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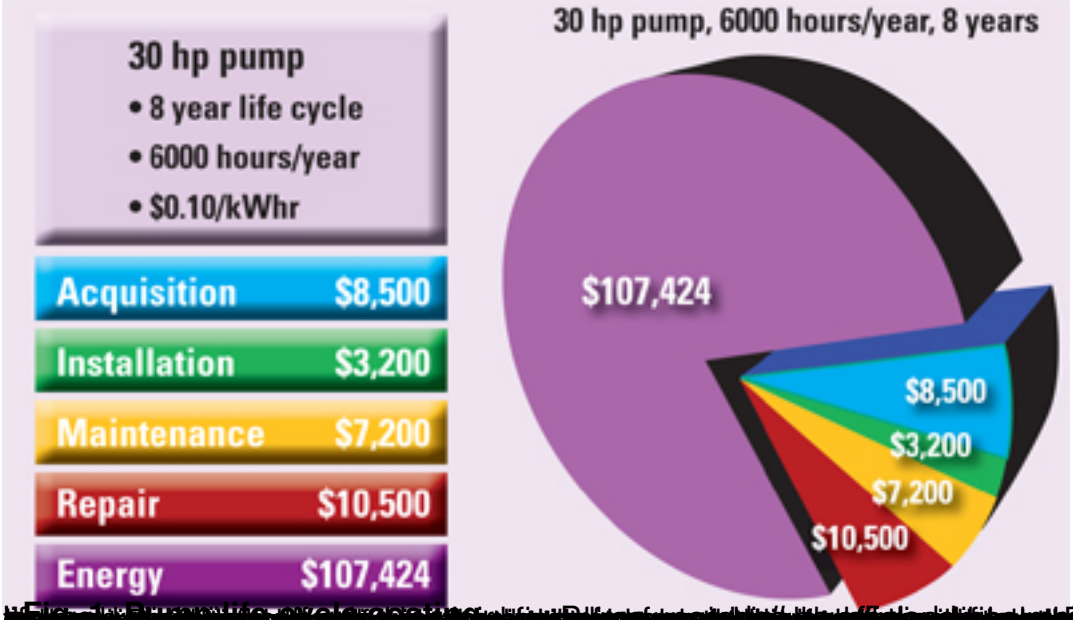
Cost control and efficiency improvement are key to successful plant operation—*especially when it comes to volatile energy costs.*

Most plant managers are keenly aware that upgrading from standard motors to NEMA Premium Efficient™ designs can save 4-6 % on their electric bills for appropriate applications. Yet, few of them realize that simple upgrades can improve pump efficiency 10-15% or even more. Often, these upgrades yield significant savings on pump maintenance and repair as well, which translates into less downtime and reduced environmental risk.

Available pump upgrades include custom coatings for internal and external parts, shaft and seal modifications, bearing isolators and bearing-housing breathers. Of these, custom surface coatings typically provide the fastest return on investment. When evaluating coating upgrades, however, it is critical to understand pump basics, as well as the pump's operating environment and system requirements.

Life-cycle costing

According to the U.S. Department of Energy (DOE), centrifugal pumps may be less than 50% efficient—*but have the potential to improve by 20-30% through various upgrades and system changes*. To create awareness of these facts, the agency is promoting "life-cycle costing" (LCC). As Fig. 1 shows, the acquisition price of a 30 hp pump that runs 6000 hrs/yr for eight years is a fraction of its life-cycle cost. Energy is by far the most significant cost, but maintenance and repairs total more than twice the purchase price.



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$$Hp = \frac{gpm \times ft \times s.g.}{3960 \times Efficiency} = \frac{750 \times 175 \times 1}{3960 \times .70} = 47.36\ hp \times .746 = 35.32\ kW$$

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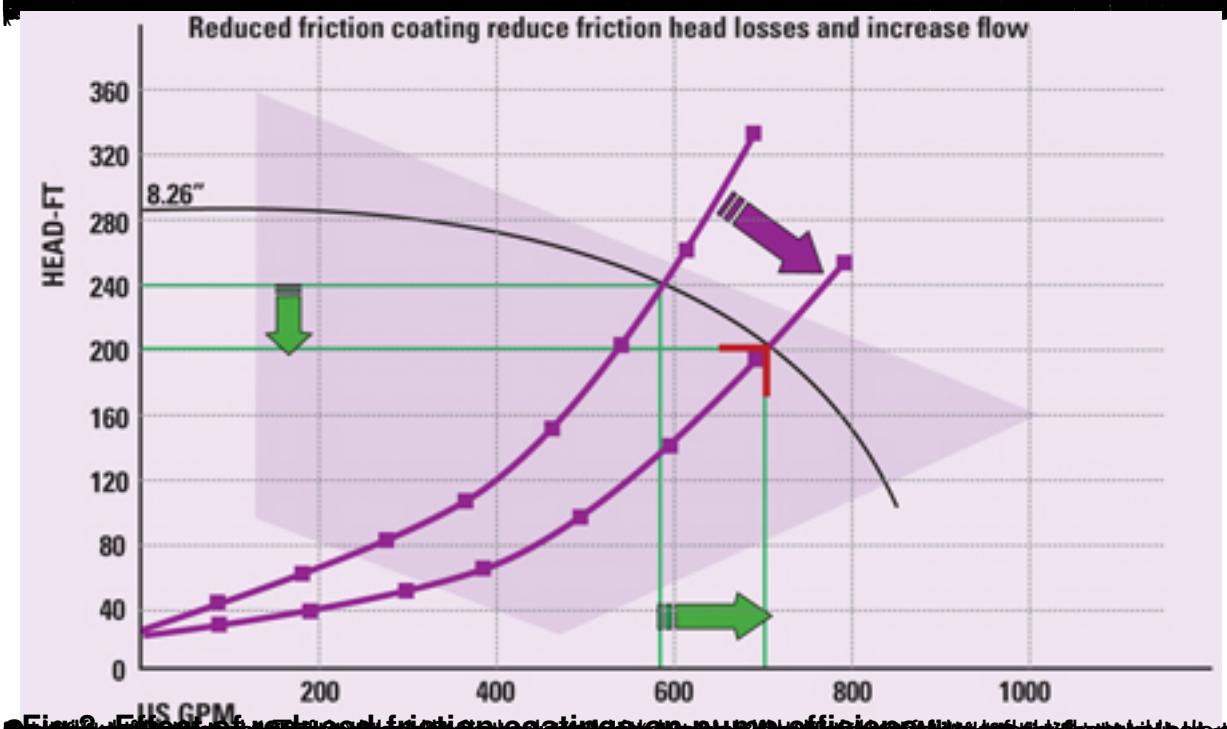

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