# Implementing PPMx on a Logistics Support Vessel

Prognostics and predictive maintenance (PPMx) give equipment operators a view into what is going wrong and when that component will fail. To support the US Army’s PPMx initiatives, a prognostics health management (PHM) system was developed and deployed on a logistics supply vessel (LSV). The LSV has a number of redundant systems for rudder control (hydraulic pumps), chill water pumps, ship service diesel generators (SSDG), and main ship engines.

One of the goals of this demonstration was to be able to design an architecture that would be scalable, maturable, low cost, and easy to install. This demonstration was built around a bused, smart sensor system. Many of the components are induction machines or generators, which have known operating RPM. For these components, “tach-from-vibe” processing produced a synthetic tach. However, special runs needed to be developed to determine when the machines were not running (as a physical tachometer is often used to determine this condition).

In this discussion, I will talk about some of the unique challenges of condition monitoring on the vessel, the architecture, analysis/signal processing, display, and moving data off the vessel.



# Biographies

Eric Bechhoefer received his BS in Biology from the University of Michigan, his MS in Operations Research from the Naval Postgraduate School, and a Ph.D. in General Engineering from Kennedy Western University. He is a former Naval Aviator who has worked extensively on condition-based maintenance, rotor track and balance, vibration analysis of rotating machinery, and fault detection in electronic systems. Dr. Bechhoefer was a board member of the Prognostics Health Management Society and a senior member of the IEEE Reliability Society.

Joelle Kessler is the Director of Project Manager at GPMS International, Inc., overseeing the LSV applications of low-cost, lightweight, condition monitoring systems as well as leading the supply chain development and production transition related to HUMS as applied to aviation platforms.