

Compressor Systems, Inc. (CSI)

LOCATION:

Simms Mesa, NM

APPLICATION:

Field gas compression

ENGINE/COMPRESSOR:

Waukesha F18GL
Frick screw compressor #355

DISTRIBUTOR/REP:

Ignition Systems and Controls, Farmington, NM
Jim Del Vecchio

ALTRONIC PRODUCTS:

ACI Control Panel
CPU-95 Ignition
DET-1600
EPC-150 AFR

OVERVIEW:

This site has large swings of BTU fuel gas which caused severe detonation, damaging the engine numerous times. The cost to rebuild the engine was more than \$10,000 for each occurrence. The end user needed controls that would help avoid detonation, offer better and more stable combustion, and also be compatible with the current screw compressor controller.

The installation included replacing the CEC ignition and MEC AFR, and installing the new Altronic Control panel and interfacing it to the Frick Screw Compressor Controller.

The DET-1600 detonation sensing monitor detected a high rate of misfire on one cylinder during the start-



up commissioning process. In order to resolve this issue and save time, the end user decided to replace the spark plug, ignition coil and secondary lead on this one cylinder — all at the same time. This cured the misfire issue. The second issue was with the “shut down” set point for detonation. The end user did not want this set point available to the operators from the DET control key pad. Special firmware was added, on site, to make this shut down set point only available via ModBus using a laptop, which offered a high level of security.

Engine exhaust temperatures were running close to their shutdown setpoints. Advancing the ignition

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timing by a few degrees did the trick. This engine has been running with the ignition timing retarded due to the detonation problems and timing variations with the previous ignition system. With the new ignition timing, now set properly, fuel consumption was reduced but no on-site devices were available to determine the amount of reduction.

Since these new controls were installed, detonation, along with engine damage, has been eliminated.

When sensing detonation the DET-1600 signals the Frick Screw Compressor controller to start an

unloading process, then retard ignition timing, then shut down if the detonation is not eliminated. All this occurs with a timed sequence between the operation noted above.

The main reason for these new controls is for detonation detection and avoidance.

The other improvement was for remote monitoring via the end user SCADA system. The end user can now “look at” the engine condition from a remote location 24/7/365.

There will be additional orders for this same system per CSI. The

customer stated, “The installation went smoothly and all items worked perfectly as specified. The on-site factory start-up support was excellent, along with follow up from the Altronic Field Regional office and ISC of Farmington, New Mexico.”

