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05/2015

Autonomous Cryogenic Load Operations: KSC Autonomous Test Engineer

The KSC Autonomous Test Engineer (KATE) program has a long history at KSC. Now a part of the Autonomous Cryogenic Load Operations (ACLO) mission, this software system has been sporadically developed over the past 20+ years. Originally designed to provide health and status monitoring for a simple water-based fluid system, it was proven to be a capable autonomous test engineer for determining sources of failure in the system. As part of a new goal to provide this same anomaly-detection capability for a complicated cryogenic fluid system, software engineers, physicists, interns and KATE experts are working to upgrade the software capabilities and graphical user interface. Much progress was made during this effort to improve KATE. A display of the entire cryogenic system’s graph, with nodes for components and edges for their connections, was added to the KATE software. A searching functionality was added to the new graph display, so that users could easily center their screen on specific components. The GUI was also modified so that it displayed information relevant to the new project goals. In addition, work began on adding new pneumatic and electronic subsystems into the KATE knowledgebase, so that it could provide health and status monitoring for those systems. Finally, many fixes for bugs, memory leaks, and memory errors were implemented and the system was moved into a state in which it could be presented to stakeholders. Overall, the KATE system was improved and necessary additional features were added so that a presentation of the program and its functionality in the next few months would be a success.

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