INDUSTRIAL CRYOGENICS

IMI SENSORS
A PCB DIVISION

pcb.com/cryo | 1 800 959 4464

INDUSTRIAL CRYOGENICS

Detect Cavitation, Recirculation & Resonance
In Cryogenic Centrifugal & Reciprocating Pumps

The field of cryogenics is typically defined as beginning at temperatures below –292 °F (–180 °C). There are several common industrial gases (argon, helium, hydrogen, nitrogen and oxygen) and fuels (liquid natural gas and liquid propane gas) whose boiling point is below this temperature mark, thereby classifying them as cryogens.

These gases and fuels are transported and used in a variety of industrial applications as refrigerants in their liquid state, thereby requiring the use of cryogenic centrifugal and reciprocating pumps to effectively transfer them between cryogenic tanks, double-walled containers with a high vacuum between the walls to reduce heat transfer into the liquid. These applications include:

- Liquefied natural gas (LNG) processing
- Industrial gas processing
  (argon, helium, hydrogen, nitrogen and oxygen)
- Pharmaceutical production
  (statin drugs, biotech products such as vaccines)
- Frozen food production/storage

Regardless of whether the cryogenic pump is submerged in the liquid or mounted in an exterior suction vessel, these pumps can suffer the same types of faults as their non-cryogenic equivalents, including:

- Acoustical resonances
- Cavitation
- Impeller eccentricity and imbalance
- Impeller/diffuser clearance
- Oil whirl
- Recirculation
- Structural resonances
- Wear ring clearance

CE

TOP-EXIT CRYOGENIC ICP® ACCELEROMETER FOR PREDICTIVE MAINTENANCE

MODEL 637A06, EX637A06

- Sensitivity: 25 mV/g
- Frequency Response: 4-1500 Hz
- Operating Temperature Range: -320 to +250 °F

CE

SIDE-EXIT CRYOGENIC ICP® ACCELEROMETER FOR PREDICTIVE MAINTENANCE

MODEL 638A06, EX638A06

- Sensitivity: 25 mV/g
- Frequency Response: 4-1500 Hz
- Operating Temperature Range: -320 to +250 °F

CE

CABLES/CONNECTORS FOR CRYOGENIC APPLICATIONS

MODELS 048/053 AE/AP/BP/BQ/BR

- All tested to -300 °F (-184 °C)

4-20 mA TRANSMITTERS FOR PROCESS MONITORING AND PROTECTION

IMI® 4-20mA vibration transmitters are particularly well-suited for 24/7 vibration monitoring of critical rotating equipment. Simply install the transmitter in conjunction with a cryogenic ICP® accelerometer and run the 4-20 mA output to the nearest PLC, DCS, SCADA, or any plant information system. That is all it takes to begin continuous vibration monitoring and avoid costly unexpected down time. Using the reliable 4-20mA trending signal enables the user to schedule diagnostic testing based on real data rather than using time scheduled route based testing. This practice saves time and reduces overall costs of predictive maintenance. Optional hazardous area approved models also available.

VIBRATION TRANSMITTER

MODEL 682C03

- ICP® accelerometer input
- Outputs 4-20 mA signal proportional to acceleration, velocity, or displacement
- Analog vibration output via front BNC

UNIVERSAL TRANSMITTER

MODEL 682A06 (WITH MODEL 070B80 FRONT PANEL)

- Input 4-20 mA signal from Model 682C03
- Outputs include current re-transmit and two Form A relays
- Fully field-programmable with use of detachable display (Model 070B80)

PORTABLE VIBRATION CALIBRATORS FOR ON-SITE SENSOR VALIDATIONS

If a measurement is taken only to find out later that the sensor was bad, the cost of invalidating the data or re-taking it (if even possible) can range from nothing to immense. Routine calibration of sensors can eliminate this concern by periodically measuring the sensitivity and output of a sensor. Small and completely self-contained, portable vibration calibrators are ideal for field check of accelerometers, velocity transducers and proximity probes.

PORTABLE VIBRATION CALIBRATOR

MODELS 699B06 & 699B07

- Ruggedized, weatherproof enclosure dramatically improves durability and portability
- Precision quartz reference accelerometer and conditioning electronics for superior control and stability
- Provides NIST traceable transducer verification across a wide frequency and amplitude range

HANDHELD SHAKER

MODEL 699B02

- Fixed frequency of 159.2 Hz
- Field-adjustable measurement range in acceleration, velocity, or displacement

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