



## Improving Industrial Efficiency: Chemical Manufacturing

Chemical manufacturing is a diverse sector, including products as varied as fertilizer, petrochemicals, plastics, rubber, and pharmaceuticals. While processes are different for each of these products, a 2005 report by the DOE's Industrial Technologies Program (ITP) and the 2006 Manufacturing Energy Consumption Survey suggest there are common energy intensive systems within this sector.

The DOE's ITP report recommended several top areas for improvement, among them compressed air, HVAC, motors, pumps, and electrochemical process systems. By looking at these systems and making improvements, you can significantly reduce electricity usage and achieve measurable savings throughout your facility.

### Improve the quality of your compressed air

- For compressed air systems operating around 100 psi, a reduction in operating pressure of 20 psi will result in an approximate 10% reduction in energy costs.
- Leaks in your compressed air system force the system to supply greater air flow, consuming more energy. Fixing air leaks can reduce annual energy consumption by 20%.

### Upgrade motors

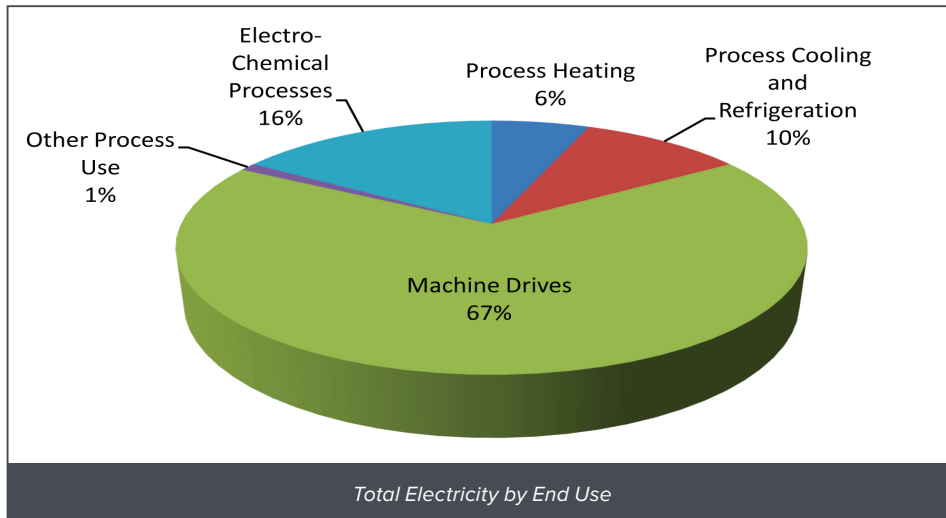
- Use synchronous belts, which require less maintenance, are slip-free, and save up to 5% of energy consumption.
- Use variable speed drives, which can match motor speed to load, saving 7-60% of the motor's electricity consumption.

### Pick the right pump and properly maintain it

- Match the pump size to the process, saving up to 15-25% on electricity.
- Repair and lubricate pumps to save 2-7% of the pump's electricity.



The Manufacturing Energy Consumption Survey gathers national data and tabulates based upon non-process specific end uses. As seen in the graphic below, machine drives account for 67% of total process electricity use, followed by electrochemical processes at 16% and process cooling and refrigeration at 10%.



#### References

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- U.S. Department of Energy. (2005) Energy Tips: Motor Systems. Motor Systems Tip Sheet No. 5. September 2005.
- U.S. Department of Energy and The Society of the Plastics Industry, Inc. (2005) Improving Energy Efficiency at U.S. Plastics Manufacturing Plants. September 2005.
- U.S. Energy Information Administration. (2009) Manufacturing Energy Consumption Survey, 2006. Electronic Publication: <http://www.eia.gov/emeu/mecs/contents.html>. Accessed 1/2010. Last updated 6/2009.

#### Get started

Visit [nyserdera.ny.gov](http://nyserdera.ny.gov) or call **1-866-NYSERDA** to learn more about how NYSERDA can help you significantly reduce electricity usage and achieve measurable savings throughout your chemical manufacturing process.

