

ENGINEERING STUDY PROPOSAL

WHY AN ENGINEERING STUDY??

Core design faults and upgrade options

Maximum life of equipment depends on many factors

- Initial equipment design
- Wear materials
- Installation
- Mechanical "meticulousness" of personnel
- Operating modes due to process design
- Operating modes due to mechanical condition of related equipment (valves, instrumentation, controls)
- Operating modes due to personnel
- Initial budget for equipment (heavy duty engineered versus cheap)

Pumpcoat provides these studies to assist users in determining how to get the most from equipment.

- Detrimental operating conditions are identified
- Possible pitfalls of certain maintenance practices are identified
- Incorrect installations are identified
- Training of personnel of "scenarios to avoid" are conducted
- Maintenance and operations people are put in a "teamwork" environment
- Maintenance and operations people are made a "part of the design review process" increasing personal input and "pride in ownership"
- Awareness of average life versus industry standards is brought to life, i.e. we didn't know these pumps should last five years!
- Specific engineered upgrade options are designed specifically for the equipment in its present installed environment
- Current vendors may not be displaced but enhanced
- Lowest achievable energy usage is identified
- Maximum equipment life and associated lower costs are documented

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List of deliverables

A qualified **Pumpcoat** engineer reviews a specific list of equipment.

The equipment is reviewed in its installed environment, inspection and overhaul records including:

- Typical/specific preventive maintenance
- Actual equipment repair records
- Failure modes
- Wear rate of installed materials
- Circumstances contributing to failure
- Special operating characteristics and demands

A preliminary spread sheet analysis is prepared and a second site meeting is held to gather additional data.

- Agreement with operations and maintenance as to correctness of data
- Pump tests are performed to verify actual equipment operating points
- Additional tests (usually conducted by customer personnel) are agreed upon

A report is then generated including:

- Specific operating and maintenance action items which will positively affect equipment time between repair
- Analysis of original equipment design points to actual system operating conditions
- Horsepower draws, annual energy usage \$\$, and possible upgrades for energy savings
- Core design faults and mechanical, material or design upgrade options and recommendations
- Service manual and training module specific for the installed equipment

A training seminar is held either on or off site.