

# Biomass Boilers in Modern Day North America

Viessmann Manufacturing  
Company Inc.



# Challenges

- Fuel Supply
  - Stable fuel costs
  - Availability
  - What is the right fuel?
  - Fuel quality



# Challenges

- Social Impact
  - Emission footprint
  - Noise
  - Smoke
  - Odours
- Location
  - Land availability
  - Emission footprint
  - Traffic implications



# Why Wood Pellets?

- Most uniform/consistent wood fuel
- Multiple vendors (security, availability)
- Low ash content (less maintenance)
- Most energy dense wood fuel
  - Smaller storage facilities required
  - Less truck traffic
  - Less transportation costs
- Low emissions (due to low ash content and low moisture content)



## Show Case – Grant County, OR Regional Biomass Development

- Rural county in eastern Oregon
- approx. 8000 inhabitants spread over 12.000 km<sup>2</sup>
- Complete county is off the natural gas-grid (most neighbouring counties are as well)
- Logging industry is important part of economy



## Show Case – Grant County, OR Regional Biomass Development

- US Forest Service helped funding a pellet mill for rural economic development project
- 30.000 tons/yr pellet production
- Forest stewardship materials from local forests as feedstock
- Could supply fuel for about 100 commercial biomass projects



## Show Case – Grant County, OR Regional Biomass Development

- Public buildings in the Grant County and neighbouring counties now will be converted to pellet boilers
- Pellet prices are low due short distances and local involvement
- Plant brings supplies 3 local projects
  - Grant County Airport / USFS Airbase
  - Blue Mountain Hospital
  - Harney District Hospital

# Project Examples

## Grant County Airport / USFS Airbase

- Pyrot 220 (0.75 MMBtu)
- Fuel usage 120 tons pellets p.a.
- USFS Facility



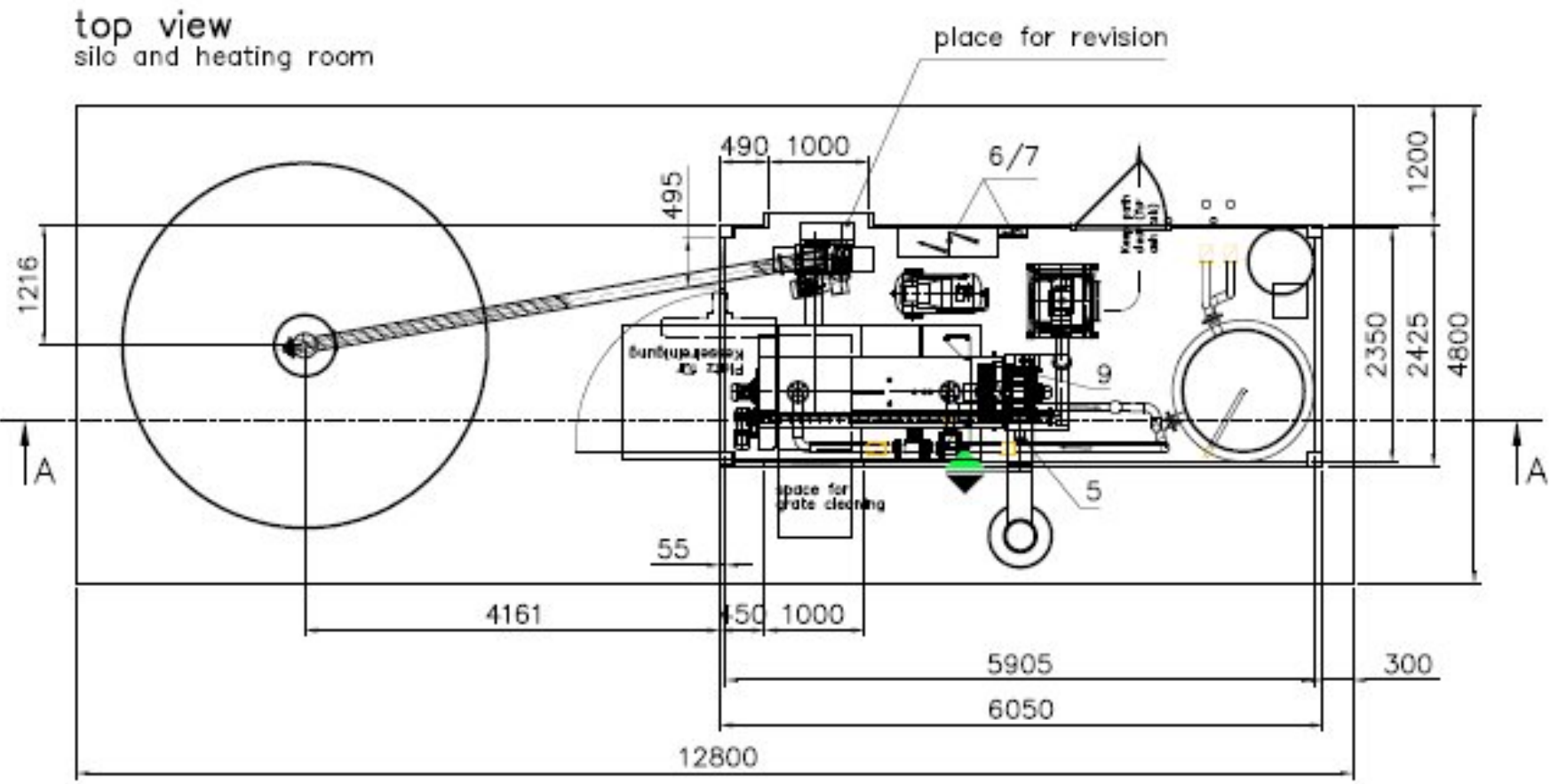


# Project Examples

## Grant County Airport / USFS Airbase



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# Project Examples

## Blue Mountain Hospital

- Pyrot 540 (1.8 MMBtu)
- Fuel usage 300 tons pellets p.a.
- Heats critical access hospital for remote rural community



# Project Examples

## Harney County District Hospital

**KÖB**

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- Pyrot 150 (0.51 MMBtu)
- Fuel usage 55 tons pellets p.a.
- installed 2007
- Monthly fuel savings now pay for a new MRI scanner
- Amortization Period of roughly 5yrs



# Showcase – Southeast Alaska Sealaska Plaza – Juneau, AK



- 8400 tons CO2 savings per annum
- Pyrot 220 (0.75 Mbtu)
- Over 1 M\$ savings over 25 years
- Displacing 35000 gallons of oil per year
- Showcase project for SE Alaska
- Modern VI metal mesh filter



# Case Study La Cité Verte, Downtown Quebec City

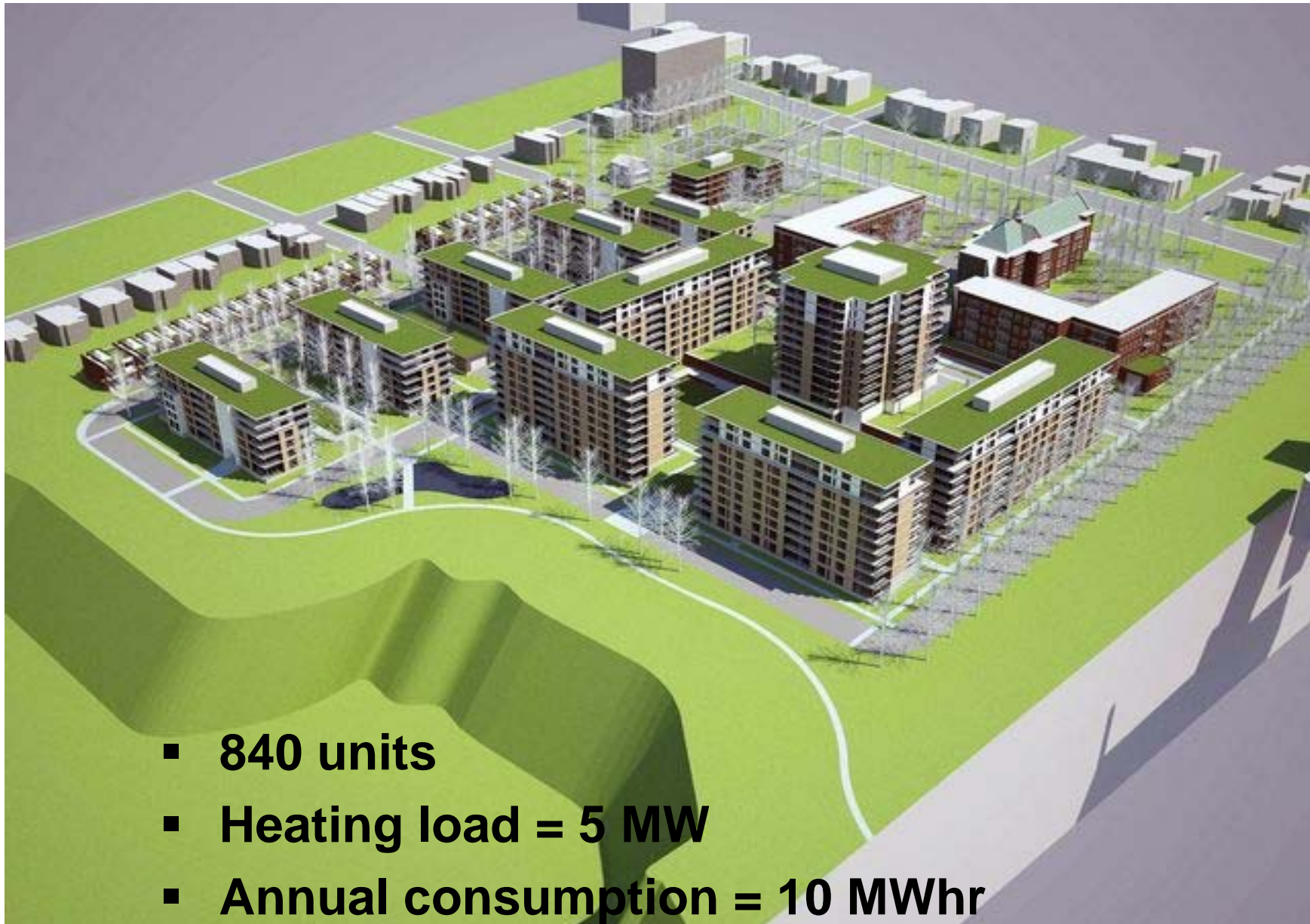


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- A real estate project that follows a sustainable development approach
- More than 840 homes and commercial spaces grouped around collective equipment
- A unique example of an urban development project respecting the tenets of LEED for neighbourhood development



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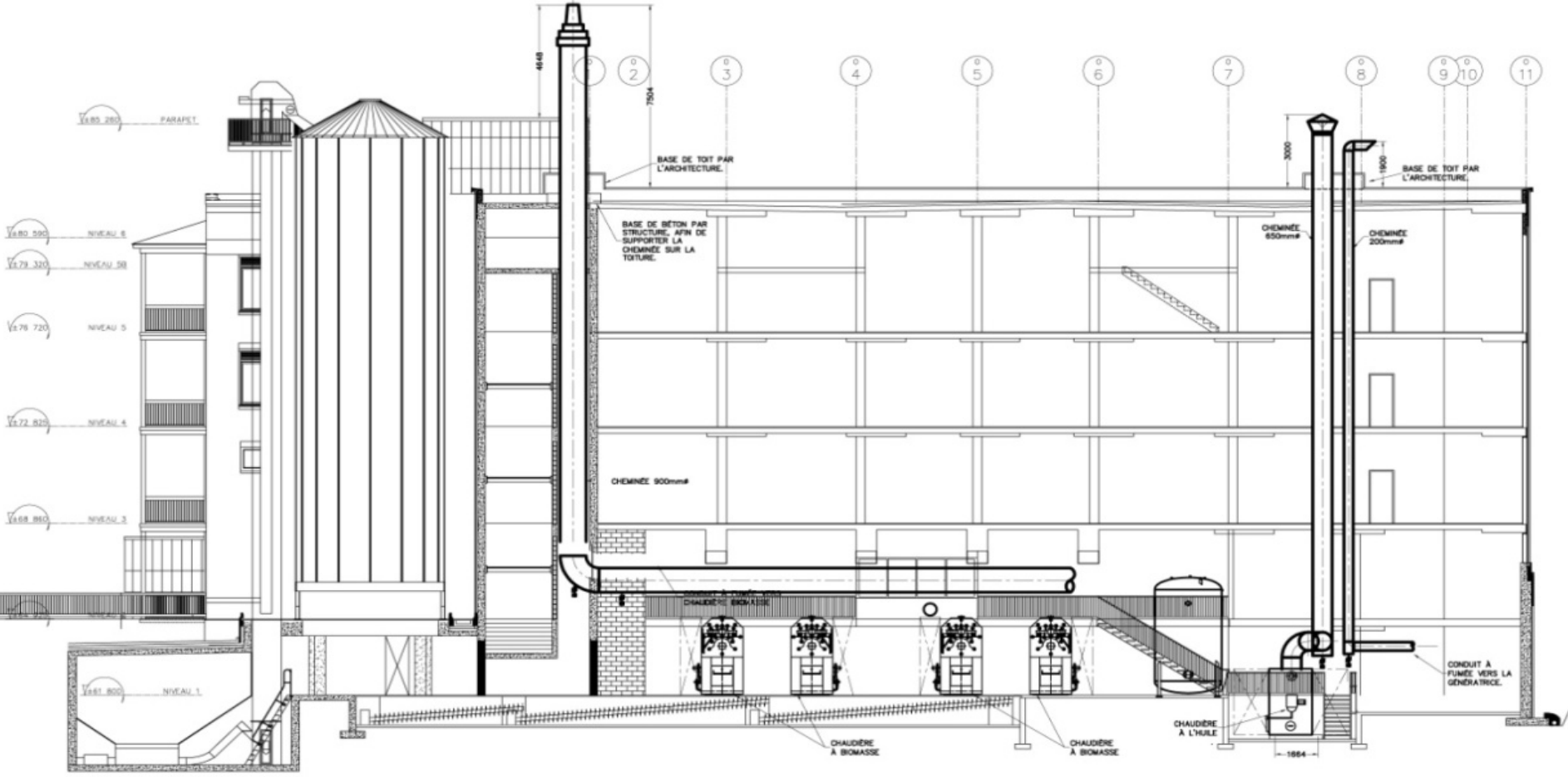
# Components of the system

- A biomass boiler plant of 5 MW, with two 5,500 gallon buffer tanks and an emergency biodiesel boiler of 5,2 MW
- A hydronic distribution network of 2 miles
  - 8" to 1" diameter pipes
  - Supply = 90°C (195°F)
  - Return = 50°C (120°F)
  - 1 pump of 40 hp with variable speed drive winter pump
  - 1 pump of 15 hp with variable speed drive summer pump
- 44 district heating sub-stations, 15 to 1,400 kW





# Biomass boiler plant



**COUPE DE LA CHEMINÉE**  
ÉCHELLE: 1/100

# Biomass boiler plant

- 2600 metric tons/year, approx. 75 truck loads
- 9 tons of residue/year



# Conclusions

- Biomass Boilers can achieve very fast amortization periods
- Proven highly sophisticated biomass boiler technology is available (ten thousands of installations worldwide)
- Biomass boilers have a significant impact on local sustainability
- Biomass Boilers are a tremendous opportunity especially for rural, off the natural gas grid markets



# Questions and/or Comments?



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For detailed product information  
please visit me at our trade booth.

