

Using Biomass as Boiler Fuel

Replacing coal with ground/chipped wood and paper pellets in a solid fuel boiler to produce steam

Appleton Coated

- Located in Combined Locks, Wisconsin
- Products include coated papers for traditional and digital printing, specialty products, publishing papers.
- Some products are manufactured with Green (renewable) electric, recycled fiber and/or FSC certified pulp

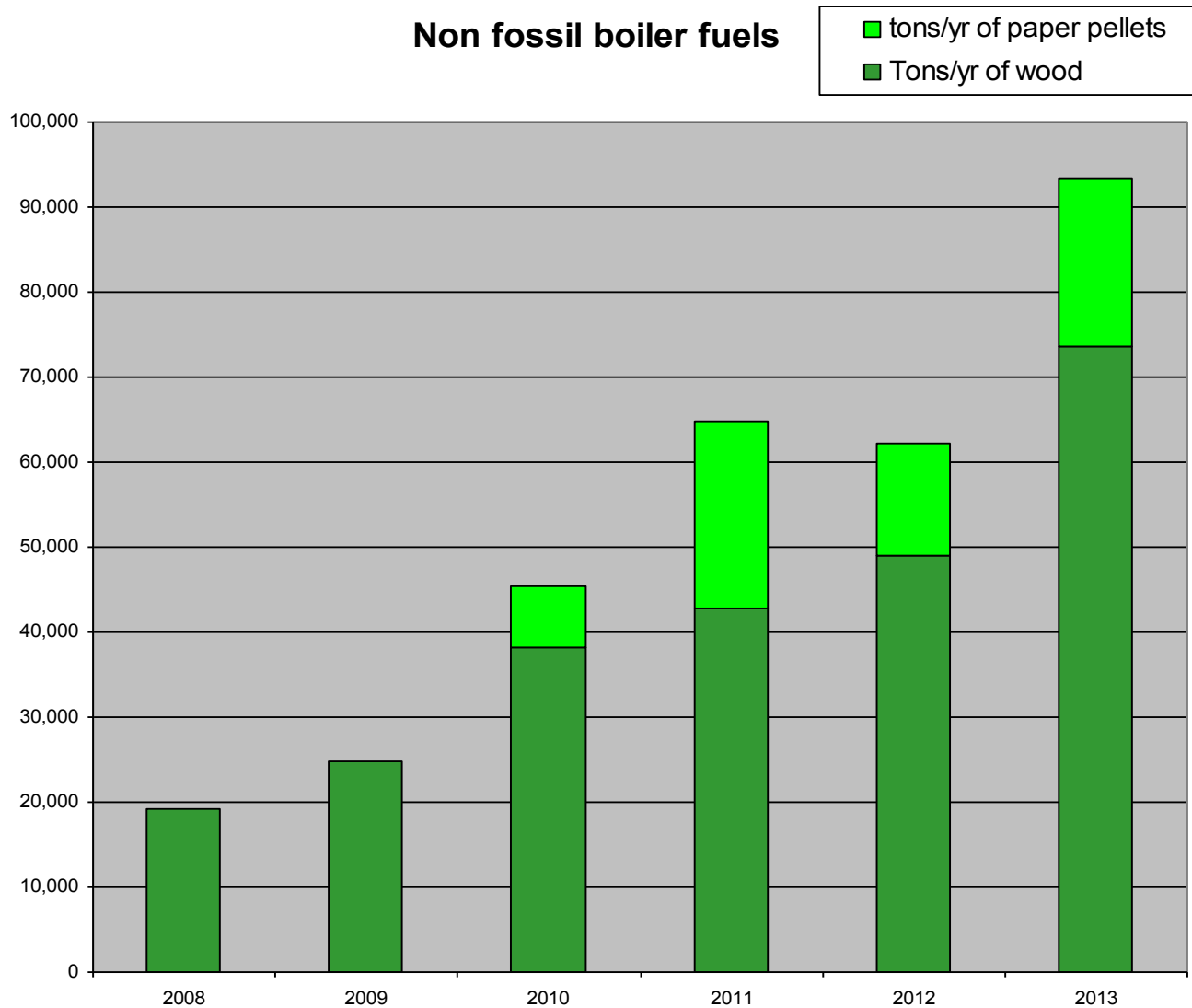
Company Goal to reduce the use of fossil fuels

- Customers will value reducing our environmental impact
- Fossil fuels include coal, natural gas and fuel oil
- Non fossil fuels include wood and paper pellets
- Fuel used in boilers to produce steam
- Wood and paper pellets displace coal

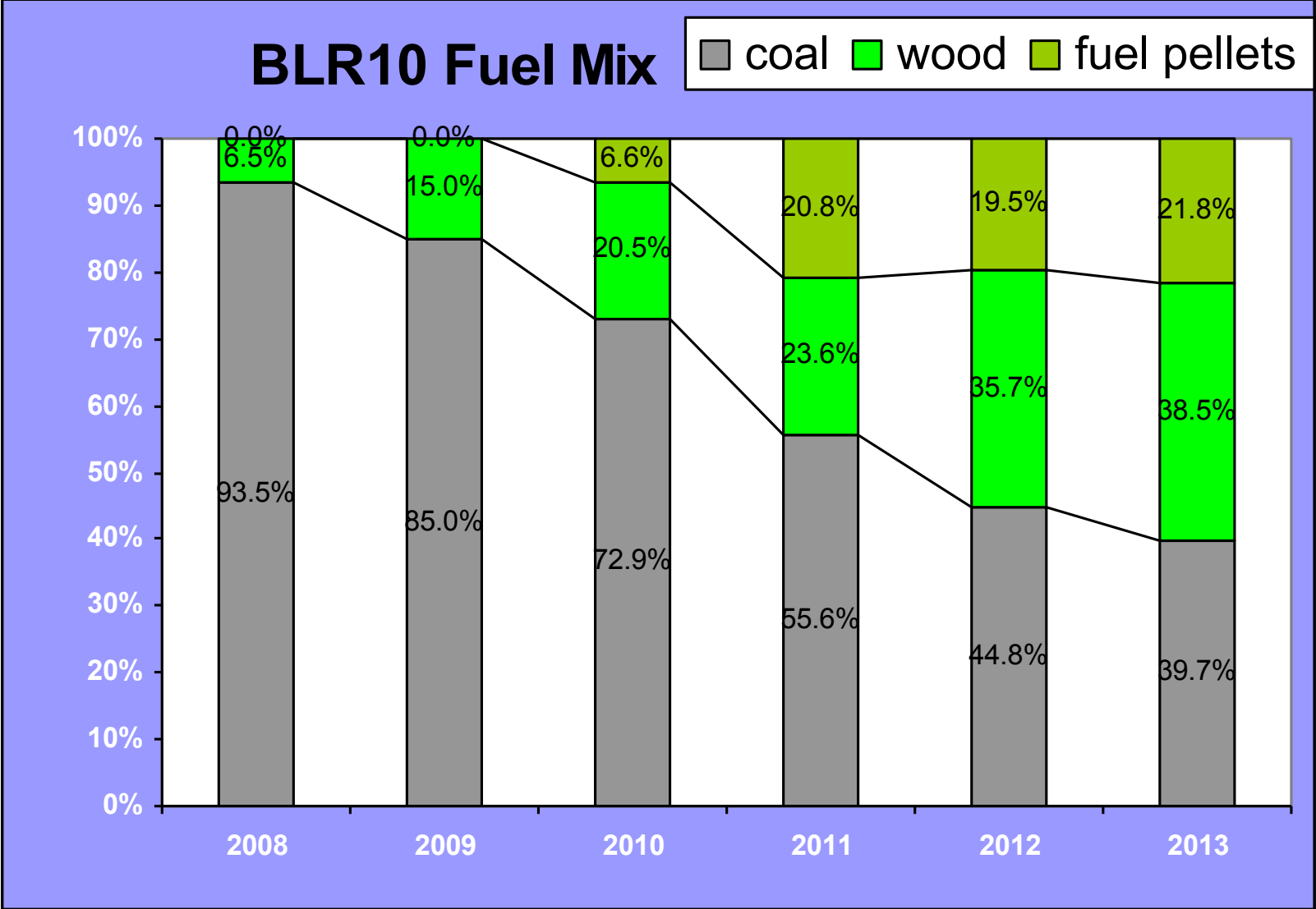
Displacing coal

- One solid fuel boiler burns coal/paper pellets/wood
- Increasing wood and paper pellets will reduce the amount of coal used to produce steam

Increased use of wood and pellets



Coal use is down as wood and paper pellets increased



Historical background

- Solid fuel boiler constructed in 1984
- Fuels included coal/wood/waste residuals
- Wood from debarking operations related to pulp mill stopped when pulp mill shut down
- Started purchasing wood from outside sources to replace wood from pulp mill
- Improved system to increase throughput

Wood handling system

- Boiler permitted to burn 17 ton per hour
- Not able to consistently deliver wood to the boiler
- Opportunity to increase the use of wood if fuel handing system could be upgraded
- Bioenergy Grant helped fund the improvements

Improvements

- Replace/eliminate high maintenance conveyors
- Shorten the blow line and reduce the number of elbows from 12 to 5 to increase throughput and maintenance
- Speed up metering screws
- Result: increased throughput and decreased down time

Paper pellets

- Mixed with coal and blend is fed to the boiler
- Required R&T to evaluate and stack testing to confirm emission stayed constant or decreased
- Permitted to use up to 30% paper pellets

Semi trucks deliver wood



Trucks unload into reclaimer



Wood is metered onto conveyor



Magnet used to remove metal



Disc screen



Small material passes through



Larger material hogged



Rotary airlock to transfer material to blow line



Blow line from rotary feeder



Metering bin



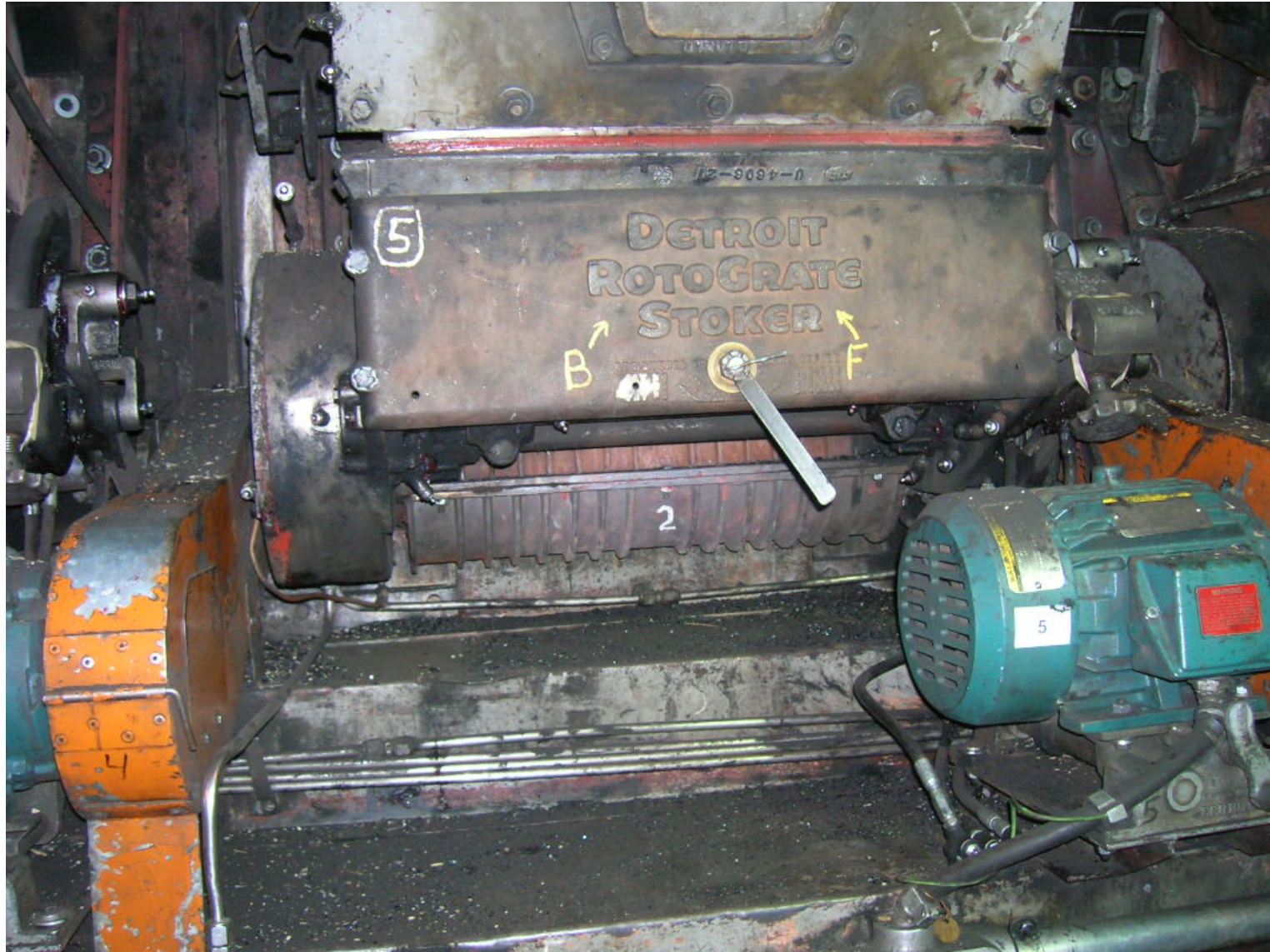
Slow turning screws drop wood
down chutes



Chutes from metering bins to boiler



Fuel feeder



Wood chutes have use air to push fuel into boiler furnace



Traveling Grate Spreader Stoker

