O-ArmX - OLAD Based Industrial Exoskeleton

The U.S. Navy has issued a research and development contract to BAE Systems for their O-ArmX, which builds on an OLAD exoskeleton and incorporates Equipois’ zeroG® arm adapter for use with heavy tools. Made with lightweight, commercial off-the-shelf materials, the O-ArmX is powered by rechargeable 28 volt drill batteries. Use of battery power provides continuous support to the user, even while walking around the shipyard or transferring cumbersome tools to a different workspace.

OLAD minimizes pressure on the wearer’s lower back, hips, knees and ankles while improving posture and reducing risk of injury. The system also mimics a user’s gait and body movements; supporting equipment weight even in tight, hard-to-reach, confined spaces like those found on dry-docks.

“OLAD is an electromechanical system that offloads equipment burden”, said Dr. Adarsh Ayyar, Principal Engineer for BAE Systems. “While using O-ArmX, the wearer feels only a small percentage of the equipment’s weight, resulting in decreased body strains.”

While the zeroG® arm is not powered, the tool’s weight, including the arm, is supported by OLAD and relatively weightless up to 100-pounds, which is more than current requirements.

Through the CTMA program, NCMS is leading the effort to mature and transition exoskeleton technology between the Naval shipyards and suppliers of key components, and has been working closely with Ayyar and his team. Starting in January 2015, O-ArmX will be tested and evaluated for industrial hand-tool applications at the Norfolk Naval Shipyard and Puget Sound Naval Shipyards. These tests will clarify how workers can make the best use of O-ArmX’s capabilities and provide the feedback needed to make further enhancements to the system.

But Ayyar is looking beyond the shipyard tests in its collaborative efforts with NCMS. “What we are creating is a single base tool that can be used in many applications,” Ayyar points out. “NCMS has a broad base and a fundamental focus on commercial markets which is great for O-ArmX,” he says. “The exoskeleton in combination with Equipois’ zeroG® arm can be used to address multiple problems in commercial and military markets.”

Ayyar notes that OLAD is a cutting edge product and while it is still under development, feedback from end-users will provide BAE Systems an opportunity to enhance capabilities and features in the system’s design that improve performance and safety. “This is a cooperative process with the Navy, NCMS, Equipois, and BAE Systems, all working in tandem to develop an optimum system,” he says.