

Wood Heat Maine - Education, outreach
and technical assistance in support of commercial and
community-scale modern wood heating in Maine.

2nd Maine Modern Wood Heat Symposium - Augusta, ME Feb. 5, 2019

CAL·U·WE
Biomass Heat & Power Solutions

Spanner Re² GmbH Small- Scale Wood Chip Fueled CHP

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Caluwe, Inc. – Biomass Heat & Power Solutions

1993 – 2005: Product Testing & Certification; Apragaz (B) and TUV-SÜD (US)

2005 - Present: Caluwe, Inc. - **Import, Distribution and Sales:**

- Hydronic wood stoves and fireplace inserts: **Walltherm** (I) & **Spartherm** (D)
- Hydronic wood fired cook stoves: **Pertinger** (I) & **Lacunza** (Es)
- Pellet Boilers: **Windhager** (A) >>> USA & Canada
- Wood Chip Boilers: **Heizomat** (D) >>> USA
- Biomass CHP: **Spanner Re²** (D) & **Burkhardt Energy** (D) >>> USA

Caluwe, Inc. – Biomass Heat & Power Solutions

- Steam from wood chips: Kolhbach/Wisewood Energy (400 kW – 2 MW, ASME)
- Emission control systems: Catalytic, ESP's & Cyclones >>> USA & Canada
- Wood chip storage bins with integrated drying system:
8'x8' - 10'x10' - 12'x12' - 16'x16' - 20'x20'
- Thermal Storage Tanks: From 120 gallons up to 20,000 gallons
- Installation & Service: MA, Southern ME & NH
- Heat sale contracts to government & municipal entities (MA only)
Wood chip boilers / CHP (similar to Solar PV > roof lease)
- Heizohack wood chippers

Imported Brands

Private Labeled Brands



Spanner



www.holz-kraft.de

Commercial-Scale Dry-Chip Combined Heat & Power System and Chip-Drying Technology

Wood Chip CHP: Spanner Re² (D) >> us

Models HKA10, HKA35, HKA45, HKA49 and HKA70

HKA10 – 9 kWe & 22 kWt or 75,000 BTU/hr

HKA35 – 35 kWe & 80 kWt or 119,400 BTU/hr

HKA45 – 45 kWe & 102 kWt or 348,000 BTU/hr

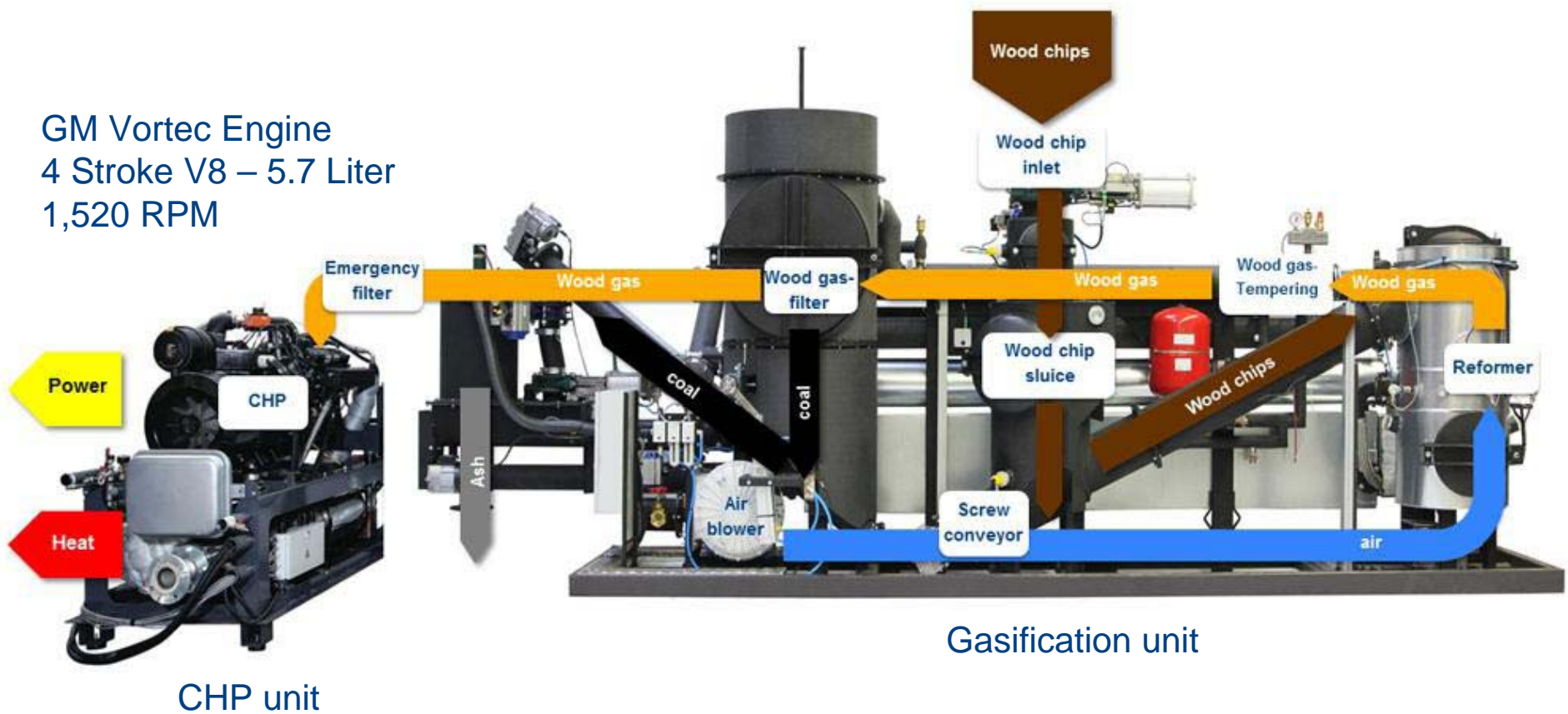
HKA49 – 49 kWe & 111 kWt or 379,000 BTU/hr

HKA70 – 68 kWe & 123 kWt or 419,500 BTU/hr



Operating principle of the Spanner Wood-Power®-Plant

(Face Lift = Post Reformer)



Wood Chip CHP: Spanner RE² (D) >> us

Model HKA10 – 9 kW_e & 22 kW_t



Wood chip drying technology

Wood chips for use in a Wood-Power-Plant must not exceed a water content of 13 % resp. a moisture content of 15 %!

However: Fresh material (from the forest) has a moisture contents of over 100 %

→By simple storage (natural predrying) of wood chips, moisture contents cannot be decreased to < 40 %

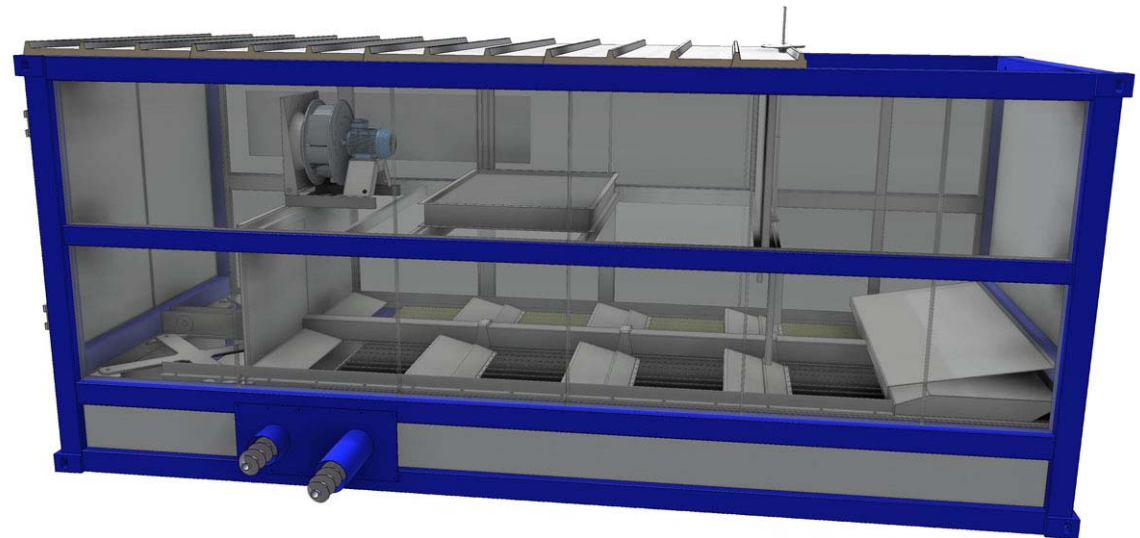
→Therefore wood chips have to be technically dried to achieve the required moisture content of < 15 %.

Spanner Re² offers a range of drying units:

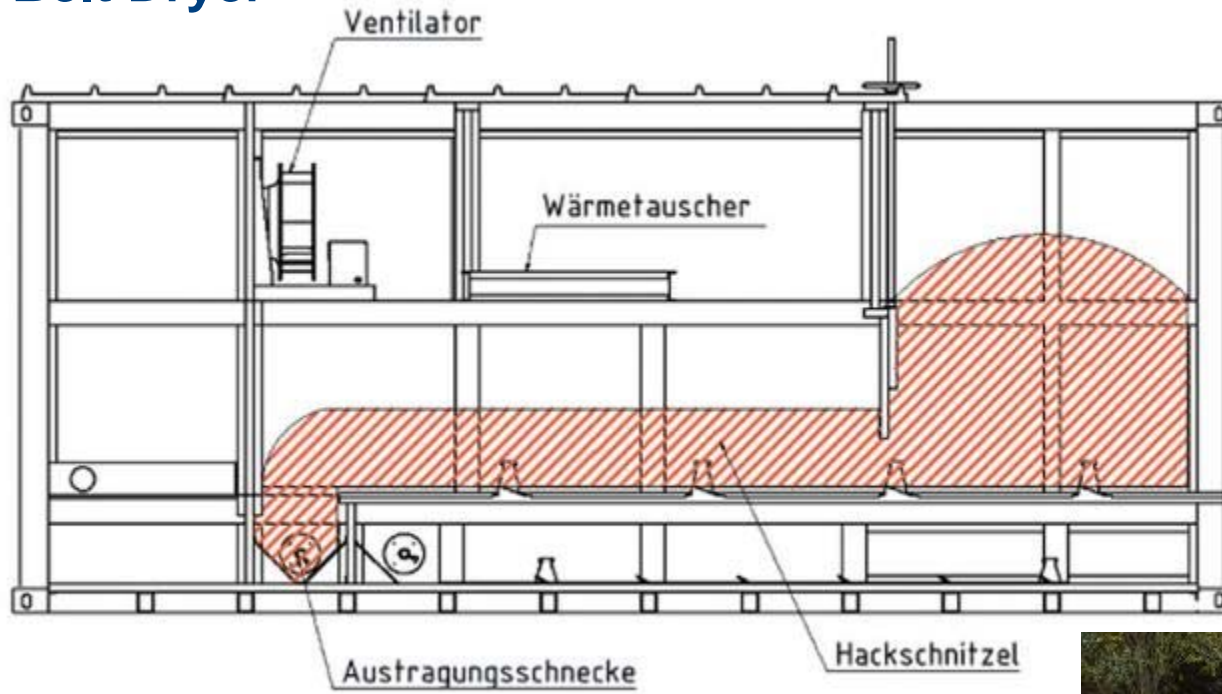
Bin drying
Slanted floor drying
Mobile silo
Container drying
Waggon drying
Double bin drying
Push floor drying

Push floor drying

- For approx. 15 – 20 m³/day or rather 5500 m³ per year
- The big difference: permanent drying resp. Discharge of wood chips
- A storage bin for dry wood chips is required !!!!!
- Fan and heat exchanger press warm air through the floor from below
- Drying time is adjusted by means of temperature comparisons above and below the wood chips
- **Dimensions:** 6 m x 2,4 m x 3 m



Belt Dryer



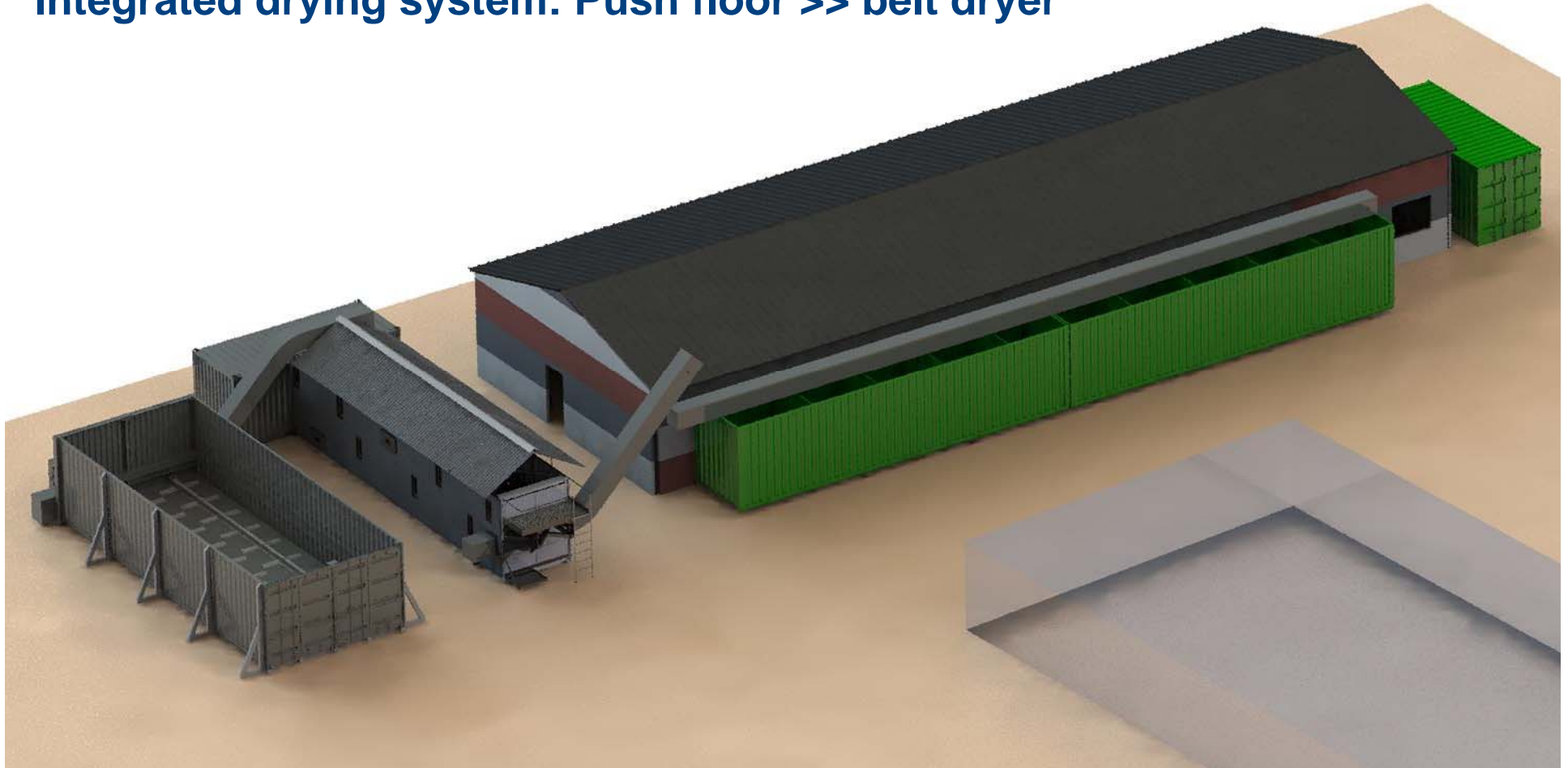


Cascade System





Powerplant with Integrated drying system: Push floor >> belt dryer



Biomass Thermal is competing with:

- Wind
- Solar PV
- Solar Hot Water
- Air/ground source Heat pump

All non-emitting renewable energy generators

Important for public opinion/perception:

- Biomass technology needs to be clean (PM2.5 level)
- Biomass technology needs to be efficient (>75%)
- Responsible use of the sourced biomass fuels (MC)
- Sustainable sourcing of biomass fuels

Thank you for your attention

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