

Old EMDS waste precious electric energy

Electric motor driven systems (EMDS) run much longer than their operating life expectancy of 10 to 20 years, according to their output size. Their bearings are regularly greased and repaired and even their stator copper wiring is eventually rewound at considerable cost. But, even with careful maintenance, old motors can never reach the efficiency of modern IE3 Premium Efficiency motors.

The figure below shows the results of an analysis of 4142 electric motor driven systems that were part of an industry incentive program in Switzerland. All over the output power range from small 0,01 kW up to large 1000 kW motor driven systems, 56% of the motors listed were older than their operating life expectancy - a good sign for their durability, but a severe waste of precious electric energy. The analysis shows that electric motors are operated on average twice as long as planned.

The problem of old age includes all components of the motor driven unit: the lack of electronic load control, inefficient V-belts for transmissions, the use of throttles, bypasses and dampers as well as oversized pumps, fans

and compressors, etc. The over-age includes the problem of no recent checks on proper sizing of systems that may have gone through several steps of past changes in load requirements in the 30, 40 or more years since their initial set-up. It also includes inefficient applications, not operated in optimum duty points, where in the past decade a major up-lift of technologies and efficiencies has come into play. Old, inefficient, oversized motor driven systems waste electric energy every hour of operation. Improvements with retrofits make for a smoother, cooler ride of entire industrial processes with state of the art load control. These investments generally have a payback below 3 years with current energy prices. The improvement can be engineered in such a way so that only a short interruption of production occurs.

For an enterprise this means a to have a careful look at motor driven units that more than 10 years in service. Depending on annual operating time, a replacement is cost effective already after 10 years where the old system is fully amortized.

