P11TF12 Provides Process Control & Special Cause Event Detection

Poor Machining Practice ==> Reduced Fatigue Life ==> Early Component Failure

Selected Incidents Related to Hole Manufacture

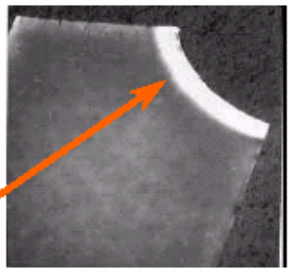
Early '90s - Cracks discovered in 9 Inco 718 and Rene 95 disks

7/96 - Pratt & Whitney titanium disk fails during take-off

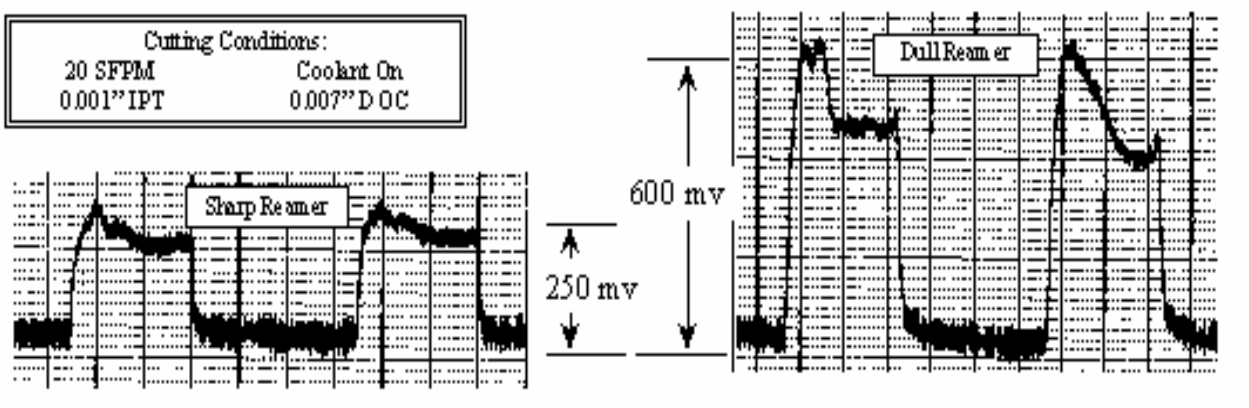
1999 - Forward Outer Seal crack discovered at a drilled/reamed bolt hole in Inco 718

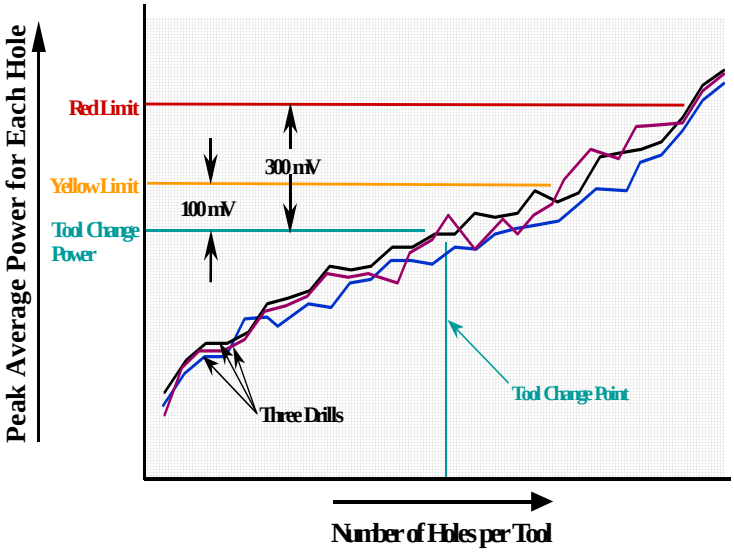
- **No visual or FPI indications at manufacture (1986, pre-P11TF12)**
- **Machining Parameters meet current P11TF12**
- **Metallography indicates severe overheat**
- **Lab simulation indicates likely loss of coolant during drilling**

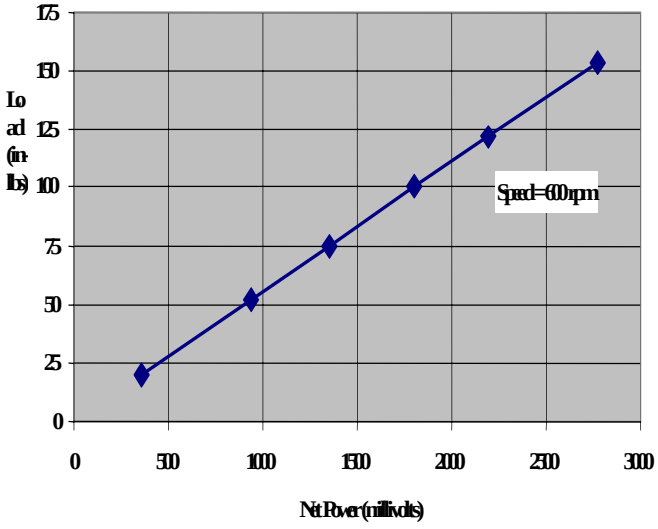
A Special Cause Event !
Under P11TF12 the operator reports the loss of coolant.
Power Monitoring (Class C Hole) detects the process variation.



Example of a thermal damage layer ~ 0.025 inch deep
(Hole cross-section cut, polished, and etched)







Electronic
Service
Products

PM2005

ESP Automation

Power Monitor System

GE P11TF12
GE P11TF8

Overview

The ESP Power Monitor system monitors all the critical processes to assure compliance with GEAE specifications for P11TF12 and P11TF8 machining and shot peening operations. The ESP *PM2005* incorporates the latest design features found in no other monitoring systems on the market today.

The heart of the system is a 2 GHz CPU with the power and speed to keep your system running well into the future. A (minimum) 40 GB hard drive ensures plenty of space to capture and store all data even on long runs. The new brilliant 17" active matrix display and extremely accurate resistive touch screen make viewing and setup fast and easy with our onscreen keyboard. Our main screen provides you with real time display of Spindle Power, RPM, Yellow and Red limits. The lower half of the display acts as a chart recorder and all current parameters are displayed to the right of the recorder. The subscreen menu buttons provide you with all the tools needed to navigate with ease all the other features of the *PM2005*.

GE approved Power cells and Flow sensors are sized to fit most every possible configuration from very small current and flow ratings to very large, including extremely high coolant pressures.

Optional features provide solutions to even the most demanding of customer needs for networking and communications.

ESP also provides Custom Integration to every Control from Gun drills and Jig Bores to Multi-axis CNC controls.

ESP will calibrate and certify your new installation and submit all necessary paperwork to GE for review and approval making the certification process as smooth as possible.

When You're Thinking Electronics…Use ESP!

Features

- Pentium Class CPU
- Microsoft Windows 2000 Operating System
- 17" Active Matrix (TFT) Color Display (1024x768 Resolution)
- High Resolution Touch Screen
- 256MB RAM
- USB port for peripherals
- 40 GB Hard Drive
- Onscreen Keyboard
- Keyboard with Mouse pad
- Standard Serial/Parallel Ports
- 3.5 inch Floppy Drive
- 16 Digital input/output
- 8 Analog Inputs
- GEAE Approved Power Cell
- Dual Coolant Flow Sensors
- Analog Pressure sensor
- 10/100 Mbs Network Adapter

Options

- *E/DNC* Network Solution
- Torque Controlled Machining
- Barcode scanner
- 120GB Hard Drive
- 54Mbps Wireless-G Networking
- up to 2GB RAM

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