White Water Filtration Project Summary
Industrial Facility Retrofit Showcase
Containerboard Mill
Henderson, Kentucky

- Total project cost: $1.2 million
- Matching American Recovery and Reinvestment Act funds: $400,000
- 5-year projected impact
  - ✓ 869 million gallons of fresh water saved
  - ✓ 330,372 MMBtu's of natural gas saved
  - ✓ 17,803 metric tons equivalent CO_2 footprint reduction
  - ✓ 1.7 MM kWh electricity saved for pumping costs*
  - ✓ 5,250 Green manhours to install project
- Years to pay back total project cost: 2 years

The International Paper Henderson facility is a 100% recycled containerboard mill that was constructed and started up in 1995. Containerboard is used in the manufacture of corrugated boxes. The mill was acquired by International Paper in August 2008 and produces approximately 230,000 tons of linerboard and corrugating medium annually. The mill has a single paper machine and a single line of OCC (old corrugated boxes) pulping operation to support the machine. A natural gas fired boiler is used to supply steam to the plant. Natural gas, electrical power, potable water, and effluent treatment are purchased from the city of Henderson.

In 2010, International Paper teamed up with the Kentucky Cabinet for Economic Development to install a Kadant Petax disk filtration system. The facility was granted matching funds of $400,000 to install the project.

The Petax system allows reuse of white water in the mill system resulting in both water and energy savings. As shown in the numbers above and in the following graphs, the energy and environmental savings have been significant and are sustainable.

In the current manufacturing process, fresh water from the City of Henderson is purchased and used in the paper making process. As the paper is manufactured, the excess water is separated and collected for possible

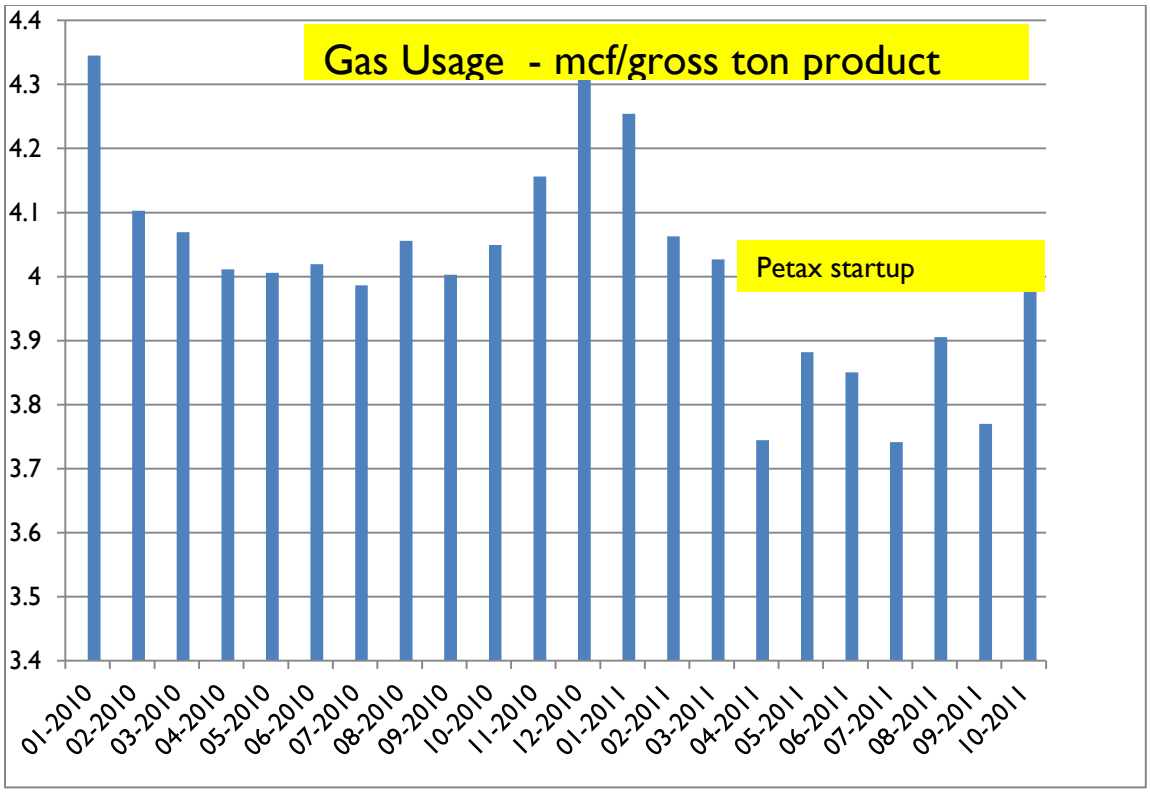
recycling. Residual paper fibers and debris in this water give it a milky appearance, hence the name "white water." Showers used to continually clean paper machine fabrics and other moving parts cannot tolerate the concentration of fiber debris. These showers were using fresh water to avoid plugging. This white water filtration project allowed filtered white water to be used on these showers in place of fresh water. The filtered white water is typically 50 degrees hotter than incoming fresh water. Water needs to be heated up in the paper making process, so retaining this heat in the system results in the energy savings realized.

The 1.2MM total project cost was funded with $800M from International Paper and $400M of stimulus funds administered by the Kentucky Cabinet for Economic Development. The project was carefully documented with monthly updates to ensure adherence to grant requirements. Despite some initial start up challenges, the project has surpassed the projected water and energy savings. The projected savings based on current raw material costs are $700M annually. Benefits will also be recognized in the community with lower costs for electric water pumping and additional water available for other industries in the community.

International Paper has worked to share news of our partnership with the state of Kentucky in our community and within our company. We have shared news of the project in a community news release and in our internal company news. We presented the project at the KY Excel conference prior to the Governor's Energy conference in September, 2011. The execution of this project was a contributing factor to the mill being recipient to the Governor's 2011 Environmental Excellence Pacesetter Award for Medium to Large Businesses. The support and cooperation from the Kentucky Cabinet for Economic Development has been outstanding. The project helps secure the competitive future of the International Paper Henderson Facility. We will continue to showcase our successful water and energy savings project.

*IP does not capture the electrical savings internally; the commonwealth and the Henderson region will see the benefit due to lower water pumping and treatment costs.

Inside view of Kadant Petax 10-disk filtration unit


Gas Usage - mcf/gross ton product
Petax startup
4.4
4.3
4.2
4.1
4
3.9
3.8
3.7
3.6
3.5
3.4
01-2010
02-2010
03-2010
04-2010
05-2010
06-2010
07-2010
08-2010
09-2010
10-2010
11-2010
12-2010
01-2011
02-2011
03-2011
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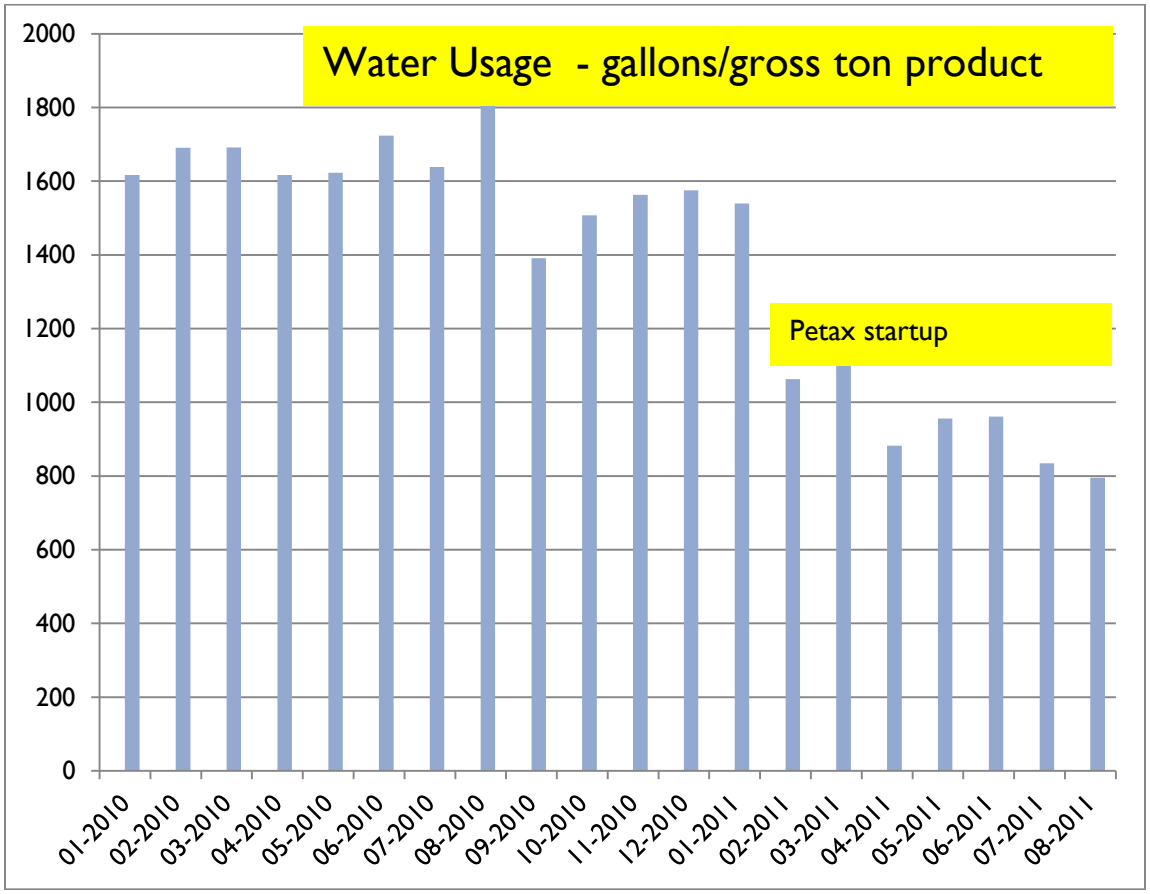
10-2011


Water Usage - gallons/gross ton product
Petax startup
2000
1800
1600
1400
1200
1000
800
600
400
200
0
01-2010
02-2010
03-2010
04-2010
05-2010
06-2010
07-2010
08-2010
09-2010
10-2010
11-2010
12-2010
01-2011
02-2011
03-2011
04-2011
05-2011
06-2011
07-2011
08-2011