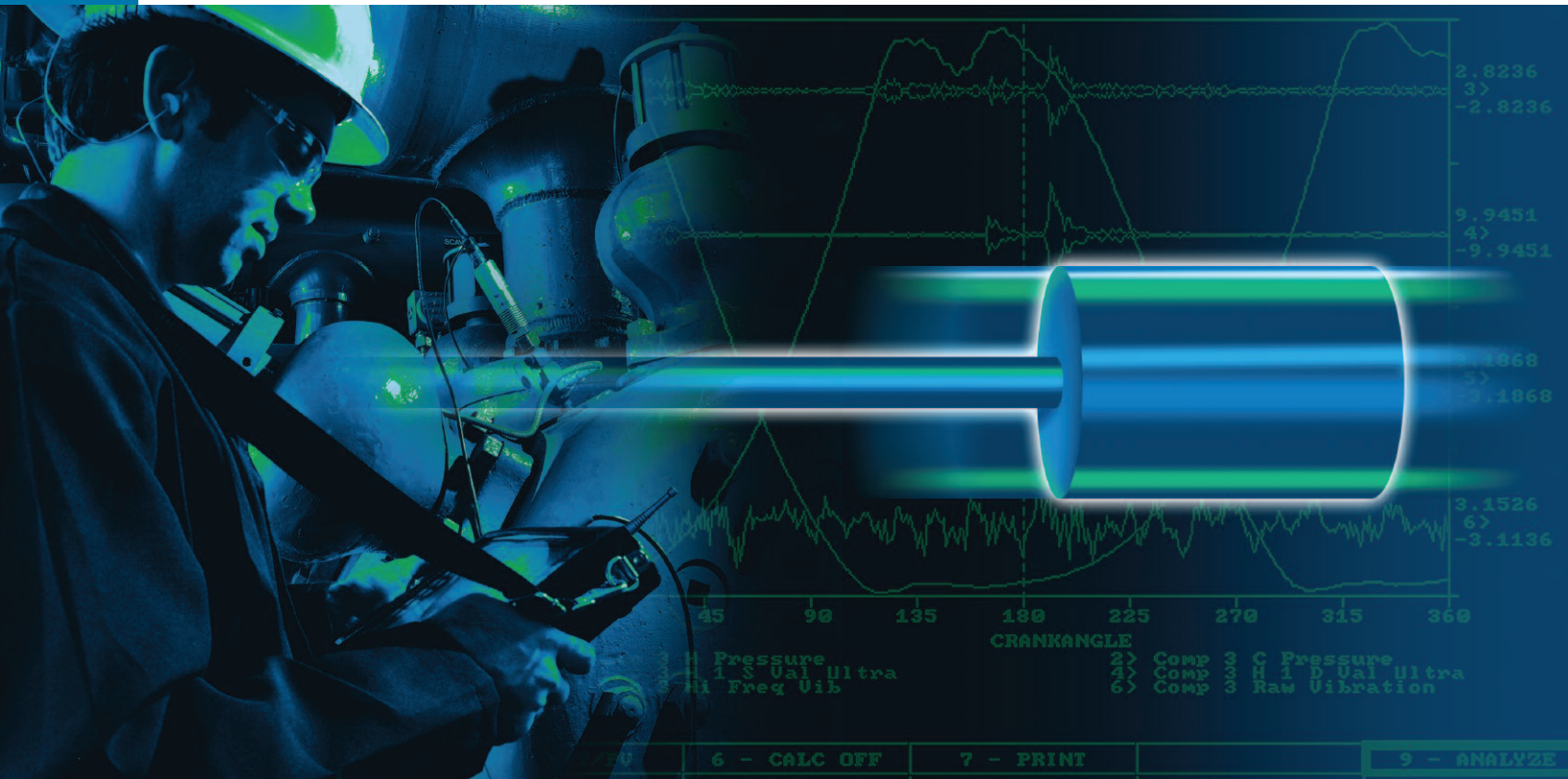


Model 6320

PORTABLE MACHINERY
ANALYZERS

Turning Data into Performance



6320/PA PERFORMANCE ANALYZER

6320/MA MAINTENANCE ANALYZER

6320/DA DIESEL ANALYZER

6320/CA COMBUSTION ANALYZER

6320/VA VIBRATION ANALYZER



Windrock 6320 Portable Reciprocating Machinery Analyzers

Detectable Malfunctions Using the 6320/PA

Engine

- Ignition System Deficiencies
- Peak Firing Pressure Imbalance
- Defective Fuel Injectors and Valves
- Leaking Valves and Rings
- Worn or Scored Liners
- Intake / Exhaust Port or Bridge Wear
- Worn or Defective Valve Train Components
- Damaged Connecting Rod and Wrist Pins
- Damaged Bearings
- Turbocharger Defects
- Jacket Water and Lube Oil Pump Faults
- Excessive Frame Vibration
- Foundation or Grout Damage
- Low Horsepower Output
- Poor Fuel Consumption
- Excessive Exhaust Emission Factors

Compressor

- Mechanical Looseness
 - Piston and Nut
 - Cross Head
 - Pin and Bushing
- Leaking Valves and Rings
- Cylinder and Piping Pulsations
- Passage Flow Restrictions
- Defective Unloaders
- Excessive Rod Loading
- Inadequate Rod Reversal
- Liner and Rider Band Wear
- Excessive Valve Losses and Deficiencies
- Low Capacity
- Poor Engine and Compressor Frame Condition
- Lack of Skid and Foundation Structural Integrity
- Malfunctions with Rotating Accessories

The Windrock Model 6320 family of analyzers has revolutionized the analysis of reciprocating machinery. 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.



Model 6320/PA Performance Analyzer. The flagship Windrock analyzer, used worldwide by reliability experts to evaluate reciprocating compressors and engines, as well as rotating machinery. The 6320/PA offers four channels of simultaneous data acquisition and wireless phase input signaling, which assures fast and accurate data collection. Sophisticated system architecture enables recall of historical data and “on-the-machine” analysis, maximizing the analyst’s time. Advanced features include compressor horsepower/load step mapping, valve efficiency evaluation and vibration spectrum analysis.

Model 6320/MA Maintenance Analyzer. Designed specifically for the maintenance troubleshooter, this two-channel instrument is a cost-effective tool that allows technicians to strategically detect and isolate mechanical faults of compressors and engines. The 6320/MA is an ideal maintenance tool for any site with critical reciprocating machinery.

Model 6320/DA Diesel Analyzer. Operators, mechanics and engineers use this cost-effective tool to improve diesel engine performance, reliability and safety, as well as to identify component-level faults and mechanical condition. The 6320/DA is the only two-channel diesel engine analyzer available. Easy, one-person set up and operation makes this lightweight, rugged analyzer an efficient, effective instrument to detect and isolate engine problems.

Model 6320/CA Combustion Analyzer. This single-channel power cylinder balancer and ignition analyzer reduces engine detonation and misfires, while decreasing emission levels. A “must have” tool for operators and mechanics responsible for maintaining engine health, the instrument guides users through engine balancing and ignition analysis processes.

Model 6320/VA Vibration Analyzer. A four-channel vibration analyzer that combines the capabilities of an advanced 4-channel vibration data collector, oscilloscope, spectrum analyzer and transient data recorder in one handheld instrument. Windrock MD analysis software presents transient data in industry-standard formats, including orbits, time waveform, FFT, Bode, polar, waterfall and shaft centerline plots.

All Windrock analyzers utilize innovative Windrock MD software for trending, reporting and analysis. Windrock MD software serves as a single data repository for all reciprocating and rotating information, allowing data to be easily shared between analysts for collaboration and consultation with industry experts. Windrock MD software also is the analysis application used with Windrock On-Guard™ online systems.

6320 Analyzer Features

Up to 4 dynamic input channels for fast data collection

USB connector for fast data transmission, keyboard use and backup abilities

External adapter to connect a video monitor

Rugged, break-away leather strap and protective case safeguards the user and instrument

4 GB mass data memory stores virtually unlimited machine history

Small, lightweight design
8.5 x 10.5 x 2 inches
5.25 pounds



Simple menu-driven user interface for quick navigation

Displays up to 10 dynamic traces per graph for "on machine" analysis

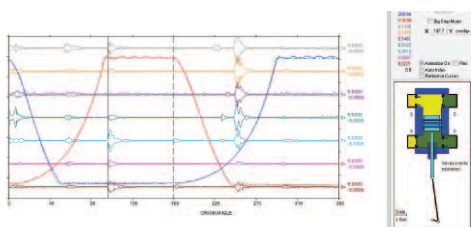
EMI hardened case prevents lockups, even near engine ignition systems

Removable lithium ion battery for "change and go" convenience

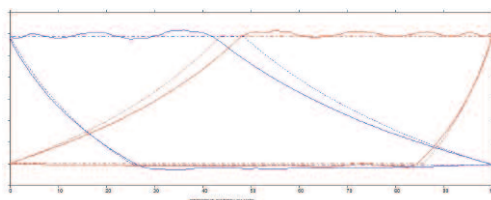
Onboard processing capability to evaluate performance data at the machine

Separate encoder, magnetic, optic or displacement input channel for flexibility in speed/phase data collection

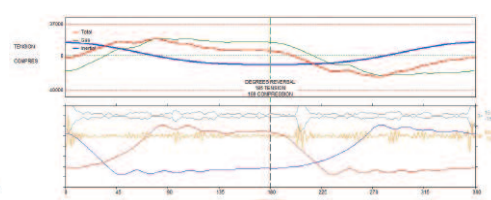
Windrock MD Software (Windows® Compatible)



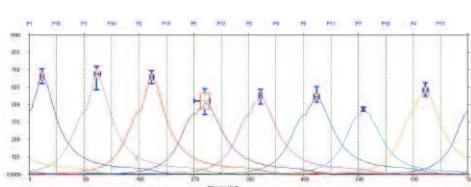
Compressor Cylinder Pressure and Ultrasonic



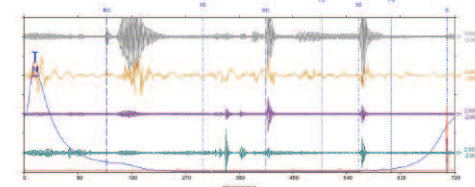
Compressor Pressure vs. Volume



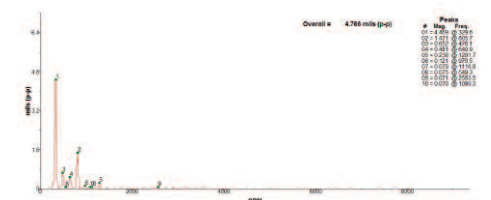
Compressor Rod Load Plot



Engine Power Cylinder Parade



Engine Signature with Vibration and Ultrasonic



FFT Spectrum

	6320/PA	6320/MA	6320/DA	6320/CA	6320/VA
BASIC ANALYSIS FUNCTIONS:					
Number of Input Channels	4 Plus Trigger	2 Plus Trigger	2 Plus Trigger	1 Plus Trigger	4 Plus Trigger
Hazardous Area Approval (Class I, Div. II, Groups A, B, C and D)	Optional	Optional	Optional	Optional	Optional
Constant RPM Display	Standard	Standard	Standard	Standard	Standard
900 MHz Wireless Link to 6320 Analyzer	Standard	Optional	Optional	Optional	Optional
COMBUSTION ANALYSIS FUNCTIONS:					
Wireless E-Guard Interface for Balancing	Optional	Optional	N/A	Optional	N/A
Peak Pressure Statistics (10 - 250 Cycles) (Mean, Deviation, High, Low, Spread, Std. Deviation, Average Mean Pressure/Spread)	Standard	Standard	Standard	Standard	N/A
Peak Pressure Balance Function (Mean, Deviation, High, Low, Spread, Std. Deviation, Average Mean Pressure/Spread)	Standard	Standard	Standard	Standard	N/A
Peak Pressure Balance Report (As Found, As Left)	Standard	Standard	Standard	Standard	N/A
Cylinder Pressure Tracking (Up to 10 User-identified Crank Angles)	Standard	Standard	Standard	N/A	N/A
Peak Pressure Angle Statistical Data (Mean, Deviation, High, Low, Spread, Std. Deviation, Average Mean Pressure/Spread)	Standard	Standard	Standard	Standard	N/A
Pressure vs. Crank Angle Pattern	Standard	Standard	Standard	Optional	N/A
Pressure vs. Volume Pattern	Standard	Standard	Standard	Optional	N/A
1st & 2nd Derivative Plots	Standard	Standard	Standard	N/A	N/A
Engine Performance Report	Standard	Standard	Standard	N/A	N/A
IGNITION ANALYSIS FUNCTIONS:					
Secondary Ignition Peak Level Statistical Data (10 - 250 Cycles) (Misfires, Mean, High, Low, Spread, Std. Deviation)	Optional	Standard	N/A	Standard	N/A
Secondary Ignition Timing Statistical Data vs. Crank Angle (10 - 250 Cycles) (Misfires, Mean, High, Low, Spread, Std. Deviation)	Optional	Standard	N/A	Optional	N/A
Expanded/Detailed Secondary Ignition Pattern (Ionization Level & Rise Time, Arc Level & Duration, Coil Ring Down Event)	Optional	Standard	N/A	Standard	N/A
Primary Ignition Voltage vs. Crank Angle Pattern	Optional	Standard	N/A	Optional	N/A
Ignition Summary Report	Standard	Standard	N/A	Optional	N/A
Ignition Survey Report	Standard	Standard	N/A	Standard	N/A
MECHANICAL ANALYSIS FUNCTIONS:					
Vibration Analysis (Transient & Orbital)	Optional	N/A	N/A	N/A	Standard
Vibration (High, Low & Raw) vs. Crank Angle	Standard	Standard	Standard	Optional	Standard
Ultrasonic vs. Crank Angle	Standard	Standard	Standard	Optional	Optional
Ultrasonic Headphones (Simultaneous Use With 6320 Analyzer or Standalone Battery Pack)	Optional	Optional	Optional	N/A	Optional
Vibration vs. Time	Standard	Optional	Optional	N/A	Standard
FFT Functions	Standard	Optional	Optional	N/A	Standard
O-Scope Mode	Standard	Standard	Standard	Standard	N/A
Infrared Temperature	Standard	Optional	Optional	N/A	N/A
COMPRESSOR PERFORMANCE FUNCTIONS:					
Horsepower Calculations/Total Load	Standard	Standard	N/A	N/A	N/A
Compressor Performance Report (Calculated Capacities, Volumetric Efficiencies, Valve Losses, Flow Balances, Rod Loads, Calculated Clearances, Theoretical Temperatures, Leak Index, Efficiency)	Standard	N/A	N/A	N/A	N/A
Theoretical Overlay With Pressure vs. Crank Angle Pattern	Standard	N/A	N/A	N/A	N/A
Pressure vs. Crank Angle Pattern	Standard	Standard	N/A	N/A	N/A
Pressure vs. Volume Pattern	Standard	Standard	N/A	N/A	N/A
Log Pressure vs. Log Volume Pattern	Standard	N/A	N/A	N/A	N/A
Rod Load vs. Crank Angle Pattern	Standard	N/A	N/A	N/A	N/A
Economic Report	Standard	N/A	N/A	N/A	N/A



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