | | | |
|--|--|--|---|---|
| Room & DHW heating residential 10-200kw |  |  |  |  |
| Room & DHW heating commercial 200 – 1500kw | |  |  |  |
| Process & industrial heat: Drying, pasteurizing Use of available waste wood 200 – 1500kw |  |  |  | |
| Electricity & heat 56kw el & 120kw heat | |  |  |  |

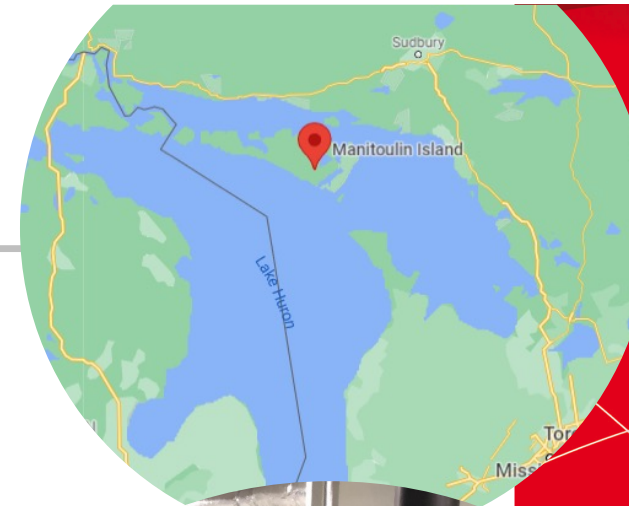
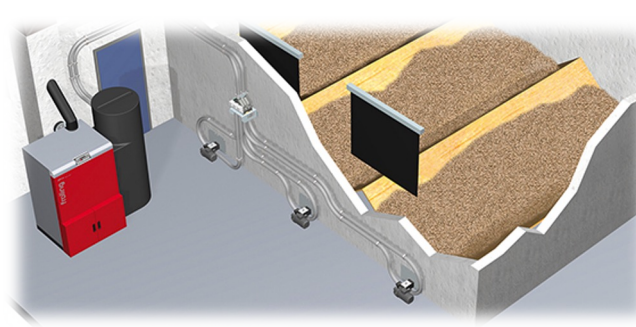
Example #1: Room heating domestic

- Available fire wood
- Used for central hydronic heating



Example #2 Residential pellets

- First Nation community Wikwemikong, located on Manitoulin Island, Canada
- Community *switching from heating oil to wood pellets*
- 140 t wood pellet storage hub & pneumatic delivery truck
- Currently *Wikwemikong has converted 1.4MW of oil heat to wood pellets.*
- Net annual **GHG emission reduction is ~890 tCO₂**

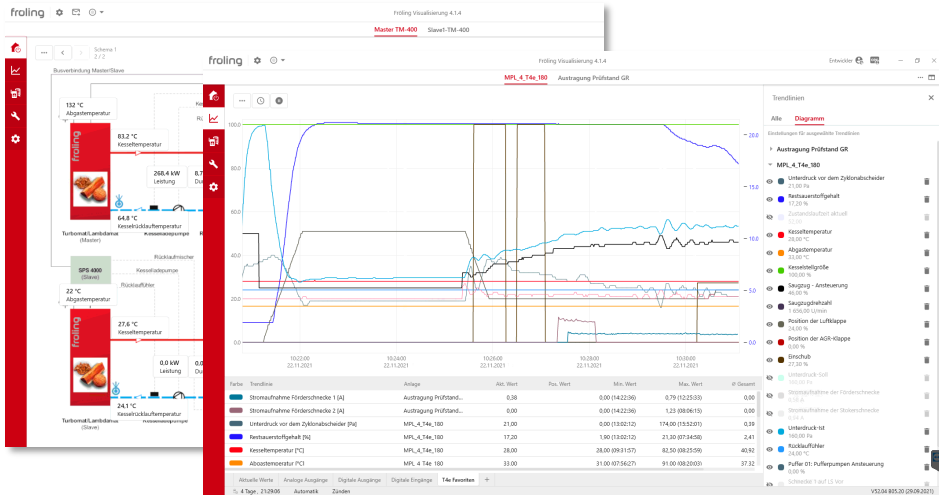


Example #3

Fjordland College, NZ

2 x 350kw

- Pellets and wood chip boilers in NZ
- Schools are converted from coal
- Output avg. 100-1.000 kw



FIORDLAND
COLLEGE
New Zealand

A place where all can thrive

Enrol Now

Ascot Community School

James Hargest College Senior Campus

East Gore School

Ruru Specialist School

Tisbury School

West Gore School

Makarewa School

Mossburn School

Parata Residence

Wallacetown School
A centre of Environmental Excellence

Example #4: Available wood - recycling



Recycling
centre in
Upper Austria



froling 

Example #4: Available wood - recycling



Waste wood is collected for recycling.

It will be chipped and burnt.

The heat is used for another recycling process

Example #4: Available wood - recycling

In this case the heat is used in order to keep the **recycled oil** (from private households and restaurants) at a certain viscosity.

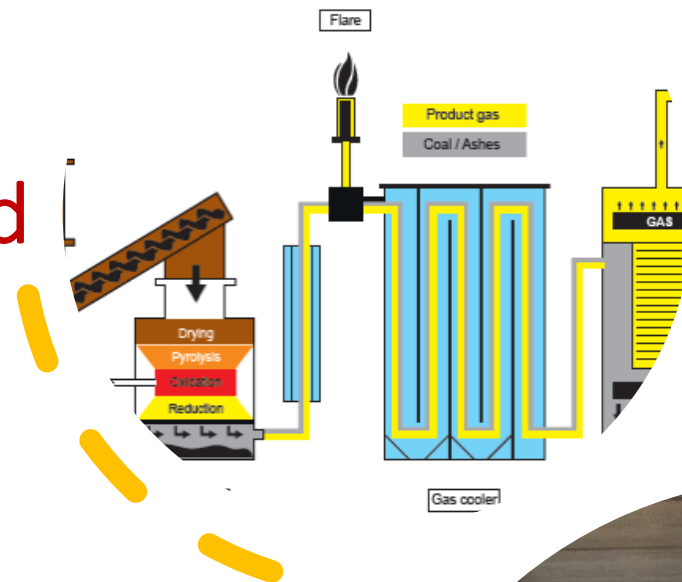
The treated oil is sold to refineries which **make biodiesel** out of it.



CHP 50: heat & power from wood

- 56kw electric & 120kw thermal
- Independent production of electricity
- Wood chips are turned into wood gas
- Wood gas is combusted in gas engine
- Engine/generator makes electricity

In district heating, wood processing,
large hotels/SPA



Example #5: 2 x CHP – Hotel Molzbachhof, AT



What Fröling stands for

Biomass solutions for heat and power

Quality made in **Austria**

Climate neutral / **renewable** / fit for the future

Customer oriented **Pioneer** & Innovator

www.froeling.com

