Written by MT Staff
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The large, foundational category of mechanical and hydraulic equipment is what makes a facility a manufacturing plant.

It includes power transmission equipment; bearings, seals and couplings; hydraulics and pneumatics; HVACR; fluid handling; compressed air systems; material handling equipment; filtration; fans and blowers; and process-heating systems and equipment, along with system integrators* **This workhorse of categories shapes industrial processes and drives key operational costs** for maintenance and, especially, energy.

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While nearly each of this category's components impact a plant's energy profile, **the most influential is the electric motor**
(power transmission). Electric motors consume more than half of all electricity produced in the United States, and most motors are in manufacturing operations. As a result, industry's need to reduce energy costs often starts by replacing standard motors with high-efficiency models.

Efficient motors reduce energy use by boosting the percentage of mechanical power output over electrical power input.
This is done through improved manufacturing techniques and materials, which also reduce waste heat, vibration and maintenance while improving reliability.
Higher initial costs of efficient motors are quickly surpassed by their energy savings
; additional savings can be obtained with variable speed drives, which match energy output to load requirements. According to Frost & Sullivan research, the U.S. market for sales of energy-efficient AC motors is climbing despite a slight reduction in overall, year-to-year AC motor sales, with growth driven by municipal water/wastewater projects, utilities and oil-refining.

Another significant contributor to energy costs is compressed air. These systems are often hampered by leaks and inadequate on-site knowledge of their components. That's changing as manufacturers learn this is a key area where great energy savings—
30% and more, say some
—are possible. Beyond the obvious waste of leaking connections, key problems with compressed air systems include poor air compression (due to inefficient motors and blowers) and poor air quality.
A system audit can catch these problems.
Recommended by the Compressed Air Challenge (a consortium formed to educate industry about optimizing compressed air systems), the audit is offered by many system providers as a path to solutions that will improve system efficiency and reduce maintenance. Achieving
the right solution hinges on addressing both the mechanical
(delivery and distribution)
and process
(air quality and quantity)
components
of compressed air systems.

Energy efficiency, reliability and sustainability underlie other key trends within the mechanical and hydraulic equipment category. For more information on motors and compressed air systems, visit Motor Decisions Matter (www.motorsmatter.org) and the Compressed Air Challenge (www.compressedairchallenge.org). For information about energy-saving solutions in other category sectors, visit the National Fluid Power Assn. (www.nfpa.com), the American Society of Heating, Refrigerating and Air Conditioning Engineers (www.ashrae.org) and the Industrial Heating Equipment Assn. (www.ihea.org). **MT**

Rick Carter, Executive Editor

*Definition determined by *Maintenance Technology* editorial staff.

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