



MAINE ENERGY SYSTEMS





SESSION OUTLINE

- State of the Art
- Acquisition of technology
- Challenges
- Regulation



MAINE ENERGY SYSTEMS

State of the art

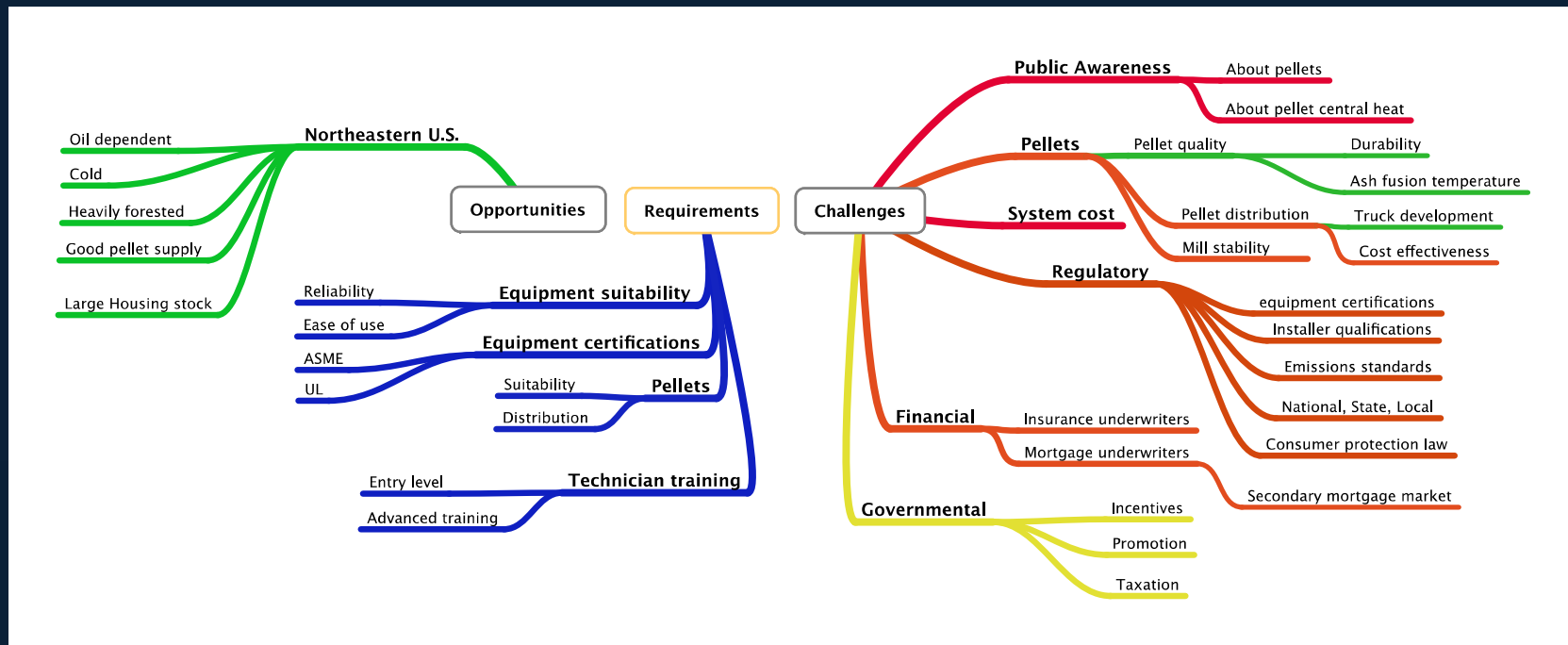




DEPLOYMENT CONSIDERATIONS

Deploying imported technology

World Sustainable Energy Days, Wels, Austria 2011





BOILER TECHNOLOGY

Triple Pass Flue Boiler Technology

Automatic ash separating and no manual cleaning of the combustion chamber during the heating season.

Underfed Burner

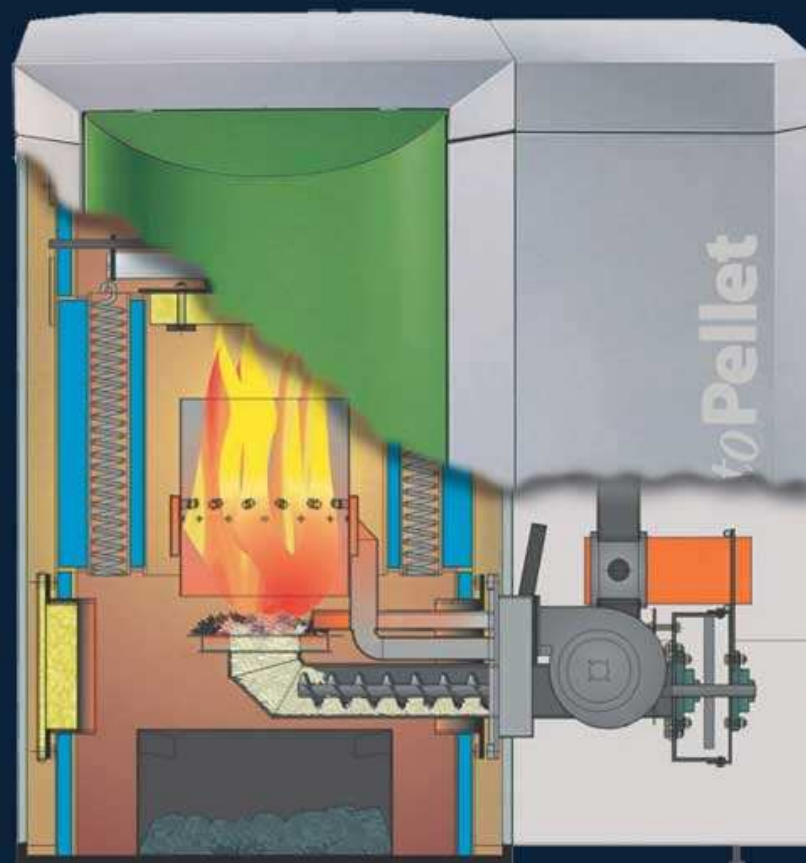
Minimizes the number of cold starts during the heating season, eliminates emptying ash from burn chamber for a restart, and results in no by-product build up.

Vertical Tube Boiler

Because of the vertical tube design, tubes are automatically cleaned daily and never require manual cleaning.

Modulation

MESys burners modulate power over 17 intervals between 100% and 33% output. The combustion control in the unit allows for high efficiency and low emission levels at all modulation levels. This makes accumulators for emissions control unnecessary.





LOAD ADJUSTMENT

Modification of the Effective Heat Exchanger-Surface

Advantages:

- Allows avoidance of low efficiency due to oversized boilers
- Permits simple modification at anytime





PELLET STORAGE

Pellet Fuel Storage

MESys FleXilos are gas permeable, anti-static bags allowing single hose fills. They are available in many configurations in sizes up to 9 tons.



Vacuum Feed



Auger Feed



PELLET DELIVERY

Loose bulk pellet delivery

Pellets are delivered in loose bulk by pneumatic pellet delivery trucks. Pneumatic transfer is the most gentle on pellets keeping breakage and dust to a minimum.



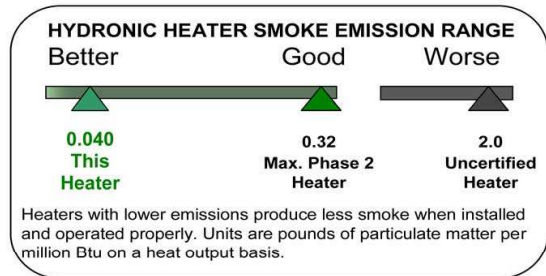


BOILER EFFICIENCY & EMISSIONS

Converted values

Maine Wood/Pellet Hydronic Heater Interim Phase 2 Certification

Maine Department of Environmental Protection has reviewed emission test results for this heater and determined that it meets the Phase 2 particulate emission standards of Chapter 150 Control of Emissions From Outdoor Wood Boilers.



Manufacturer	<u>OkofEN</u>
Model	<u>Autopellet</u>
Model No.	<u>PES56</u>
Rated Heat Output	191,184 BTU/hr
Annual Delivered Efficiency	91% using lower heating value 85% using higher heating value
Particulate Matter Emissions	0.04 lbs/Million BTU(Output) Annual Average

This heater must be installed with an appropriately sized heat storage system. Used with permission of the Maine DEP. Not valid outside the State of Maine. Expires January 1, 2015.

Source of information: EN 303-5 Report, BLT Ref. #048/06 & 153/04

Installation must comply with rules of the Maine Oil and Solid Fuel Board and the Board of Boilers and Pressure Vessels as applicable.



ACQUIRING TECHNOLOGIES

Gil's question (paraphrased)

Can the rights to existing clean technology be acquired in a reasonable period of time from those who've developed it for sums equal to or less than the costs of developing that technology anew?



ACQUIRING TECHNOLOGIES

Dutch's corollary to Gil's question

“Is the return on investment for acquired technologies worth the investment and work required to get them?”



ACQUIRING TECHNOLOGIES

How is existing technology acquired?

- Negotiation
- Distribution
 - Technical training
 - Technical support
- Installed base growth
- **Trust development**
- Manufacturing rights acquisition
 - Acquisition cost
 - Royalties based on sales



CONSTRAINTS ON DEPLOYMENT

Challenges

- Capital cost
- Consumer awareness
- Absence from IRS Title 26, Chapter 25D
- Regulatory patchwork

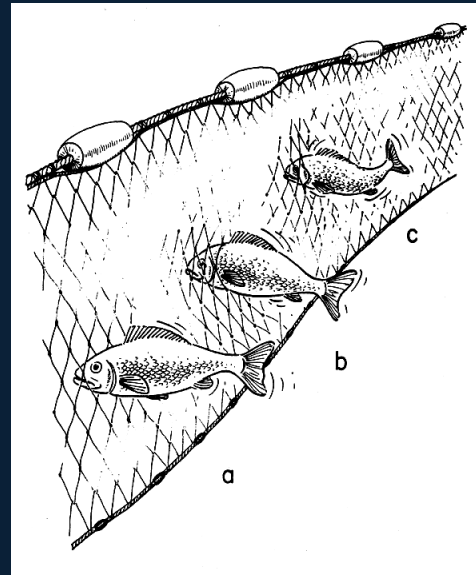
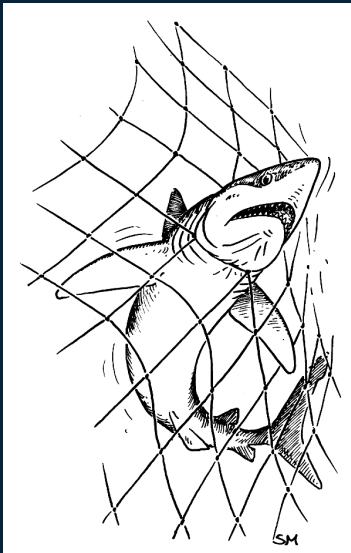




REGULATORY IMPACT

Regulatory support for acquisition of existing technologies

- EN 303-5 test conversions
- Standards not practices
- Standard pellet boilers on Burn Wise website
- Equipment differentiation, particularly in testing





CONTACT US

For further information contact
Dr. Harry "Dutch" Dresser
dutch@maineenergysystems.com

Maine Energy Systems LLC
8 Airport Road
Bethel, Maine, USA 04217
MaineEnergySystems.com