



OEM recommended shaft voltage checks are now safer, easier and more accurate than ever before.



Fig 1. Cutsforth™ Assurance Monitoring System (10" x 10")

# SHAFT GROUND MONITORING ASSURANCE SYSTEM

Shaft voltage, left unchecked, may damage the bearing surfaces of turbine generators, leading to catastrophic failures. Cutsforth™ offers an efficient alternative to manual voltage and current measurements with its innovative **Assurance Monitoring System** (Fig 1) that integrates with Cutsforth™ **Shaft Grounding Assembly: Series 2** (Fig 2). Our Assurance Monitoring System takes real-time, peak and average voltage and current measurements and passes them directly to the control room. We've included an easy to read display panel for "walk-up" readings. Plant personnel can easily and safely know when changes occur on the shaft; changes that can damage bearings and other generator related elements.

## ⚡ ASSURANCE HIGHLIGHTS

- Easy to Read Display
- Measures and Displays the following in real-time
  - » Voltage
  - » Current
  - » Ground Rope Status
- Connects to Plant Control Systems via 4-20mA lines and Modbus RTU for easy integration
- Safe and simple installation
- Easily connects to most Cutsforth™ Grounding Assemblies



Fig 2. Cutsforth™ Shaft Grounding Assembly: Series 2 that integrates with the Assurance Monitoring System

# TECHNICAL SPECIFICATIONS

Shaft Ground Monitoring: Assurance

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- Enclosure NEMA 4X rated.
- Operating Temperature Range: +5 to 150 F (-15 to 70 C)
  - » **Note:** This is specifically the Assurance System Enclosure, the Shaft Grounding Assembly hardware max temp rating is higher. Inquire for more information.
- Real time shaft voltage, shaft current and rope condition are visible on an easy to read touch screen display:
  - » **Voltage Zero to Peak:** Range 0 to 200 V
  - » **Current Zero to Peak:** Range 0 to 70 A
  - » **Voltage RMS:** 0 to 50 V RMS
  - » **Current RMS:** 0 to 30 A RMS
  - » **Voltage DC:** +/- 25 V
  - » **Current DC:** +/- 30 A
  - » **Rope Status:** Pass/Fail
- Manual input tracks date of rope change and enables operator to reset rope fault after change or inspection
- Shaft voltage & current test points are located on the Assurance System and enable the use of a handheld oscilloscope or voltmeter to take measurements.

## Connectivity to Plant Systems:

- Can reduce the frequency of routine walk-down inspections provided the data is integrated into data logging systems and rope wear is set to alarm to alert when maintenance is necessary.
- The values measured above are transmitted to the plant historian or other management software via seven 4-20 mA channels or Modbus RTU.
- For RMS and Peak measurements, 4 mA = zero and 20 mA = a full-scale reading.
- For DC measurements, 4 mA = full-scale minus reading and 20 mA = full-scale positive reading.

**Accuracy:** RMS and DC readings are within +/- 2% of source.

**Frequency Response:** Down 10% between 10 Hz and 100 kHz

**Pulse Response:** Captures pulses 10 microseconds or wider. 100 kHz or slower. (based on laboratory tests with flat-topped pulses)

- » **Notes for Pulse Response:** Negative-going pulses are converted to positive and displayed as positive readings. Accuracy, based on tests with regularly repeating pulses: +/- 2% of reading plus 5 digits, or better. Single-pulse capture holds each maximum value for 1 second. Accuracy may vary depending on the width of the pulse and its timing relationship to the internal sampling rate. Variations of around 10 to 20% of reading are possible. For example, a single 10V pulse might be displayed as anywhere between 8 and 10 volts.

Learn about all of Cutsforth™ Shaft Voltage & Current Monitoring options at [Cutsforth.com/ShaftGrounding](https://Cutsforth.com/ShaftGrounding)

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