



# Service Bulletin SB0054

**Date:** April 2003  
**From:** Capstone Technical Support  
**Subject:** Model C30 HEV Software Version 2.07 Release Notes

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## Affected

All Capstone Model C30 HEV MicroTurbine Systems.

## Summary

The Version 2.07 software is released to support the Model C30 HEV MicroTurbine systems. This version supports both the Natural Gas systems as well as the liquid fuel systems. This release offers the following major upgrades:

1. Liquid Fuel Systems
  - a) Added an injector-flush state during which air is blown through each line individually. This assures that no fuel is left in the lines after the purge is complete.
  - b) The DSP software will test for a Clogged Injector during the Line Fill process. The relevant fault numbers if the system does not pass the clog test are 16018, 16019, and 16020.
  - c) Injector #2 clogged fault (16019 LF INJ2 CLGD) or Injector #3 clogged fault (16020 LF INJ3 CLGD) are treated as warning faults and the system is allowed to run with the good injectors. However, if both injectors #2 and #3 are clogged (16021 LF MULTI INJ CLGD), or if Injector #1 is clogged (16018 LF INJ1 CLGD), the system will always transition to the Fault state.
  - d) Decreased the default time for Clog Check Delay to avoid erroneous clogged injector faults.
  - e) Cold start logic has been added to avoid over pressurizing the fuel system under cold ambient conditions.
  - f) After a switch from 1-injector state to 3-injector state or vice-versa, switch back to the previous state is now delayed by a few seconds. This may help avoid inadvertent switch back and forth between the two states, in case there is a significant power fluctuation during the switch.
  - g) Added a timeout to report a fatal Fail-to-Light fault if the LFC for the enhanced liquid fuel systems is not ready within 60 seconds of transitioning into Lightoff state.
  - h) If the LFC DSP reports "LF STRTAIR SOL" (16009) during lightoff, the system will transition to cooldown (will not lightoff). If the fault is reported anytime after lightoff, it is treated as a warning fault only.
  - i) Liquid Fuel controller faults are cleared during the Prepare-to-Start state to allow auto restart to function correctly.

## 2. Miscellaneous Updates

- a) After shutdown, a delay feature ensures that the IGBT's are not driven when the contactor is opened. Previous versions reported an IDSP Bat Fail (10029) fault whenever this situation occurred.
- b) A new SYSTYP command enables CRMS to properly set up the various panels relevant for HEV systems.
- c) Purge logic is modified to provide a Purge Air pressure of [PCD+10] as long as the Generator Power is above 3kW.
- d) The onload/offload acceleration/deceleration limit has been increased from 1500 rpm/sec to 4800 rpm/sec. This allows the engine to slow down faster and quickly stop producing power when it is not required.

### CAUTION

The acceleration/deceleration limit change may cause battery damage if external Battery Management System algorithms are not adjusted to compensate for the above change.

## Software Availability

The software zip files are located on the Members Only section of the Capstone website.

Upgrades to the Troubleshooting Guide have been released to document the new faults created for this release.

## Responsibility

It is the responsibility of Capstone to provide description of software changes contained within this document to inform Authorized Service Providers.

It is the responsibility of Capstone to make available this software version to Authorized Service Providers for the resolution of issues related to fielded MicroTurbine systems.

It is the responsibility of the Authorized Service Provider to diagnose related field issues, and upload this software to resolve the problem. After completion of software uploading, it is the responsibility of the Authorized Service Provider to provide Capstone with a Field Service Report.

Capstone shall reimburse the Authorized Service Provider for up to half-an-hour for performing the software upload on systems under warranty.

## Capstone Technical Support

If you have additional questions, please contact:

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