Safety Critical Control Device

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Categories:
- Materials and Manufacturing
- NSWC Crane

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- Electrical Engineering
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- Safety

The U.S. Navy seeks a partner for licensing and collaboration on a safety critical control device and the method of implementing a control system for systems that require high reliability and safety.

A life-critical system or a safety-critical system is a system whose failure or malfunction may result in death or serious injury to people; loss or severe damage to equipment and/or environmental harm. Attempts have been made to increase safety margins and reliability; however, these approaches have resulted in a variety of disadvantages such as susceptibility to stray voltage activated control inputs, larger overhead and increased complexity. Overcoming these disadvantages creates additional complexity such as more software or advanced microprocessors and hardware that must be ruggedized. Therefore, improvements to existing state of the art control systems are needed to enable use of safety critical control systems in environments where high reliability and simplified implementation are a necessity.

NSWC Crane has patented and developed a safety critical control device with high reliability and is simple to implement. The patent involves a method of controlling a safety critical control device, the method comprising: sending user inputs to a first state machine, identifying user inputs by the first state machine, determining the correct state to communicate to a second state machine, the correct state being determined by selecting one state of a plurality of states depending on the user inputs, communicating the correct state to a second state machine through a control bus, and determining the correct state for the second state machine based on communication from the control bus. States include a power-up safe state, a lock-out state, a ready-to-operate state, and an operate state.

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