

## X-MET8000 Series



## OBJECTIVES

- | Lightweight and easily transportable
- | Simple to operate
- | Allows non-destructive testing

## RESULTS

- | Rapid testing in the field
- | Prevents major accidents

## When safety matters: Jibe Electric Power Company puts PMI testing at the forefront

For electric power safety, electronic equipment should withstand high temperatures and pressures reaching up to 700+°C and 20+MPa. The Electric Power Research Institute of State Grid Jibe Electric Power Company relies on Hitachi High-Tech's X-MET8000 Series to test all electrical parts that are made out of alloys at its power stations and transformer substations. As more complex materials are used in building power plants and grids, positive material identification (PMI) has become even more critical for Jibe Electric Power Company to prevent major accidents.

The Electric Power Research Institute of State Grid Jibe Electric Power Company was formally established on 18 May 2012, affiliated to the State Grid Jibe Electric Power Company. The research institute provides technical support for more than 20 power plants and to the State Grid Jibe Electric Power Company, which has a total installed capacity of more than 200 million megawatts.

The engineering division of the Electric Power Research Institute is responsible for many activities, which include: supervision, research and development, technical services, and technical transformation of equipment used for servicing. They also get involved in the technical supervision of the power grid, scientific research projects and business training.

“ The X-MET8000 helps us to complete non-destructive testing and can carry out field testing in any environment. ”

The power grid's metal technical supervision is mainly carried out at transformer substations, and 11 testing programmes were completed in 2017. This included material detection, thickness measurement (thickness of zinc coating and silver coating), non-destructive tests (testing of weld joints by X-ray, ultrasound and vortex), mechanical properties, and a metallographic phase.

## METAL DETECTION IS NOT TRIVIAL FOR ELECTRIC POWER SAFETY

PMI testing is not trivial for electrical power safety. For a power plant that runs normally, if a part needs to be replaced, it's inspected before entering warehouse, before installation and after installation. No omission is allowed in the whole process. As this is critical activity, high expectations are placed by the team when it comes to selecting the instruments and equipment used for PMI testing.

## USING THE LATEST TECHNOLOGY

Jibei Electric Power has always placed a lot of importance on the instruments it chooses, including trying new technologies, when it comes to material analyser and equipment. For instance in early 1996, the research institute introduced the ARC-MET930 direct-reading spectrometer. This was followed by the X-MET3000 portable X-ray fluorescence spectrometer, and more recently, the company has bought nine X-MET8000 Experts and two X-MET8000 Optimums from Hitachi High-Tech.

Su Derui, Senior Engineer, said: "We have just bought X-MET8000 Expert and Optimum handheld X-ray fluorescence spectrometers that only weigh 1.5kg each. They are simple and efficient to operate, with the precision comparable with that of laboratory instruments, reducing our need for laboratory analysis."

The technical supervision work covers a wide range of activities and to realise more efficient processes, some of the nine X-MET8000 analysers purchased have been allocated to subsidiaries of Jibei Company. This is part of introducing best practice across the wider business, which will play a fundamental role in avoiding the occurrence of major accidents cause by the non-conformance in the chemical composition of materials used.

Su Derui continues: "The X-MET analysers help us to complete non-destructive testing and also can carry out field testing in any environment accessible to people, even in closed, narrow and small spaces. In addition, the instrument can work without external power source, and can work continuously for more than 10 hours with one lithium battery, so they're convenient to use."

## PODIUM POSITION FOR TEAM AWARD IN THE 2017 METAL TECHNICAL SUPERVISION SKILL COMPETITION

Jibei Electric Power Company came third in the State Grid Corporation's Metal Technical Supervision Skill Competition, which saw 27 provincial/municipal electric power companies take part. The competition included both a theoretical and practical examination.

After the competition, the State Grid Corporation conducted the metal technical supervision capability evaluation at the 27 provincial electric power companies under the State Grid Corporation. According to the senior engineer SU Derui, Jibei Electric Power Research Institute had passed all 11 examination criteria.

**If you'd like to see the X-MET8000 analyser in action visit [www.hitachi-hightech.com/hha](http://www.hitachi-hightech.com/hha) or book a demo.**

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### X-MET8000 RANGE

Our range of handheld XRF analysers, the X-MET8000 series, delivers the speed and performance required even in the most demanding applications. Suitable for all analysis needs from scrap metal analysis, precious metals and jewellery analysis to positive material identification (PMI) for inspection and manufacturing applications, and regulatory compliance screening.