



Proudly Operated
by **Battelle** Since 1965

Battelle Number(s):

12782-E, 13538-B

Patent(s) Issued

Available for licensing in all fields

Awards Won:

FLC Award - 2007

R&D 100 Award - 2008

Available Technologies

Grid Friendly Appliance™ Controller

SUMMARY

The Grid Friendly Appliance controller developed at PNNL senses grid conditions by monitoring the frequency of the system and provides automatic demand response in times of disruption.

Within the North American power grid a disturbance of 60-Hz frequency is an indicator of serious imbalance between supply and demand that, if unarrested, leads to a blackout. This simple computer chip can be installed in household appliances and turn them off for a few minutes or even a few seconds to allow the grid to stabilize. The controllers can be programmed to autonomously react in fractions of a second when a disturbance is detected, whereas power plants take minutes to come up to speed. They can even be programmed to delay restart instead of all coming on at once after a power outage to ease power restoration.

ADVANTAGES

- * More reliable power grids are less costly to run
- * Smaller electricity bills for consumers
- * More efficient power plant use
- * Inexpensive
- * A foundation for future grid management

By integrating the controllers with appliances at the factory, costs can be reduced to a few dollars per appliance and customers will not even notice the short interruption (by turning the compressor off, but leaving the light on in a refrigerator, for example).

When a communication system becomes available beyond the power grid, the “smarts” for this system are already on board the appliances to do much more sophisticated negotiation and control, such as reducing peak loads. This simple, cost effective technology becomes an island of new technology from which ever more sophisticated aspects of GridWise can grow.

STATE OF DEVELOPMENT & AVAILABILITY

The Grid Friendly Appliance Controller has been developed and tested at PNNL. It is ready for licensing and installation in the next generation of appliances. PNNL is currently working with appliance manufacturers and utilities to use Grid Friendly Appliances in a variety of test-bed and demonstration projects.

RELATED LINKS

- » [GridWise at PNNL Website](#)



http://www.gridwise.pnl.gov/technologies/transactive_controls.stm

» **Press Release: Pacific Northwest National Laboratory Unveils GridWise[®],
Initiative to Test New Electric Grid Technologies**

January 2006

<http://www.pnl.gov/news/release.asp?id=118>

Patents & Intellectual Property

- » Patent #: 5,442,335
- » Patent #: 7,010,363
- » Patent #: 7,149,605
- » Patent #: 8,073,573

Technology Portfolio(s)

- » Electric Utility Operations
- » Smart Grid Devices

Potential Industry Applications

- » Computers & Electronics
- » Energy & Utilities
- » Manufacturing & Warehousing

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