Contribution ID: **429** Type: **Poster**

C2Po1E-07: More advancements with CCE pre-integration and automated PI tuning

Tuesday 20 May 2025 09:15 (1h 45m)

The traditional integration of Cryocooler Control Electronics (CCE) into spacecraft is evolving. Iris Technology's continual growth and development of pre-integration methods for CCEs with cryocoolers will further reduce the complexity from the larger spacecraft system integration. Enhancements have been made to the system integration process, including an automation feature for Proportional-Integral (PI) tuning, which optimizes temperature control settling time performance and extends the scope of pre-integration tests for CCE and cryocoolers.

This improved pre-integration service from Iris Technology allows for the establishment and verification of key sub-system conditions before they are included in the complete system. These conditions range from determining optimal power levels to confirming function over a specified temperature range (to be detailed). The established norm for CCE testing relies on an assortment of instruments and physically intensive setups, and when actual cryocoolers are absent, substitute static loads might not truly reflect real-life dynamic load scenarios. To overcome such limitations, Iris Technology is creating scripted testing tools designed to automate and refine the CCE testing procedures, providing an approximation of cryocooler performance as well.

In the upcoming presentation, Iris Technology intends to showcase how software automation serves to enhance the integration process of CCE. It will present findings from automated PI tuning and tests pertaining to in-rush current and temperature characterization.

Author: Ms MALENFANT, Kristin

Co-authors: Mr O'BARD, Bryce; Mr FROHLING, Kerry; Mr VICTORIA, RJ; Mr ONG, Rath

Presenter: Ms MALENFANT, Kristin

Session Classification: C2Po1E - Instrumentation, Visualization, and Controls I