IMMUSCO

RECIPROCATING MACHINERY ANALYSIS

"Achieve optimal health and performance of your reciprocating compressors and engines with IMMUSCO"

Early stage damage identification in reciprocating machinery for the following faults:

Cylinder Head
- Piston vibration abnormalities
- Piston rod and nut abnormalities

Frame Vibration
- Running gear imbalance
- Loose counter weights

Cylinder Performance
- Peak pressure imbalance
- Energy losses

Main Bearings
- Abnormal temperatures
- Rotor rubs
- Bearing internal wea

Cross Head
- High frequency impacting
- Lower frequency rubs
- Loose shims
- Loose piston lock nuts
- Loose wrist pins

Rod drop / Rod Flex
- Excessive rod movement
- Rod looseness
- Excess vibration
- Rider band wear

State of the Art Technologies

IMMUSCO utilizes Windrock 6320 PA portable analyzers to monitor reciprocating machines through personnel certified from Windrock headquarters in Knoxville, TN, USA.With features found in no other portable devices, Windrock analyzers are designed specifically to evaluate reciprocating compressor and engine performance, assess mechanical condition and protect critical machinery assets.
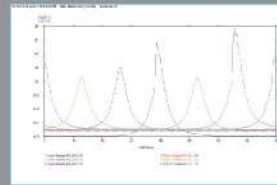
PRESSURE VS VOLUME
By PV curve for engine/compressor actual energy produced and energy losses in the operating cycle could be addressed.
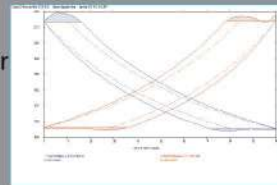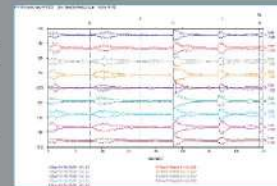
CYLINDR PRESSURE-TIME
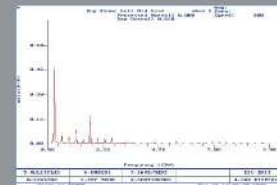By PT curve Peak firing pressure imbalance and Power efficiency could be monitored.

ENGINE SIGNATURE WITH VIBRATION & ULTRASONIC
Vibration and ultrasonic readings correlate with the engine's health.

FFT SPECTRUM
An FFT spectrum segregates and displays the effect caused by the combination of different forcing and fault frequencies.

COMPRESSOR ROD LOAD
Compressor rod load is a performance parameter for the reciprocating compressors; and thus provides details about systemefficiency.
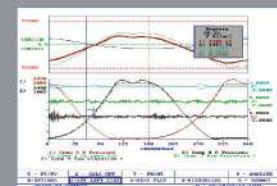
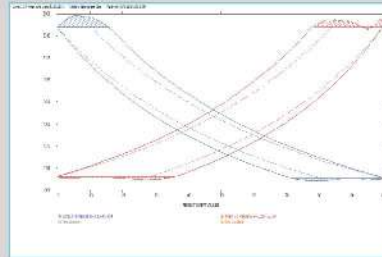161/J-1 Block M.A Johar Town Lahore

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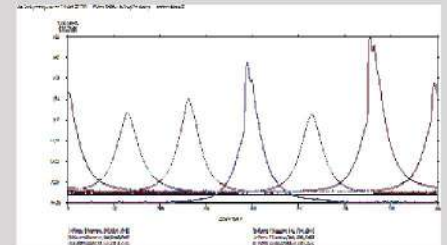support@immusco.com

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Analysis Capabilities

Process Overview

1. Various sensors are mounted on the reciprocating machine to measure varying cylinder pressures, vibration, crankshaft position, ultrasonic emissions and temperatures.

2. The data collected from these sensors is then analyzed for identification and severity of faults / defects, utilizing customized Windrock analysis computer software.

3. Finally, a comprehensive report is prepared which truly reflects machine health condition, performance and maintenance actions required.

Pressure vs Volume Curve

Real time cylinder pressures and volumes allow analysis of energy being produced and lost

Pressure vs Crank Angle Curve

Toe pressure unbalance / Peak firing pressure unbalance can be studied for each cylinder

Vibration and Ultrasonic Analysis

Pressure variation with vibration and ultrasound to identify cylinder internal faults
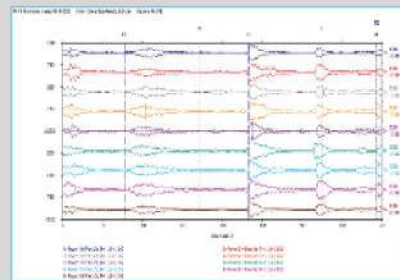
FFT Spectrum Analysis

Analysis of vibration at different frequencies to identify sources and any faults present
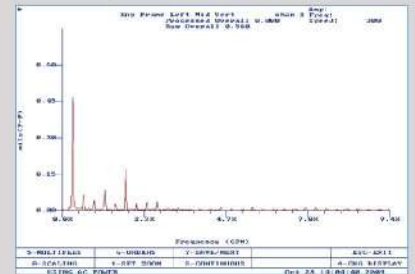
Your Problem

Cannot identify the causes of low efficiency of your reciprocating machine and don't know which improvement actions are worth attempting

Cannot determine the condition of your reciprocating machine until it's opened in a shutdown

You have received a new or repaired reciprocating machine and wish to verify its condition before acceptance or commissioning

Our Solution

IMMUSCO can precisely identify the factors influencing your reciprocating equipment's performance. The result reports can be used for recordkeeping, for decision-making and maintenance budget expenditure justification

IMMUSCO can assess the condition of your equipment while it's in operation and identify many areas requiring attention, long before your next planned shutdown. You can accordingly order spare parts and conveniently plan your maintenance activities at an early stage

IMMUSCO can accurately provide your equipment's health condition and performance on paper as an unbiased third party, when it's at workshop, after repair, when received on site, before installation or after commissioning

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