

An automatic electronic engine control unit designed for the MiniLab™ Gas Turbine Power System that ensures ease of operation and engine longevity.



Product Summary

- Autostart System Reflects Aero, Marine and Industrial Turbine Engine Practice
- Fuel Introduction and Ignition Occurs at Optimal Engine RPM
- Electronic Monitoring Ensures Temperature and RPM Limitations Are Not Exceeded
- Operator Interface Displays N1%, TIT and EPR
- Total Engine Run-Time and Cycle Count Permanently Recorded
- System Alerts Operator to Low Fuel and Low Oil Conditions
- Exceeding Any Engine Limit Results in Immediate Engine Shutdown
- Engine is Manually Controllable Throughout Entire Operating Range
- Software Upgradeable to Allow Incorporation of Periodic Updates
- Automation Allows Operator to Focus on Educational or Research Activities
- Industry Leading Warranty with Unsurpassed End-User Support
- Designed and Manufactured in the USA

Description

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Turbine Technologies
LTD
MiniLab Gas Turbine
Power System # 0419
Factory Demonstrator
Chetek, WI USA
TTL TIME: 0:08:32
CYCLES: 8
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N1% 58.1 TIT 515 °C
EPR 6.8 RUN 0:00:25
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```
*** CAUTION ***
Desc: FUEL LEVEL
*** CAUTION ***
Desc: OIL LEVEL
*** CAUTION ***
Desc: THROT POSITION
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```
!!! WARNING !!!
Desc: LOW START PRES
!!! WARNING !!!
Desc: HUNG START
!!! WARNING !!!
Desc: OIL PRESSURE
!!! WARNING !!!
Desc: OVER SPEED
!!! WARNING !!!
Desc: OVER TEMP
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Turbine Technologies MiniLab™ Gas Turbine Power System is now available with a fully autonomous computer controlled start and engine monitoring system. Purpose designed and specifically built for the SR-30 Gas Turbine Engine, the OneTouch™ system manages the engine start process and continuously monitors all subsequent engine operation. Should a critical engine parameter be exceeded, OneTouch™ immediately shuts the engine down and alerts the operator to the cause. OneTouch™ greatly simplifies engine operation and effectively frees the MiniLab™ operator to focus on instruction, demonstration and data gathering without compromising safety or engine health. With OneTouch™, virtually anyone can operate the MiniLab™ Gas Turbine Power System with confidence and assurance that the safest and most efficient means are employed during the starting and operation of the engine. No other gas turbine of this type is as easy to operate.

Two buttons and the traditional T-Handled Power Lever are all that is necessary to operate the MiniLab™ through the OneTouch™ system. A backlit LCD screen integral to the operator panel serves as the primary user interface. During normal operation, the LCD screen indicates all monitored engine parameters and provides a simple indication of system status. Should OneTouch™ command an engine shutdown, the cause for the shutdown will be displayed. Additional diagnostic and stored data retrieval functions are available through a combinatorial selection of the two buttons and power lever.

Operation of the MiniLab™ equipped with OneTouch™ is both intuitive and straightforward. A keyed master switch limits MiniLab™ operation to those that are authorized to do so. With the keyed switch on, power is immediately applied to OneTouch™. During system initialization, several screens are displayed that provide basic MiniLab™ information such as unit serial number, registered owner and cumulative system time displayed as engine run-time and total engine start/stop cycles. The availability of this information is particularly helpful when making operational or service inquiries to the factory.

Following initialization, OneTouch™ will display the normal operation screen and indicate that the engine is ready to start. Pressing the green START button commences the autostart sequence. Engine rotation begins through the introduction of starting air. Rotational speed is displayed as a percentage of the maximum engine RPM limit as indicated by the N1% value. As N1 increases, fuel is introduced at the appropriate time and ignited thereby starting the combustion process. The displayed Turbine Inlet Temperature (TIT) value will show an immediate temperature rise indicating positive combustion. As N1 continues to increase, the Engine Pressure Ratio (EPR) relating combustion pressure to ambient pressure will also increase. Starting air remains on until the engine achieves a stable idle rpm and the TIT has cooled to an acceptable level.

The engine is now running and may be operated as desired. For reference purposes, an elapsed run-time counter displays the time since engine start. Stopping the engine is as easy as pressing the red STOP button. OneTouch™ continues monitoring the engine throughout the entire shutdown. Once N1 and TIT values are within safe start limits, OneTouch™ enables the engine for an immediate restart. Through OneTouch™, the engine may be repeatedly started and stopped without any adverse affect to the engine or the MiniLab™ system.

During start and operation, should any critical engine value be exceeded or a problem found with any MiniLab™ system, OneTouch™ will command an engine shutdown and alert the operator to the problem. Faults are segregated between CAUTION and WARNING depending upon the severity of the problem and the operator intervention required to rectify the fault. A CAUTION is indicative of a minor problem that can be immediately fixed. Low fuel or oil levels are examples of CAUTIONs that are fixed simply by adding the appropriate fluid. A WARNING suggests the potential for a more serious problem that must be investigated before the engine can be run again. In the unlikely event a WARNING indication is experienced, the Operator's Manual provides detailed instructions to assist with the WARNING condition prior to any subsequent operation.

A software based system, OneTouch™ is easily upgraded and revised as changing requirements warrant. Hardware ports are available to facilitate interaction with the OneTouch™ system.