

Pellet
Fuels
Institute

2010 ANNUAL CONFERENCE

JULY 18 – 20 – The Grove Park Inn – Asheville, NC

CHP/PELLET PLANTS

-Combined Heat and Power and Pellets -

Presentation prepared by;

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CHP/Pellet Plant

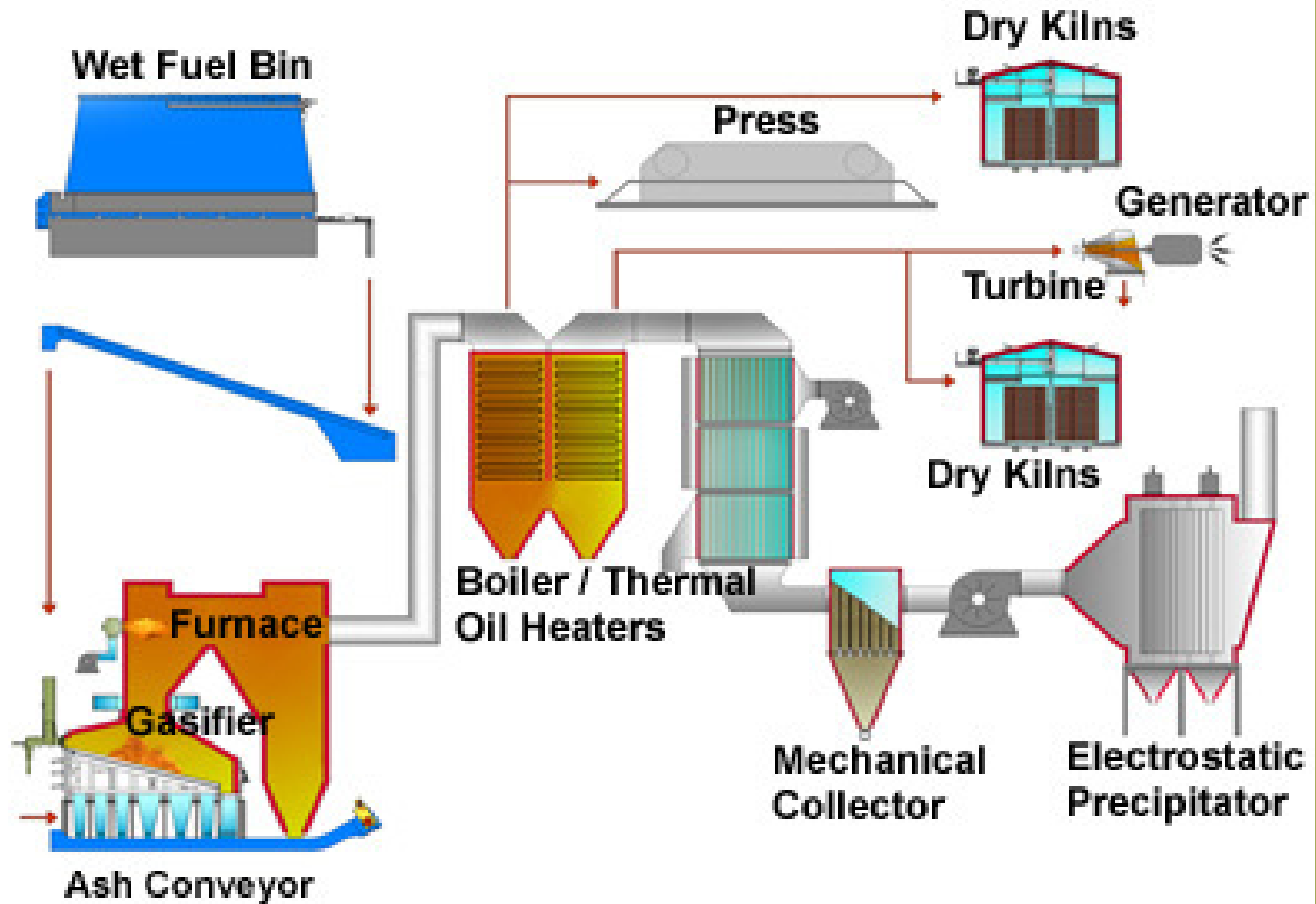
Presentation Content

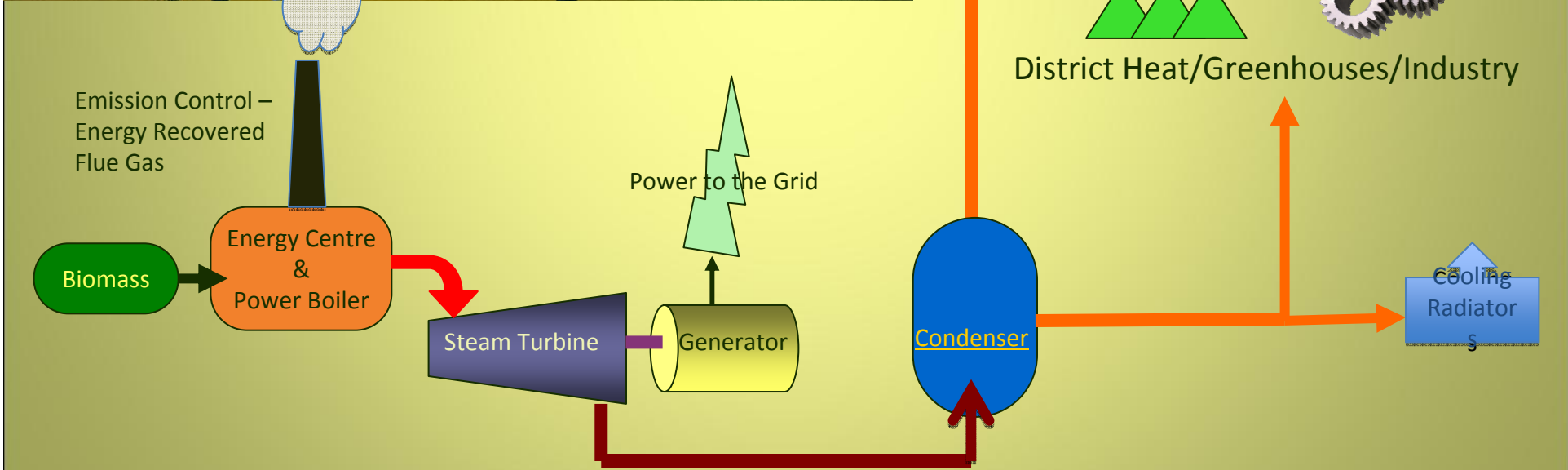
- PROCESS – Description and Options
- TECHNOLOGY – Available for CHP/Pellet Plants
- ECONOMICS – Gut check, when does it make sense
- OPERATIONS – Challenges and Opportunity's

– Combined Heat & Power –
“means utilizing all thermal values of thermal power production”



An example of true CHP





BioFibre Drying for Wood Pellet Production



District Heat/Greenhouses/Industry



Cooling Radiators

CHP/Pellet Plant – PROCESS – Description

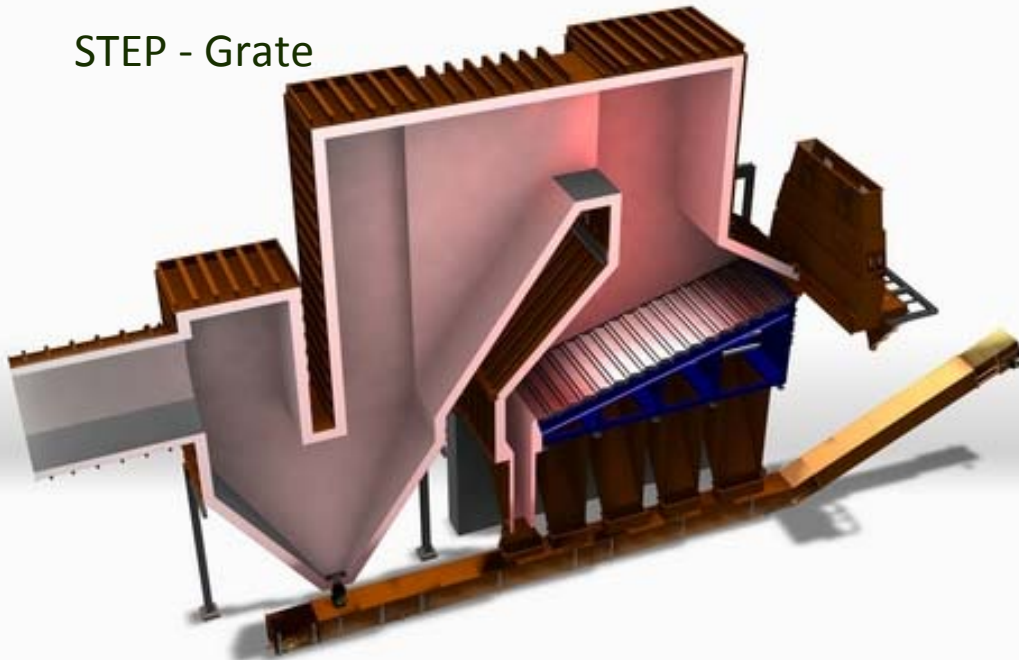
CHP/Pellet Plant – Balcas – Invergordon, Scotland



-100,000 MT – P/A wood pellets
- 5 MWe

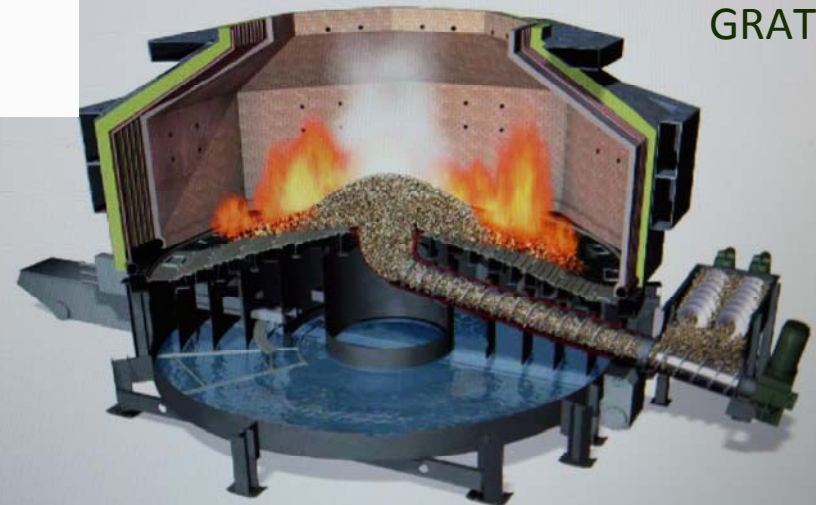
CHP/Pellet Plant – TECHNOLOGY – Energy Systems

STEP - Grate

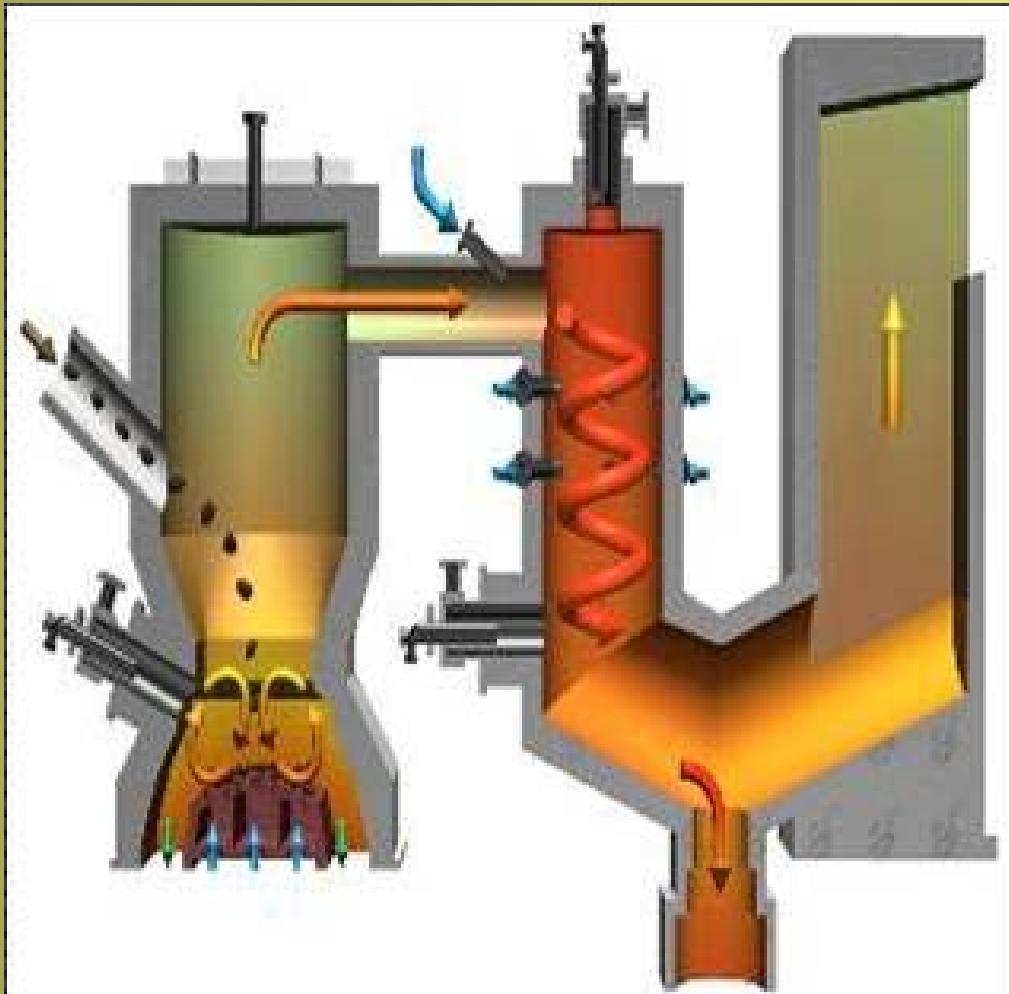


Traveling Grates

ROTATING
GRATE



CHP/Pellet Plant – TECHNOLOGY – Energy Systems

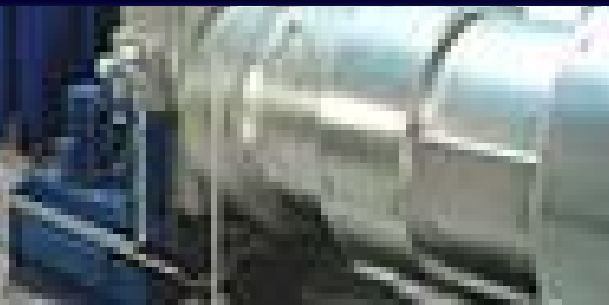
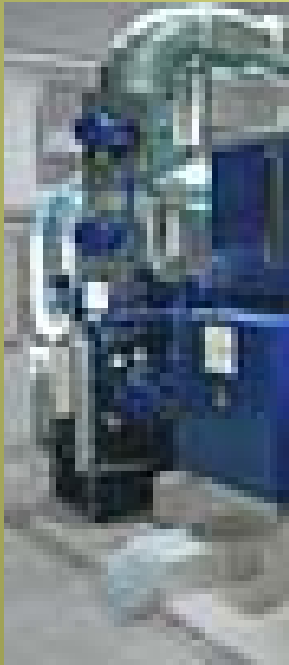
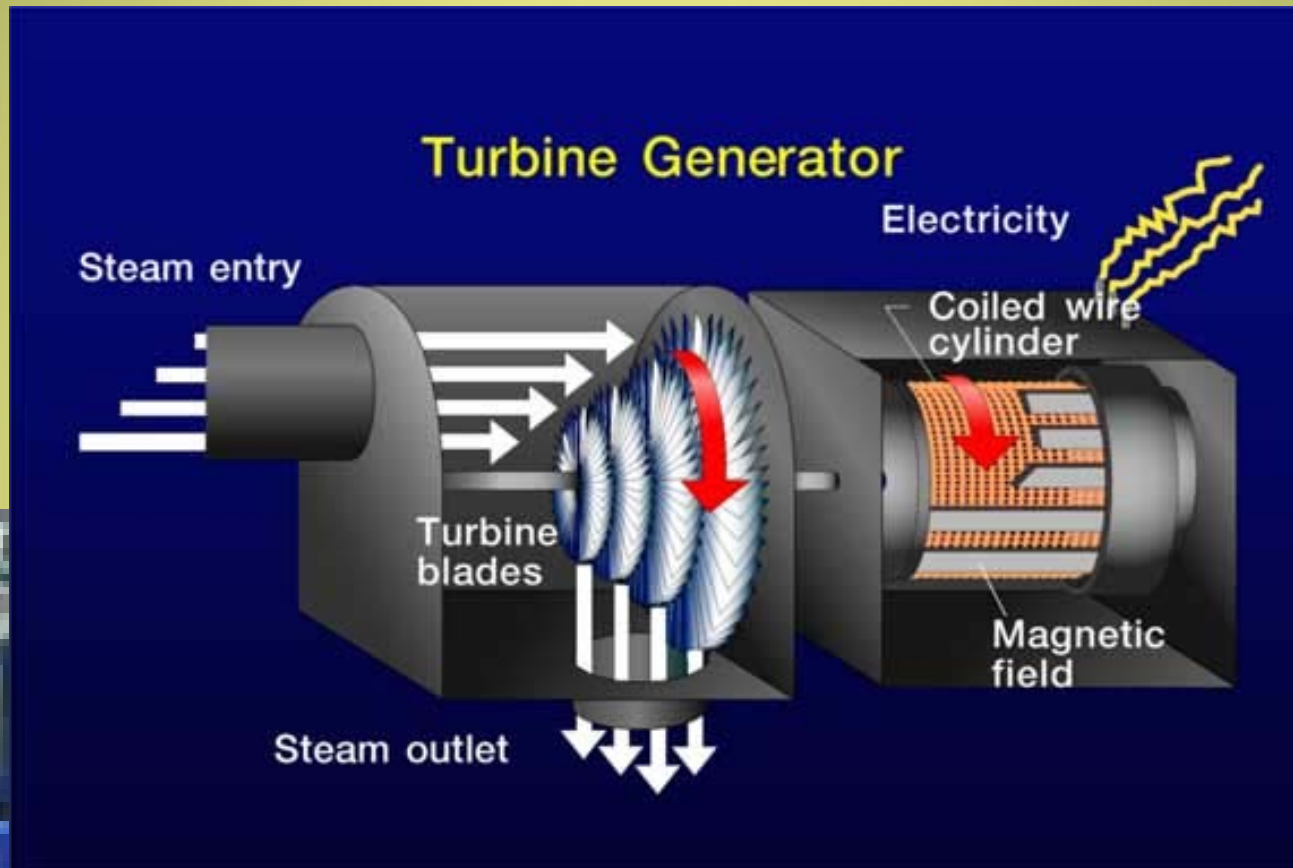


Fluidized Bed

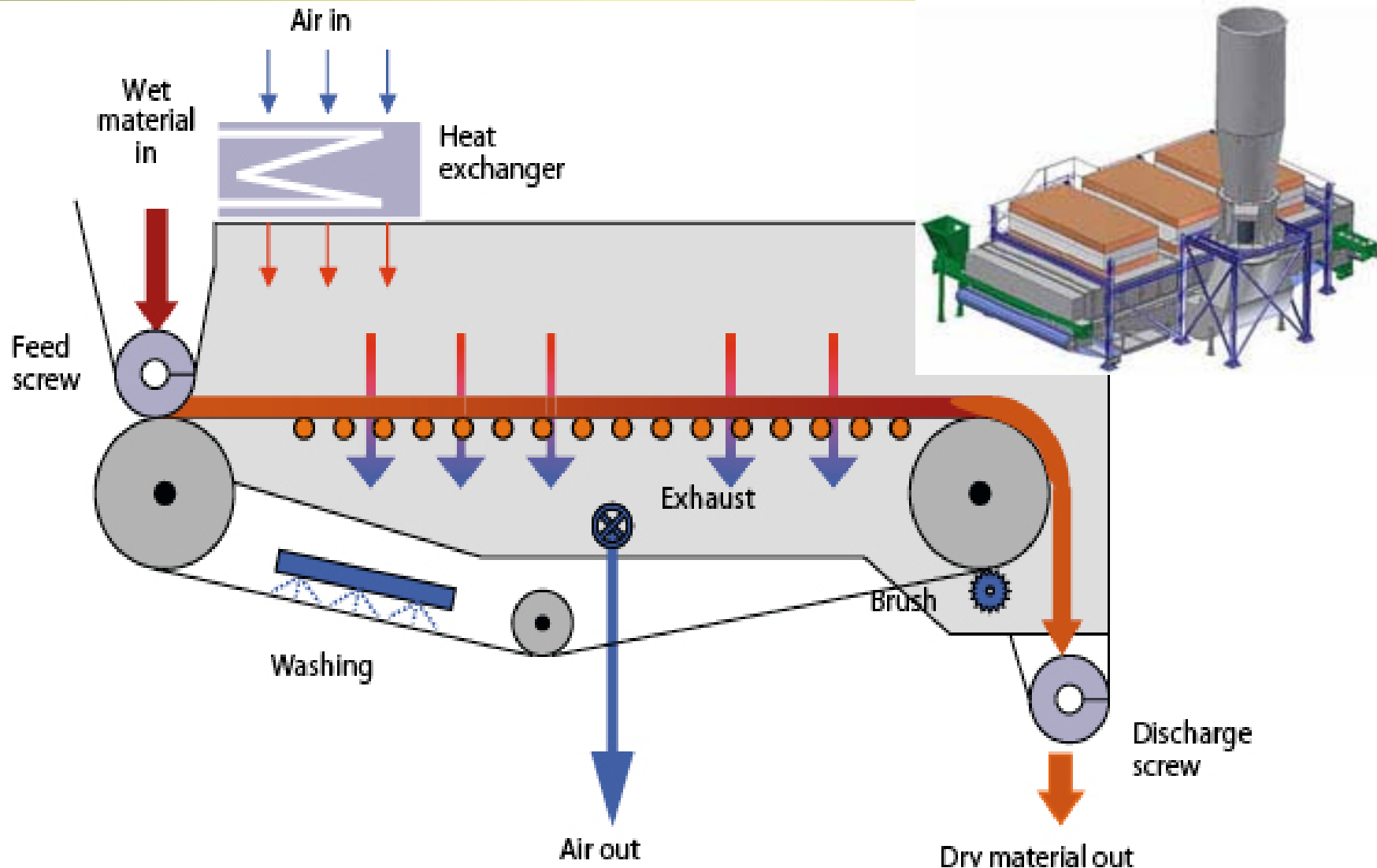


Gasifier

CHP/Pellet Plant – TECHNOLOGY – Turbines & Generators



CHP/Pellet Plant – TECHNOLOGY – *Belt Dryers*



CHP/Pellet Plant - ECONOMICS

- Capex
- Operating Capital
- PPA
- IRR

Economics “CHP/ Pellet Plant”

Power / Wood Pellets / District Heat

Revenues

Based on 5-10 MWH's Electric – 25-30 MWH's Thermal x 8000hr

- Green Power 40 – 80,000 Mwh @ \$120/mwh - \$5 – 10,000,000 P/A
- Wood Pellets 100,000 ton @ \$100 P/A Millgate - \$10,000,000 P/A
- District Heat 90 – 130,000 Mwh @ \$25/mwh - \$2 – 3,000,000 P/A

Gross Revenue - \$17 - 25,000,000 P/A

Capital investment (approximate estimate) **\$50 – 60,000,000**

- CHP Plant 5-10 mwh EL – 25-30 mwh Th - \$35 – 40,000,000
- Pellet Plant 100,000 ton P/A capacity - \$15 – 20,000,000

CHP/Pellet Plant – OPERATIONS

- Additional Skilled Personnel Requirements
- Potential Production disruptions
- Additional Maintenance

Thank – You!