



# CHIP FABRICATOR CRYSTALLIZES COMMITMENT TO ENERGY EFFICIENCY

**MAXIM INTEGRATED PRODUCTS IS SAVING AN ESTIMATED \$253,680 ANNUALLY**

As a leading manufacturer of integrated circuits, Maxim Integrated Products, Inc., prides itself on delivering the highest quality, most innovative products—and has approached energy efficiency with the same dedication and precision, particularly at its energy-intensive wafer fabrication facilities. The Beaverton plant has slashed estimated annual energy costs by \$253,680 and is looking for more.

“Energy Trust arranged for engineers at Portland General Electric’s Customer Technical Services to provide free energy analyses on all of our projects, lightening the load on our staff,” said Malcolm Delaney, executive site director. “We have received more than \$533,760 in Energy Trust of Oregon incentives and each project has qualified for the state energy tax credit.” PGE Customer Technical Services is the local program delivery contractor for Energy Trust.

One project—replacing a 75-horsepower, single-fan, air supply unit with a “fan wall” composed of six small fans with variable frequency drives—proved so successful that Maxim Integrated decided to replace two additional air supply units with fan walls.

“Fan walls offer much better control,” said Pankaj Patel, facilities engineer, who helps lead energy-efficiency efforts at the Beaverton plant. “The VFDs save energy by running fan motors at reduced speed. And the multiple-fan array offers built-in redundancy, which is critical in our industry.” But the benefits don’t stop there. The day after Maxim Integrated installed its first fan wall, the plant’s vibration decreased significantly. “The fan wall creates far less vibration than the previous air handler,” explained Patel. “Decreased vibration allows us to improve mechanical reproducibility in our fabrication process.”

## PROJECT-AT-A-GLANCE

- 293,625 square feet
- 450 employees

## BENEFITS

- Reduced energy costs
- Gained usable floor space
- Improved production yield through decreased vibration
- Improved competitiveness
- Increased employee participation to save energy
- Reduced carbon footprint

## PROJECTS

- 1,275-ton VFD chiller
- Variable chilled water temperature reset
- VFD control on 350-hp condenser water pump
- Condenser water control modifications
- Replaced fluid-drive pump with VFD driven pump
- Replaced four dryers with efficient blower purge dryer
- Variable speed drive compressor
- Air supply unit fan walls (three projects)

## FINANCIAL ANALYSIS

- \$253,680 estimated annual energy cost savings
- \$533,760 in cash incentives from Energy Trust
- 35 percent Oregon Business Energy Tax Credit from Oregon Department of Energy

## ESTIMATED SAVINGS

- 3,725,224 kilowatt hours annually
- 1,415 tons of carbon dioxide

Energy-saving efforts at the Beaverton site reflect Maxim Integrated's overall corporate commitment to energy efficiency and the environment. Maxim Integrated is an ISO 14001-certified company.\* As part of that effort, Patel meets twice monthly with a benchmarking team that includes engineers from other fabrication sites to compare utility bills at each of the company's four plants and brainstorm innovative approaches to reduce energy expenses and carbon impact. In fiscal year 2009, the four sites accomplished a combined 12.8 percent reduction in utility expenses.

"Commitment for this effort comes from the highest corporate level," said Steve Nyman, Beaverton facilities manager. "Senior management sets high expectations for innovative energy conservation, and provides necessary support." Nyman indicated that his team is evaluating additional opportunities in solar electric power, lighting efficiency and boiler plant upgrades.

Maxim Integrated also encourages input from employees about reducing utility expenses. Members of the benchmarking team present their results at regular site quality meetings, explaining recent site projects and seeking suggestions on new ways to save.

"We give employees ownership in the process," said Patel. "Several employees have asked if we can do something to better control lighting on the Beaverton plant's fourth floor, which houses mechanical equipment but rarely employees. As a result, we're considering a lighting project that would include occupancy sensors."

*\*International Standards Organization and ISO 14001 is a stringent series of standards on environmental management against which an organization can be certified by a third party.*



*Maxim Integrated replaced a chilled water plant with a high-performance chiller with VFD, which is saving an estimated 1.2 million kWh a year. Controls that allow variable chilled water temperature reset give engineers the flexibility to make chiller adjustments, saving another 257,612 kWh annually.*



**We couldn't have accomplished this level of energy efficiency without the financial and technical assistance provided by Energy Trust.**



**Malcolm Delaney,  
executive site director  
Maxim Integrated Products**

## INVEST IN SAVINGS TODAY

Call Energy Trust's Production Efficiency team at 503.445.7643, email [production@energytrust.org](mailto:production@energytrust.org) or visit [www.energytrust.org/pe](http://www.energytrust.org/pe).