The Barn Raiser

Mid-South Engineering Company

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Good Construction Management

Many companies recognize the value of properly planning for a Shut-Down, but equally important, yet more elusive, is planning to keep an existing operation productive while as much work can be done to limit the down time involved. While the theory is simple, the application isn't. The theory is, of course, to understand your available resources and to devise and execute a well planned strategy of construction that ends with a good start-up.

Good construction management is when work is done safely using the available resources while limiting the capital cost and maximizing the final mill goals. Good construction managers draw from years of experience, to assist the owner in the best use of each resource.

• Time. Downtime is costly, therefore the driving emphasis is to limit the duration. Experienced managers, contractors, and a good plan are the necessary components.

• Cost. The shortest duration of a shut-down is not always the least capital cost. However, less down-time and giving the owner the improved system sooner allows production to capitalize on the investment.

• Resources. People are the key resource. Expert planning and then good supervision saves money. Using good contractors and equipment is imperative.

• Planning. Pre-shut-down construction pays dividends if the concept is well conceived. Having drawings and plans is a small percentage of a project's cost, but failing to develop good plans is one of the costliest mistakes. The construction labor and equipment represent over 70% of a project's budget. Detailed planning and scheduling eliminates obstacles and promotes timely construction. Evaluating local accommodations for contract work forces needs to be thought through and budgeted. Parking, lodging, lighting, temporary power, restroom facilities, and the like must be considered.

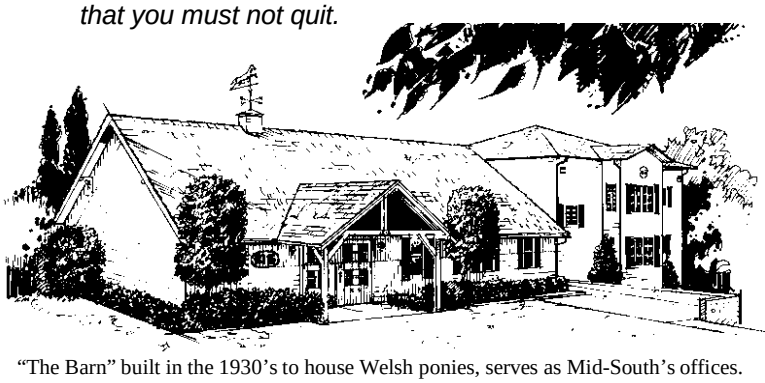
• Unforeseen. Weather conditions and local competition of contractors and resources can adversely affect a construction project. Cold, stormy, or rainy seasons should be taken into the plan as much as possible since they can add cost, but weather can be unpredictable. Soils evaluation can limit the unforeseen problems during foundation installation, but items buried beneath the soil's surface stay hidden until "Pandora's box" is opened.

Don't Quit

When things go wrong, as they sometimes will,
When the road you're trudging seems all uphill,
When the funds are low, and the debts are high,
And you want to smile, but you have to sigh,
When care is pressing you down a bit,
Rest if you must, but don't you quit.

Life is strange with its twists and turns,
As everyone of us sometimes learns,
And many a failure turns about,
When he might have won had he stuck it out;
Don't give up though the pace seems slow,
You may succeed with another blow.

Success is failure turned inside out,
The silver tint of the clouds of doubt,
And you never can tell how close you are,
It may be near when it seems so far;
So stick to the fight when you're hardest hit,
It's when things seem worse,
that you must not quit.



"The Barn" built in the 1930's to house Welsh ponies, serves as Mid-South's offices.

Managing Variable Frequency Drives

Many industries and companies now use variable frequency drives (VFD) on their machinery, but the comfort factor of how to maintain these units is not always present. Maintaining variable frequency drives (VFD) can be simple if you follow some basic practices and can ensure that your drives will provide many years of trouble-free service.

First, let us provide a explanation of what a VFD represents. A VFD controls the speed, torque, and direction of an ac induction motor. It takes fixed voltage and frequency ac input and converts it to a variable voltage and frequency ac output. Fairly involved control circuitry coordinates the switching of power devices, typically through a control board that dictates the firing of power components in the proper sequence. A micro-processor or digital signal process meets all the internal logic and decision requirements. Condensing our explanation to one line, a VFD is basically a computer and power supply. As with any computer and power supply there are primary maintenance requirements:

- Keep it clean.
- Keep it dry.
- Keep the connection tight.

Keeping it clean depends on the type of enclosure used. If the drive is housed in a NEMA 1 (side vent for cooling airflow) enclosure it is susceptible to dust contamination which can cause a lack of airflow, resulting in diminished performance. Spraying air that is oil and moisture free periodically is a good PM. You can purchase cans of non-static compressed air. Check circulating fans for signs of bearing failure or foreign objects. You may choose to use a NEMA 12 (sealed, dust-tight) enclosure and you save yourself some grief.

Keeping it dry may be simple if you operate the VFD all day, every day where normal radiant heat prevents condensation. If you don't operate constantly, then consider a NEMA 12 enclosure and/or a thermostatically controlled heater.

Keeping connections tight sounds basic, but checking connections is a step many people miss or do incorrectly. Retorquing screws is not a good idea, and further tightening an already tight connection can ruin the connection. But tightening loose connections caused by vibration solves erratic operations and prevents arcing, nuisance over voltage faults, and over faults.

Pumps and Pump Baseplates - Are They Compatible

When considering a pump installation, the compatibility of the baseplate should be designed to accommodate the pump selected for each application. Frequently, whenever making process changes, a different and generally larger pump is needed. Yet, little consideration is ever given to replacing the pump's base. The existing pump baseplate will simply be reused without even looking at the design requirements.

The baseplate design should take into account such things as tolerances for flatness, adequate tolerances to avoid "bolt binding", and baseplate torsional stiffness. It is always recommended that engineering check the baseplate design for adequate stiffness to avoid excessive deflections during starting conditions and/or other real operating conditions. However, the design of the baseplate is not generally noticed until pump failures begin to occur and production has been curtailed due to down time with the pump or excessive maintenance cost are incurred. As is generally the case, the first place the failure is blamed is on the pump when in reality it may have been caused by the pump baseplate.

Design Standards have been published addressing design tolerances to help eliminate improperly designed baseplates for most pump applications. With these design standards as guide lines engineers can design baseplates that are compatible with the pumps and reduce the excessive cost associated with pump repair and lost production due to pump failures caused by the improperly designed baseplate.

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