KMbalancer®//+

Vibration Analyzer and Dynamic Balancer

- advanced vibration analyzer
- single, double-plane dynamic balance
- IP65, portable and compact
- powerful data analysis software

KM Instrument

Why we need KMbalancer®*II+*

PdM & CBM

Predictive Maintenance (PdM) and Condition Based Maintenance (CBM) are trends in modern industrial maintenance strategies, and they are the only way to transform machine maintenance from "spending money" to "making money".

Predictive maintenance and condition monitoring determine whether the machine should be repaired based on the individual <condition> of the machine. For example, vibration detection technology is used to analyze the abnormal causes, damage extent, and life prediction of machines, so we know when to repair? Where to repair? There is no need to constantly worry about temporary abnormal conditions of the machine. This can also reduce maintenance costs, increase plant capacity, and thus enhance the competitiveness of the enterprise.

CONDITION

KMbalancer®*II+* is suitable for vibration condition monitoring of all kinds of rotating machines, such as motor, pump, air compressor, windmill, gear box, steam turbines, generators, cooling towers, etc. With the powerful KMVS Pro Data Collection and Analysis software, we can manage the machine database, monitor trend of state, analyze the abnormal cause and output the report, etc. Its spectrum analysis and time waveform analysis can be used as the basis of the condition monitoring. Generally speaking, for the machine maintenance inspector, the bearing condition of rotating machine is the most concerned problem. KMbalancer®*II+* uses a high-performance embedded microprocessor with powerful data processing capabilities. KMVS Pro data collection and analysis software has a built-in bearing fault database that can be used to accurately analyze initial abnormal bearing problems and make early judgments on bearing wear or lubrication problems.

SOLUTION

KMbalancer®*II+* in addition to emphasizing the complete functions of vibration measurement and analysis, also emphasizes the two characteristics of "simple" and "practical". Most of the higher-order vibration analyzers have a flashy problem, many measurement and analysis of the function are too cumbersome to set up, which is not suitable for factory maintenance inspection and problem improvement. KMbalancer®*II+* can analyze various vibration problems, such as: imbalance, misalignment, shaft bending, looseness inside and outside the machine, fluid turbulence, poor lubrication, abnormal condition of motor, bearing and gear, etc.

CORRECTION

Among the root causes of damage to rotating machinery, 40% to 50% are related to poor dynamic balance. In addition to consuming electrical energy, poor dynamic balance can also easily lead to abnormal wear of bearings, mechanical shaft seals, rotating shafts and other components. In addition to the vibration analysis function, KMbalancer®*II+* also has the function of on-site dynamic balance correction, which can perform single and double-plane dynamic balance correction of machine speed from 1 to 100,000 RPM.

Who is using KMbalancer®*II+*

Petrochemical Industry

Petrochemical industry is responsible for the production of hydrocarbon fuel, lubricating oil and so on to meet the global demand for energy. In order to meet production requirements, complex machines and equipment that require very high operating standards are put into use. Once they stop due to failure, the losses will be huge. KMbalancer®*II+* can be applied to key equipment in factory, such as pumps, compressors, ventilation equipment, exhaust fan and power equipment.

Machinery Manufacturing Industry

Machinery manufacturing industry is the heart of industry, it provides technical equipment for industry, agriculture, transportation, national defense, etc. It is the base of the national economy and defense modernization technology. Therefore, the development of the machinery manufacturing industry and the level of self-sufficiency of machinery and equipment are the true indicators of a country's economic development level and scientific and technological level.

KMbalancer®*II+* can be applied to the monitoring and improvement of production equipment of manufacturers, such as the precision balancing of spindles in CNC manufacturing enterprises, the vibration monitoring of fans and the on-site dynamic balancing of impellers in the fan manufacturing industry, as well as the condition monitoring of various types of power equipment.

Colleges and Scientific Research Units

As the base of training technical talents, colleges and universities and scientific research units have always been taken the theory of technology research into practice. On the premise of consolidated theory knowledge, it constantly introduces advanced equipment for practical operation and provides guarantee of cutting-edge technology for the country.

KMbalancer®*II+* has gain recognition from numerous colleges and universities and scientific research units. It is well applied to the mechanical lab.

Power Industry

As the mass production of power, the structure of the power equipment become more and more complex, and the relation between each subsystem become closer and closer. Once any part of the equipment has a failure in the process of operation, it will be likely to interrupt production, which will cause huge economic losses. In order to ensure the operation of power system safety, economic and stable, fault diagnosis of power equipment will be turned to the form of state monitoring. In order to optimize the equipment management and preventive monitoring, the devices are usually divided into two categories: steam turbine generator and accessory equipment. Wind power : generator, gear box, bearing of main shaft Thermal power : ventilation equipment, turbine, steam turbine, generator, condensate pump, circulating pump and auxiliary pump.

Iron and Steel Industry

With the sustained growth of steel demand around the world, the competition of metallurgy and non-ferrous metal industry is increasingly fierce. How to improve the competitiveness of enterprises and reduce the cost of finished steel, vibration monitoring of the equipment is the best and the most effective way to implement it .

KMbalancer®*II+* can be applied to following plants: coking plant, blast furnace, smelting, basic oxygen furnace (BOF), open hearth furnace, hot-rolled and cold-rolled plant.

KMbalancer®*II+* can mainly be applied to the following equipment: motor, all kinds of fan (drum/induced draft fan, sintering fan, one/two dust removal fan, etc.), instr air compresssor, rolling mill, coiling machine, casting machine, the gearbox, crane, pump and ball mill.

Features of KMbalancer®*II* +

Intelligent LED Display

- Different color of LED lights indicate the state of instrument and battery

Excellent Performance

- The stable and efficient Android operating system
- I. MX6Q, quad core Cortex-A9, single core 1GHz processor with powerful data processing capabilities

Human-machine Interface

- Portable, one-hand operation
- Intelligent Sensitization, according to the light intensity to automatically adjust the brightness of the LCD screen

Solid Shell

- Light and compact
- IP65
- Non-slip design

Super Clear Exquisite Color Display

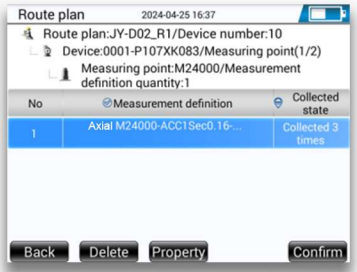
- Intelligent LED Display
- Bright backlight
- Auto off

Large Capacity Storage

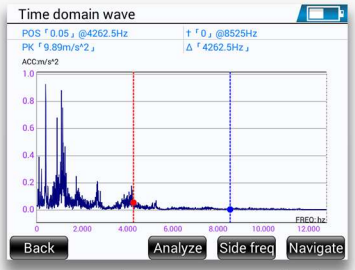
- 8 GB

High Capacity Lithium Battery

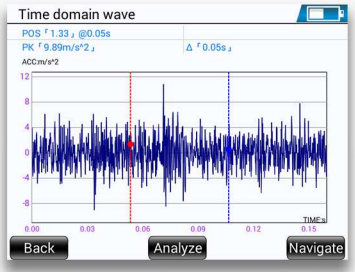
- Low power hardware design, intelligent power management and large capacity lithium battery make sure that it can be rated for >8 hours of continuous use on a full charge.



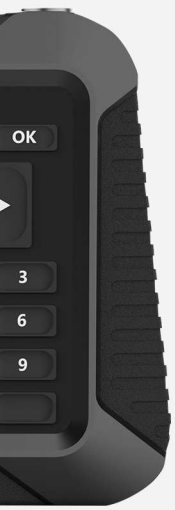
Route Based Data Collection



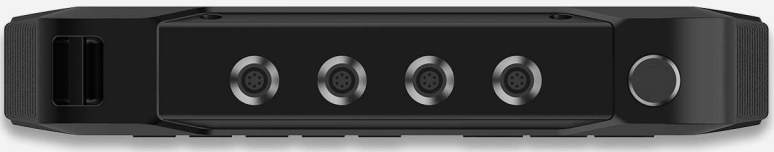
12800 Lines FFT Analysis



Time Waveform Analysis



The interface, suit for industrial environment



Trigger/speed/ industrial interface

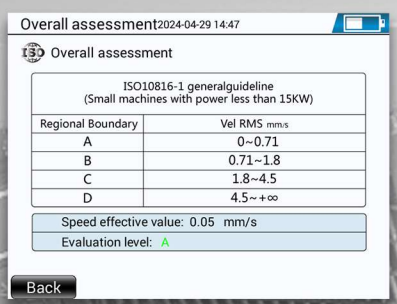
USB communication interface

Measurement channels A and B

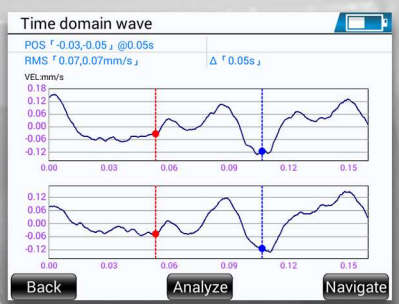
Functions of KMbalancer®*II*+:

- Route Based Data Collection
- Total Vibration Trend Monitoring
- FFT Analysis
- Time Domain Waveform Analysis
- Single, Double-plane Dynamic Balance
- Speed Measurement
- Vector Decomposition and Synthesis
- Raw Data Analysis
- ISO Permissible Unbalance Query

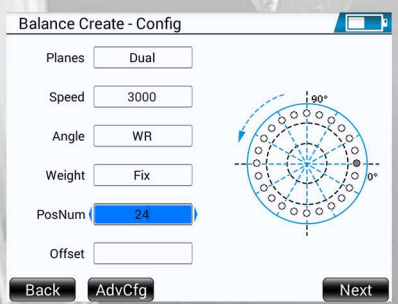
Solid Shell with IP65, dust-tight and splash-resistant, makes KMbalancer®*II*+ more durable and get effective protection in harsh condition



ISO Vibration Standard



Total Vibration Trend Monitoring



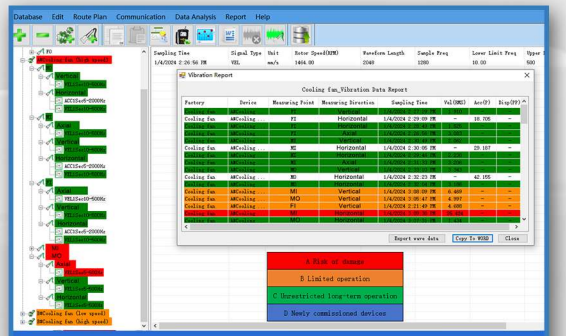
Single, Double-plane Dynamic Balance

KMVS Pro Data Collection and Analysis Software

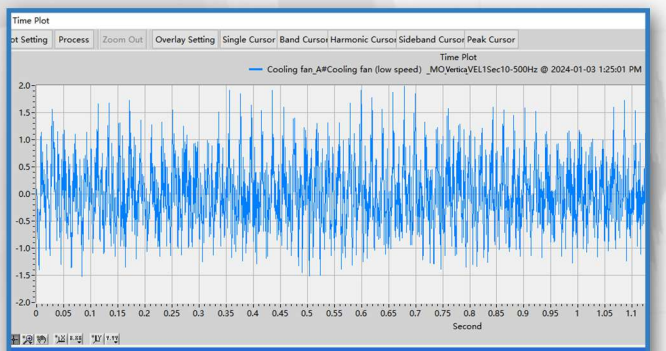
Whole plant planning, make machine condition clear at a glance

Perfectly matched with KMbalancer® *II+* instrument to form the factory's machine condition inspection and monitoring system. As a predictive maintenance system software platform, KMVS Pro has the functions of machine condition data collection and management, machine status alarm, trends and fault diagnosis.

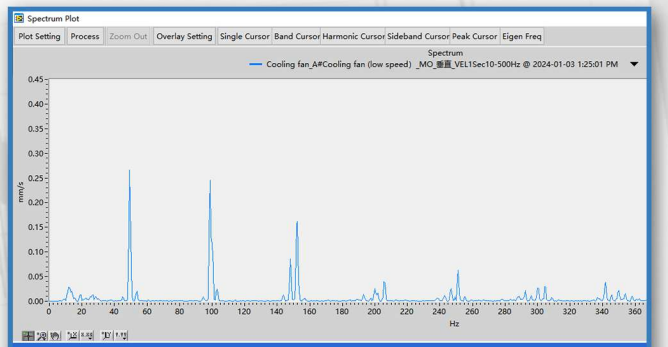
It provides the user with a convenient and flexible work platform, which enables it to manage machine status data, collect schedule data, evaluate machine status, analyze machine fault and generate predictive maintenance report.



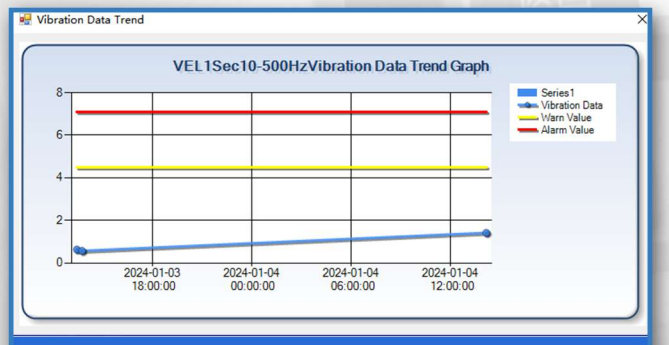
Alarm with color Vibration report automatically generated



Interface of time domain waveform analysis



Interface of FFT analysis



Total vibration trend analysis

ISO 10816-3

KMbalancer®*II*+ Technical Specifications

Display	Colorful backlit LCD screen, 480*640, 16.7M color	
Digital	Processor	1.MX6Q，quad-core Cortex-A9，single core 1GHz
	Flash	8G e.MMC
Communication	USB2.0 Full Speed	
Power	Lithium-ion, Operating time >8 hours continuous, Recharge time 2-3 hours	
Conditions	Enclosure	IP65 Dust-tight and splash-resistant
	Drop test	1.2m
	Operation temperature	-10℃~ 50℃
	Humidity range	0% ~ 80% Relative humidity
Collection	Number of channels	Channel A: ICP/AC/DC Channel B: ICP/AC/DC Channel RPM: speed
	Signal types	Velocity, acceleration, displacement
	Measurement types	Time waveform, total value , spectrum
	Signal range	±25V
	Dynamic range	> 110 dB
	Frequency Range	High (Fmax) all inputs = 40kHz, low (Fmin) DC input = DC, AC/ICP input
	Analog filter	High（0.16Hz / 1Hz / 2Hz / 5Hz / 10Hz / 20Hz / 50Hz /100Hz） Low（500Hz / 1kHz / 2kHz / 5kHz / 10kHz / 20kHz / 40kHz）
	Refresh rate	40 kHz（single）
	Windowing	Hanning
	Sampling rate	1k-128k
Dynamic balance	Speed range	1~ 100,000 RPM
	Dynamic balance	Single, double-sided dynamic balance, vibration analysis, rapid dynamic balance analysis
	Acquisition signal type	The unit can be set free
	Operation	Wizard type operation
	Tool box	Time/frequency domain analysis, history browsing, manually entered, data review, vector decomposition/synthetic, ISO permissible unbalance query, add calculation