Proper and Improper Grouting of Skid Mounted Equipment

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A skid is a steel structure, used as a shipping platform, which subsequently is installed on a concrete pad or foundation at the job site. This installation concept, most often called "packaging", allows the manufacturer to factory assemble a unit under shop conditions. Packages are frequently complete with accessories, instruments and controls. The cost of packaging is usually much less than would be required for field assembly, particularly where the job site is in a remote part of the world.

When the installations are temporary, and relocation of the equipment at a later date is anticipated, cement grouts are generally used. Because cement grouts do not bond well to steel surfaces, lifting the skid at a later date is relatively easy. On the other hand, when the installation is to be permanent, epoxy grouts are generally utilized. The advantage of an epoxy grout lies in the fact that it bonds extremely well to both concrete and steel. Epoxy grouts also provide an oil barrier to protect the underlying concrete foundation. Concrete exposed to lubricating oils over a long period of time can become severely degraded and lose all its structural properties.

A typical skid mounted integral gas engine compressor is shown in Figure 1. When proper techniques are carried out during the original installation, the grout should contact the entire lower surfaces of all longitudinal and transverse "I" beams. Complete contact is necessary in order to prevent vibration when the unit is placed in operation.

Figure 2 is a photograph of foundation pad where a skid has been removed leaving the cement grout intact. This photograph illustrates proper cement grouting. Note the impression left in the grout by the lower flange of the longitudinal and transverse "I" beams. Virtually 100% grout contact was obtained on these load bearing surfaces.

Figure 3 is an example of poor grout placement. Note the lack of support in the center where most of the machinery weight is concentrated. Long, unsupported spans are an invitation to resonant vibration problems and to progressive sagging of the beams with age. Progressive sagging will eventually cause continual misalignment problems. Further, the anchor bolts on the compressor side of the crankcase are attached to one of the internal longitudinal beams. When the equipment is at rest, there may be perfect alignment; however, when the equipment is running, the beam may be flexing much the same as a suspension bridge. If this is true, fatigue of the crankshaft and bearing damage may result.

The obvious solution to this defect is to grout in the unsupported sections. Since cement grout will not bond well to itself or concrete, any regrouting should be carried out with an epoxy grout because of the inherent bonding properties of epoxies. Some epoxies will even bond to oily surfaces.

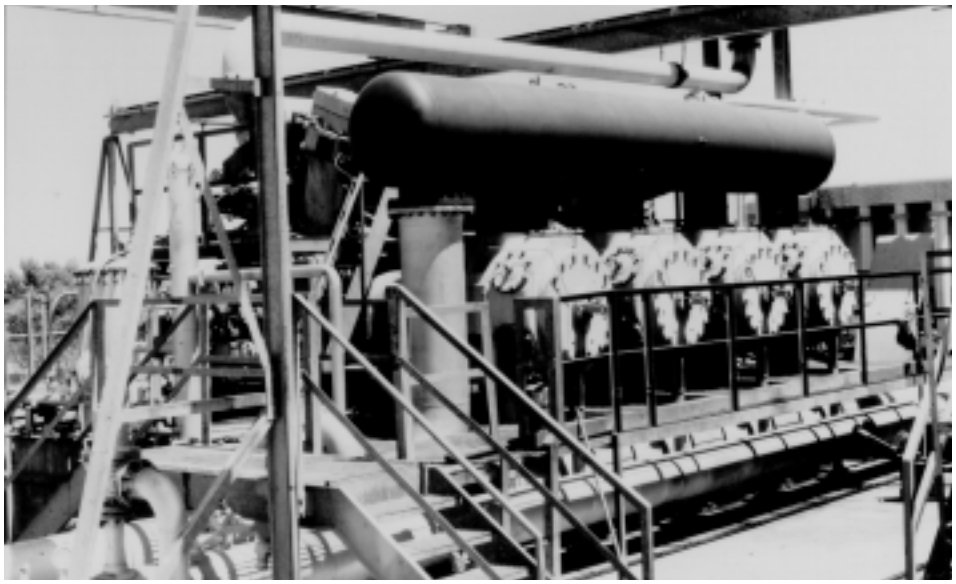


Fig. 1: A typical skid mounted integral gas engine compressor complete with accessories, controls and instrumentation.



Fig. 2: This illustrates proper skid grouting.



Fig. 3: Poor grout placement on a similar installation.

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