

THE COMPRESSOR MONITORING SKETCH

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INTRODUCTION. Review meetings between mechanical engineers, control systems engineers and equipment manufacturing representatives do not always provide a final resolution of all outstanding technical issues relating to the precise scope of supply. Without some means of focusing the discussion a number of scenarios are possible.

Scenario number 1: Everybody thinks they understand.

A typical discussion may run like this:

Equipment Engineer, "Where will you provide bearing monitoring?"

Vendor Representative, "On all the bearings."

The control systems engineer writes this down in his note book and goes off to list and tag all the monitoring points. Some time later he finds out that there were more bearings than anyone thought, that axial probes appear on both sides of the thrust bearings and the key phasor is missing. At this point he realizes that his monitoring package is too small and that the proper monitor will not fit into the compressor control panel that has been ordered.

Scenario number 2: Everybody is totally mystified.

A typical discussion may run like this:

Equipment Engineer, "Where will you provide bearing monitors?"

Vendor Representative, "Radial X/Y probes will be provided on both the inboard and the outboard bearings but axial probes only on the active side of the outboard bearings."

Equipment Engineer, "Are those on the driven end or on the opposite from driven end?"

Controls Engineer, "Is that on the north end or the south end of the compressor?"

Vendor Representative, "It's on the high speed shaft of the gear box."

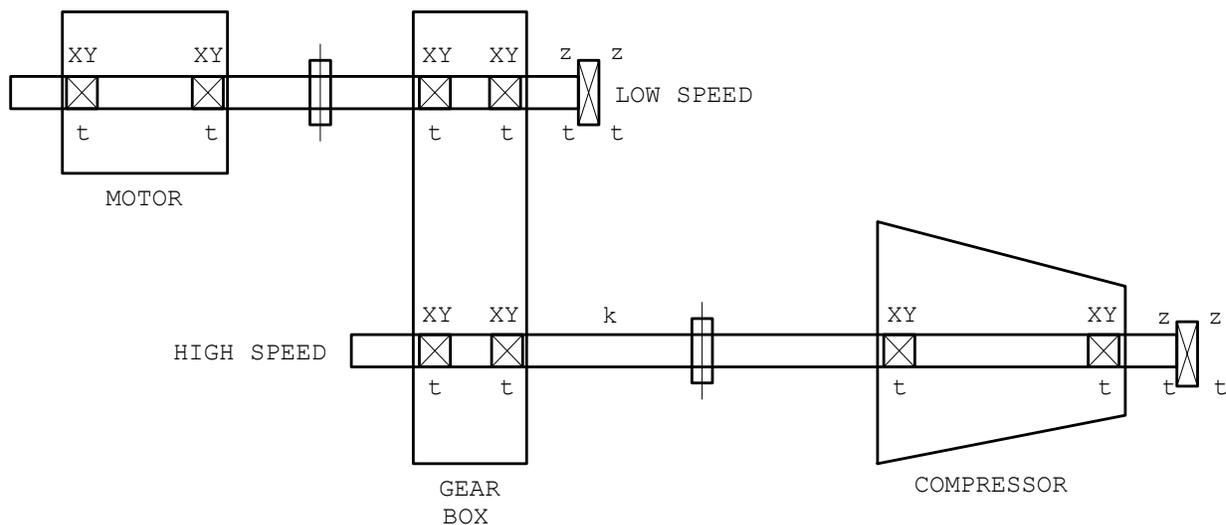
Controls Engineer, "Are the RTDs SAMA or DIN calibration?"

Vendor Representative, "They are all type J thermocouples except in the motor windings where they are 10 Ohm copper. The gear box is made in Europe so they are probably European type RTDs."

Scenario number 3: Everybody understands what is wanted.

The discussion starts off like either scenario number 1 or 2. Then the controls engineer (our hero!) goes up to the blackboard and draws out the sketch shown below. He shows an outline of all major pieces of equipment: The motor, the gear box and the compressor. Every bearing is identified. The equipment engineer first finds out there is a bearing he didn't know about. The vendor representative finds out that axial probes are wanted on both sides of the thrust bearings. The controls engineer finds out that there is no accelerometer on the gear box. And everybody has a great lunch at the vendor's expense with the satisfaction of a job well done.

Once instrument tags and details are added, the Compressor monitoring sketch can serve as a basis for a Process and Instrumentation Diagram. Later, it can be included as a graphic display on a DCS or it can be engraved on laminated plastic and attached to the local compressor panel below the vibration and temperature monitors.



LEGEND

k - Key Phasor
t - 100 Ohm DIN RTD
x - X axis Vibration Probe
y - Y axis Vibration Probe
z - Thrust (Axial) Probe



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The author has never experienced any confusions or misunderstanding where this sketch has been used. It certainly saves on long distance conference calls.