



FMC TECHNOLOGIES

This case study presents results of a systematic utility cost reduction plan implemented at a 450,000 sq. ft. manufacturing facility in a hot and humid climate.

Utility usage reduction measures ranged from no-cost / simple operation and maintenance improvements, e.g., turning-off lighting and air-conditioning equipment during unoccupied periods; to low-cost expense improvements, e.g., (Compress Shield™);

YEAR 2 (2003) EXPENSE IMPROVEMENTS

An example of an expense improvement was installing (Compress Shield™) in air-conditioning equipment in order to reduce resistance to heat transfer due to insulative oil accumulation (approximately 2% per year) on the refrigerant-side of heat exchange tubes in condensers and evaporators.

This refrigerant-side "fouling" can impede heat transfer by up to 30%. (Compress Shield™) (totaling 5% of oil volume) forms a one molecule thick coating on the surface of the tubes and restores original heat transfer efficiency.

This was applied to unitary air-cooled air-conditioning equipment and applied water-cooled equipment. Electricity savings varied depending on the extent of oil accumulation / heat transfer impedance as well as annual run hours, annual load profile, etc. The 10-year old, 500-ton medium pressure centrifugal water-chiller enjoyed an

11.8% improvement in "before" versus "after" performance at full-load operating conditions.

ELECTRICITY:

Volume Savings: 1,633,630 kWh (9.3%) - variable-speed drives on air-handling units and (Compress Shield™) in heat exchangers entirely offset "new" electricity usage by the 46,000 sq. ft. office addition

Cost Savings: \$196,722 (17.0%) - slightly lower prices and moderately lower usage

Off-Site Emissions Savings: approximately 1,408 tons (9.3%) of CO₂ (a greenhouse gas)

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