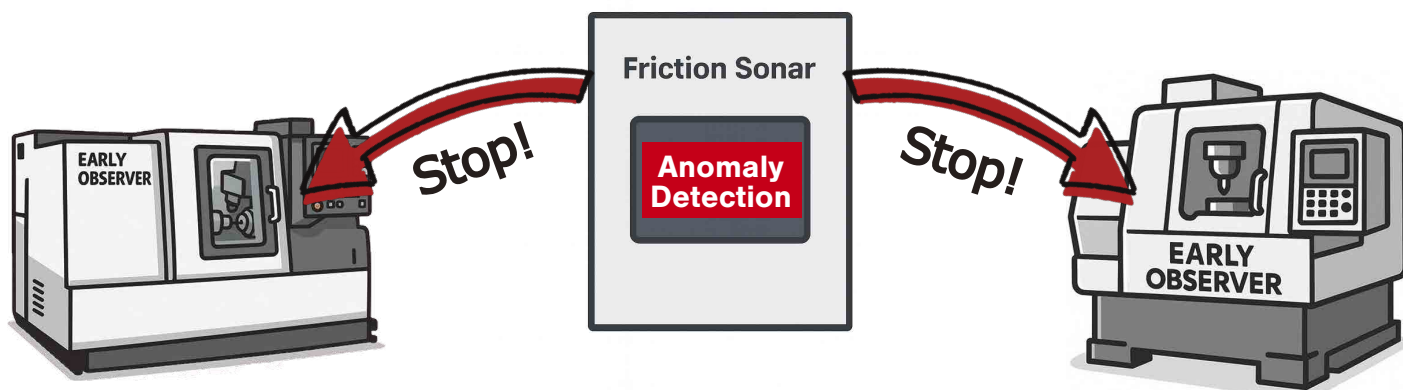# Early Observer
Friction Sonar
Retrofit system for existing NC

Real-time monitoring of machining

Friction Sonar

Anomaly Detection

EARLY OBSERVER

Stop!

Stop!

EARLY OBSERVER

Early Observer Friction Sonar

is a machining monitoring system that can be retrofitted to existing NC machining machines.
It monitors the machining status of up to six locations in real time. If it detects any of the following conditions, it will issue an error signal.

Tool destruction/breakage/wear condition

Connection Method

Connect the external device PIO of the CNC controller to the PLC built into the friction sonar.

Mitsubishi Electric MELSEC iQ-R   Early Observer MEL-E Freddo
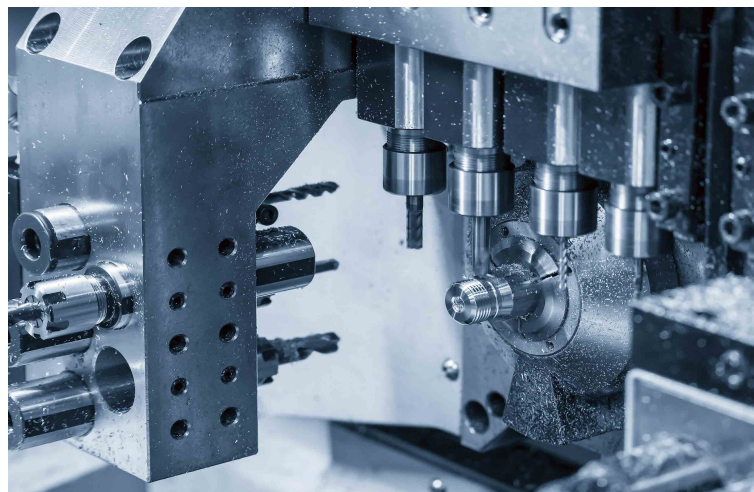
Touch sensor feature (Patent pending)

* Standard equipment on the Early Observer MEL-E Freddo series.

It detects contact between the tool and workpiece at high speed and outputs a contact signal after 1/500 seconds.
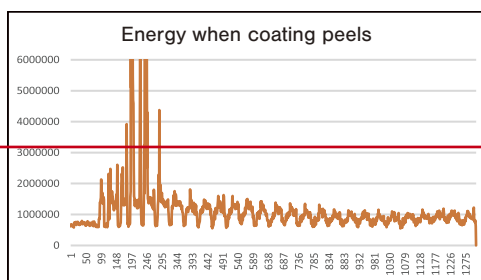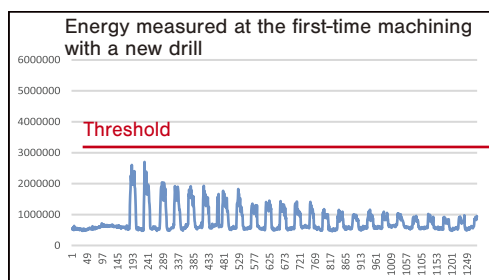In finishing processes where the workpiece has high precision, the high-speed skip function can be used in conjunction with this to reduce the tool length measurement time and achieve high-precision machining.

* This product is an engineering system that requires consultation with the customer.
* Depending on the target equipment and processing content, the system may not perform to its full potential.
  We recommend that you conduct a verification test before installing the system.

JCC Co., Ltd.

■ Friction Sonar detection example [Detecting coating peeling on Φ0.2 drills]

Energy measured at the first-time machining with a new drill

Threshold

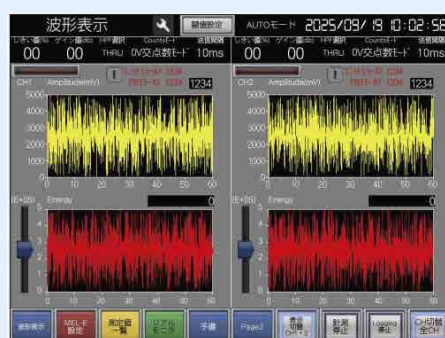**Energy when coating peels**

New drill

Coating peeling

■ Friction Sonar standard operation screen

1. Measurement condition settings

Set the measurement conditions.
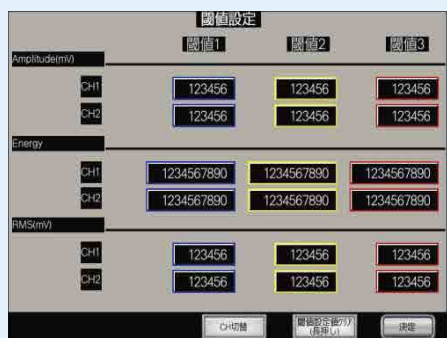
2. Real-time display of processing status

The machining status is displayed in real time.

3. List of measurement values for processing status

Displays machining measurement data and calculated values for tool management.
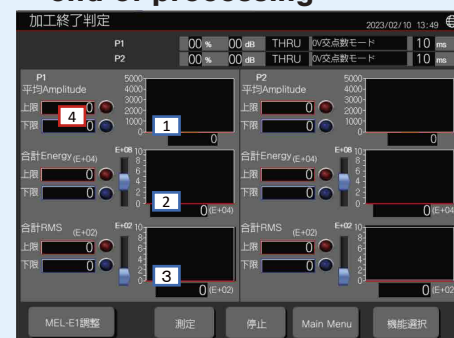
4. Threshold alarm setting screen

Set alarm thresholds for tool damage, breakage, etc. Refer to the data in [**3.**].

5. Real-time diagnostic screen

Real-time management is performed according to the settings on the [**4.**] Alarm threshold setting screen.

6. Diagnostic screen at the end of processing

Displays the calculated value for the tool at the end of machining.
Set a threshold value to manage the tool.

Note: Each diagnostic will automatically detect abnormalities when in automatic driving mode.
For details, refer to the "New MEL-E" leaflet.

* This product is a data logging system adopting the Focus AE sensor as a key technology, which does not guarantee machine failure sign diagnosis result or quality control.

* As of November 2025 The specifications may be changed notice.