

Impressions of the Fluke 289/FVF

Application Note

The multinational BENETTI GROUP is the world's leading manufacturer of machinery and tools for excavating and processing marble, granite and stone blocks. Founded in 1926, the group is currently managed by the third generation of the Benetti family, and has around 50 employees. It meets the most demanding production requirements, with unrivalled experience in designing and manufacturing a complete range of equipment for natural stone quarrying and processing.

Marco Pieretti is an assembly mechanic with BENETTI MACCHINE Spa. He is in charge of equipment assembly at sites abroad, as well as employee training and technical assistance for the company's entire equipment range. He provides technical assistance services at least twenty times per year, and is also involved with assembly and final testing of a variety of the company's saws:

- the Fast 735 and Fast 736 diamond belt saw for slabbing and dressing marble and stone blocks.
- the Super Jet Belt 950 diamond belt saw for block cutting in marble and stone open pit quarries.
- the Tunnel Jet Belt 940 diamond belt saw for use in underground quarries.

Mr. Pieretti had been looking for a measurement tool that he could readily use for testing and troubleshooting activities in both the quarry and workshop. He does not have an electrotechnical or electronics background, and was hoping to find a powerful, versatile, portable and easy-to-use

tool to help limit costly equipment downtime. Such downtime is particularly undesirable in Benetti's business, where equipment is used in open pit and underground stone quarries.

Most of Benetti's machinery is powered by asynchronous motors that are controlled by frequency converters at up to 75 kW for driving diamond wire and belt equipment. Secondary drive systems use small inverters or dc motors controlled by corresponding electronic boards. Stationary cutting machines rely on a hydraulic circuit to control diamond wire raising and lowering. This circuit includes a variable capacity hydraulic pump, a proportional valve-controlled piston and a pressure/voltage transducer.

The Fluke 289 seemed from Fluke's web site to meet all Mr. Pieretti's needs, and from his distributor he ordered the Fluke 289 FlukeView® Forms Combo Kit, i410 AC/DC Current Clamp, and TLK289 Industrial Master Test Lead Set. He got of his Combo kit at the beginning of 2008, and has been using and evaluating it since then.

For example, with built-in data logger and TrendCapture capability, the Fluke 289 helps Mr. Pieretti track down elusive, intermittent problems, monitoring equipment while he gets on with other work. He can overlay the logged data from six meters or six time periods to find cause-and-effect relationships or for condition monitoring applications in FVF software.

Benefits

1. Current and voltage measurements of dc drive

The i410 AC/DC Current Clamp makes it easy to record the various operating parameters of dc drives used in both diamond wire and belt saws. It shows no-load operation parameters during calibration and test using the convenient MIN/MAX/AVG display. Besides maximum and minimum values, this also shows average values and all corresponding timestamps. The large, easy-to-read display has two brightness levels for screen backlighting.

Under actual operating conditions, Mr. Pieretti found that the Fluke 289 conveniently allowed him to measure the force that the diamond wire/belt tool has to exert. That comes because of variations in cutting conditions like diamond wire/belt sharpness, stone inclusions and irregularities, and equipment cooling efficiency.



Fast 735 and Fast 736.



Fast 735 and Fast 736.



Fast 735 and Fast 736.

2. True-rms current and frequency measurements of ac/low-pass filter drive

With the help of the i410 current clamp, Mr. Pieretti can accurately calibrate instrumentation during new equipment testing, and avoid instrumentation damage during testing and troubleshooting in the quarry. He can also collect and monitor operating parameters of the asynchronous motors that drive diamond wire and belt equipment with inverters.

3. Temperature measurement

The CSM 962 chain saw is controlled by a complex and highly integrated hydraulic circuit that must withstand extremely harsh operating conditions. The Fluke 289 allows hydraulic transmission and epicyclic reduction gear operating temperatures to be collected, which is particularly useful during troubleshooting.

4. Event logging

Diamond wire saws operate at very high power (up to 75 kW) and their fixed shaft start-up result in high starting currents. There are frequent mains quality problems because of on-site electric generators, including uncharacteristically long response times and interference with nearby equipment.

The Fluke 289's MIN/MAX/AVG function allowed Pieretti to detect and report on customer problems with mains quality and/or free distribution line dimensioning, which caused malfunctions that were not correctly attributed to the machines. This included inverter alarms for overvoltage or undervoltage, start-up problems, and damaged contacts.

5. Monitoring diamond wire and belt sawing machine operating parameters

The Fast 735 and 736 stationary diamond belt saws are much like a laboratory for stone abrasion testing, as the equipment management software optimizes performance parameters according to the force exerted on the tool. The sharpness and efficiency of the tool may vary over time, making fine tuning of machine and tool composition a long and costly process.

In this context the Fluke 289's key Event Logging feature with a variable sample time after the minimum period of one second, has repeatedly proved to be extremely useful. It can record a signal corresponding to the effort required by the tool over time (even a full work shift) and present the data efficiently using the FlukeView® Forms software.

"The Fluke 289 has proved to be an extremely efficient tool over the relatively brief period in which I have used it" remarked Pieretti. "As a non-specialized user, I particularly appreciate its accuracy and easy-to-use features, which give me a problem-solving tool for a variety of situations. Last but not least, I value sharing with other technicians the experience I gain on quickly fine tuning machines and tools in the field. Congratulations on your products and thank you!"



Temperature measurement.



The Fluke 289's MIN/MAX/AVG.

Fluke. *Keeping your world up and running.®*

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