Capstone Turbine Corporation · 21211 Nordhoff Street · Chatsworth · CA 91311 · USA
Phone: (818) 734-5300 · Fax: (818) 734-5320 · Web: www.microturbine.com

Work Instructions

LCM Control Board Replacement

Capstone Model C60 MicroTurbine

Purpose and Scope

This document describes the procedure for replacing the Load Control Module (LCM) Control Board on the Capstone Model C60 MicroTurbine.

Guidelines

This document presents information sufficient to allow an Authorized Service Provider (ASP) to properly replace the control board.

Conduct maintenance in a clean, well-lighted area using normal shop tooling to avoid damage to delicate components.

Retain all parts removed for use at assembly, unless otherwise specified. Discard all parts as noted in this document.

Safety Precautions

Only Capstone Authorized Service Providers (ASP's) should open the MicroTurbine and other equipment connected to the MicroTurbine. The systems can include multiple sources of power.

Observe and adhere to the Safety Precautions listed below when servicing your MicroTurbine. Read and become familiar with the General Safety Precautions and Instructions contained within the MicroTurbine System Manual. Before servicing:

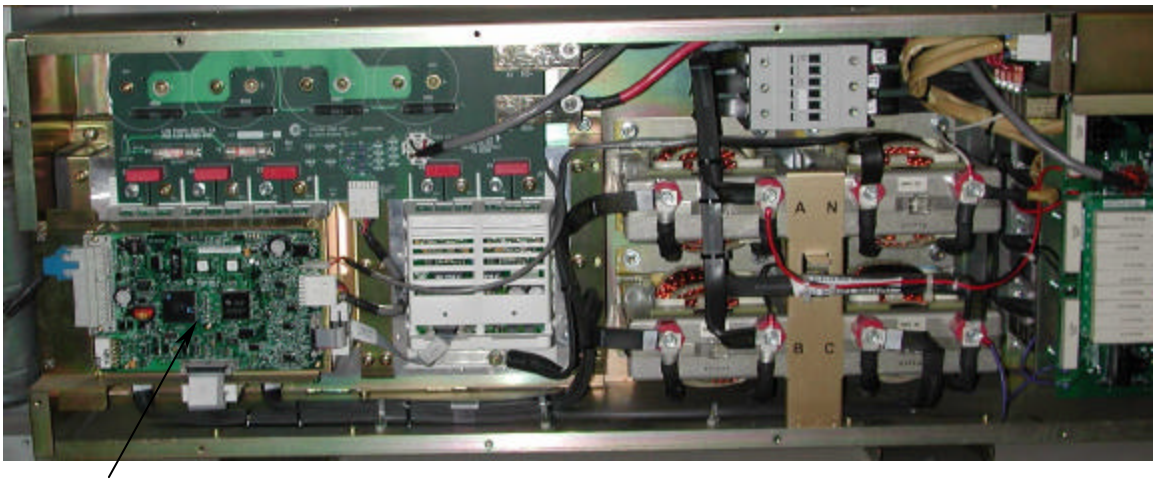
- ❑ Check to ensure that the inlet fuel supply is SHUT OFF
- ❑ Always check to ensure that your MicroTurbine is de-energized from the utility. Isolate and lock out the utility (if applicable).
- ❑ Isolate and lock out any other sources of power to the MicroTurbine. For example, connections to the solid state relays in the MicroTurbine Communications Bay.
- ❑ Open the Stand Alone battery circuit breaker, lock it in the OFF position, and then unplug the battery cable.
- ❑ Wait at least five minutes after disconnection from utility before servicing to allow for electrical energy dissipation.
- ❑ Verify that no voltage is present on any electrical terminals.
- ❑ Never work on energized equipment.
- ❑ Observe all safety precautions to prevent Injury or death.

Required Tools

- ❑ 10mm socket
- ❑ #2 Phillips screw driver
- ❑ Anti-Static ground strap

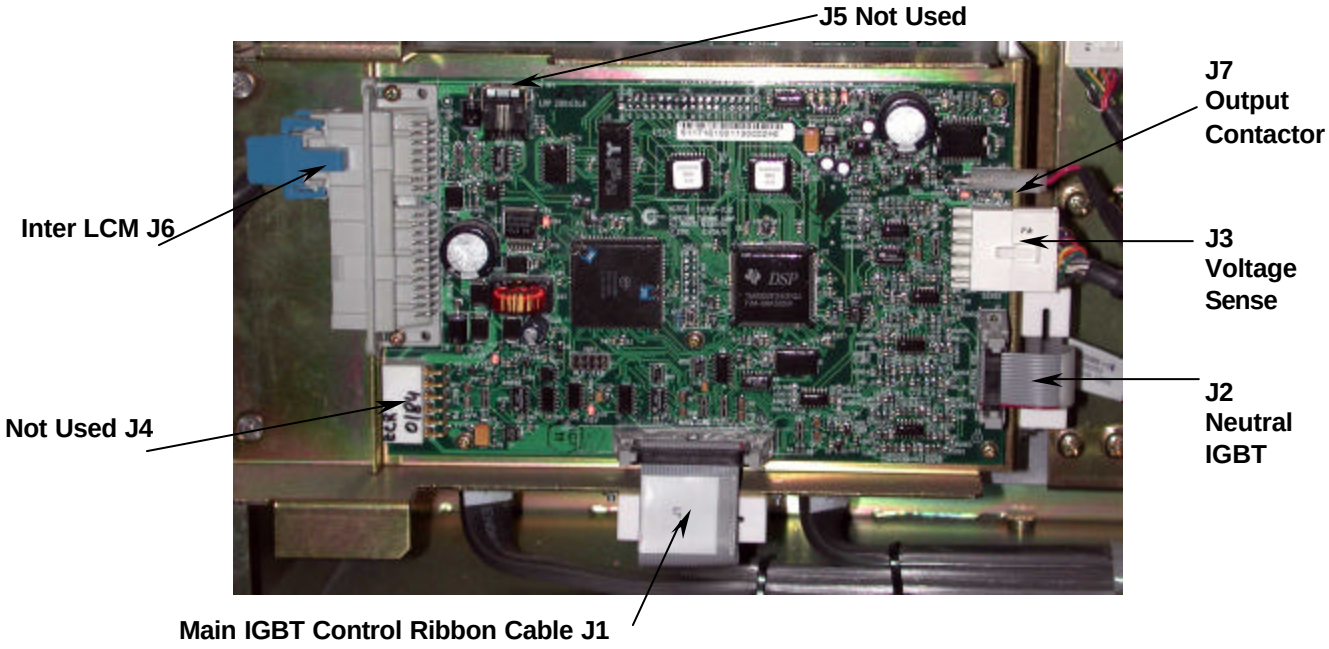
Procedures

1. Ensure the MicroTurbine system is in the standby state.
2. Remove all power sources and fuel supply from the MicroTurbine system.
3. Remove the MicroTurbine right side panel.
4. Remove LCM cover.



HCB/LCM Control Board

5. Remove cables J7 LCM Output Contactor, J1 Main IGBT, J2 Neutral IGBT (if Stand Alone equipped), J6 Inter LCM, and J3 Voltage Sense from HCB.



6. Remove Hybrid Control Board (HCB) from mounting plate by removing six #2 Phillips screws.
7. Install new HCB. Be sure to re-install all 6 mounting screws as some provide necessary grounding.
8. Reconnect all power and communication cables to HCB. Verify ribbon cable connections at J1 and J2 for the IGBT's are secured.
9. Turn on power and fuel supply.

NOTE	The Hybrid Control Board (HCB) can be programmed for BCM or LCM software functions. Verify that the PM is programmed properly for the LCM Assembly P/N. If necessary reprogram the PM and/or software per CRMS Instructions.

10. Check the configuration using CRMS or the Display Panel. If the LCM Assembly P/N does not match that on the physical label on the LCM, reprogram the LCM.
11. Verify that the Inverter DSP controller software installed in the HCB matches that of the system code set. Reprogram the software if necessary.

NOTE	A 4011 software compatibility fault will be reported if software does not match the device or code set.

12. Test the system for proper operation as detailed in the MicroTurbine User's Manual.

Responsibility

It is the responsibility of Capstone to make these procedures available to the Authorized Service Providers so they can successfully complete this task.

It is the responsibility of the Authorized Service Providers to read this document, understand its contents, and effectively complete the replacement procedures.

It is the responsibility of the Authorized Service Provider to provide Capstone with a Field Service Report when the LCM Control Board replacement task is completed.