书豪仪器 SOOHOW INSTRUMENT

IFP100 Portable Intelligent Ferrograph Analyzer

PRODUCT INTRODUCTION

The IFP100 Oil Wear Particle Image Monitoring System is a high-end industrial portable detection device developed by SOOHOW for monitoring ferromagnetic metal particles in machine lubricating oil. Its core image detection system first employs excitation technology to capture ferromagnetic particles adsorbed onto the inner surface of the glass in the sample detection cell within the lubricating oil. Utilizing optical lens imagin principles, an industrial CMOS camea acquires images of ferromagnetic particles deposited on the microchannel glass surface of the oil cell. Finally, neural network algorithms process and analyze the wear particle images to enable real-time monitoring of parameters such as size, dimensions, and morphology of ferromagnetic particles in the oil. The instrument system simultaneously features automatic wear mechanism identification, parameter trend analysis, automatic early warning, operation and maintenance recommendations, and automatic generation of inspection reports.
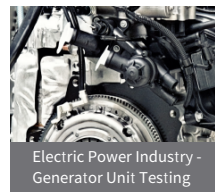
APPLICATION FIELD

Transportation Industry - Diesel Locomotive Inspection

Steel Industry - Fan Testing

Electric Power Industry - Generator Unit Testing

Navy Defense - Transmission Gearbox Inspection

MAIN FEATURES

■ The instrument detection unit employs 6x optical magnification (currently industry-leading) and a 5-megapixel CMOS industrial camera to achieve ultra-high-definition acquisition of wear particle images;

■ The instrument's internal detection module uses reflective light source illumination, enabling clear observation of wear particle surface textures and color characteristics;

■ The instrument features a built-in magnetic field strength that can be adjusted steplessly according to monitoring requirements , with 256 adjustment levels available;

■ The instrument is capable of classifying ferromagnetic wear particles into four wear types: normal abrasive particles, adhesive wear, sliding wear, and cutting wear;

■ The instrument software incorporates oil sample and device editing management functions, historical detection data report queries, device wear type, and wear particle quantity trend statistical analyses;

■ The instrument is equipped with automatic sample injection and automatic cleaning functions, includes sample cell cleaning effect monitoring (via software), and allows the duration of automatic sampling and automatic cleaning to be set;

■ The instrument automatically generates detection result reports and provides wear evaluation recommendations and maintenance advice based on the detection results;

■ Adopting high-strength injection molded shell, compact structure, lightweight, and easy to carry; The panel adopts high-precision aluminum alloy integrated processing technology, which is simple, beautiful, and durable.

PARAMETER

Project	Data
Detection Principle	Electromagnetic Adsorption and Image Recognition Technology
Detection Range	5～500μm
Light Source	LED Reflective Light Source
Optical Magnification	6×
Industrial Camera	5-megapixel CMOS camera; resolution 2592×1944
Detection Target	Ferromagnetic Particles in Lubricating Oil
Detection Parameters	Statistical Analysis of Particle Size, Morphology, and Wear Types
Output Indicators	Total wear amount, number of large and small abrasive particles, equivalent circle radius , major axis dimension, wear evaluation
Wear Type Output	Normal abrasive particles, adhesive wear particles, sliding wear particles, cutting wear particles
Analysis Functions	Supports data report querying, exporting, device trend analysis, and automatic generation of analysis reports
Detection Duration	Less than 1 minute
Display	12.1-inch 1280×800 color LCD with touchscreen operation
CPU	8-core 64-bit processor 4 Cortex-A76 cores and 4 Cortex-A55 cores, plus a dedicated NEON coprocessor Cortex-A76 with a maximum frequency of 2.4 GHz, Cortex-A55 with a maximum frequency of 1.8 GHz
GPU	Integrated ARM Mali-G610 Built-in 3D GPU Compatible with OpenGL ES 1.1/2.0/3.2, OpenCL 2.2, and Vulkan 1.2
NPU	Embedded NPU supporting INT4/INT8/INT16/FP16, delivering computing power up to 6 Tops
RAM	16GB
Storage	eMMC 256GB
Interface Type	Nylon tube with an outer diameter of 6 mm and an inner diameter of 4 mm
Operating Temperature	-20～60°C
Operating Voltage	DC 24 V or power adapter
Maximum Power	Less than 100 W
Output Port	USB/RJ45
Enclosure Material	PP, aluminum alloy
Weight	10±0.2kg