

Hydraulic Pump Life Monitor™



Advanced real-time monitoring

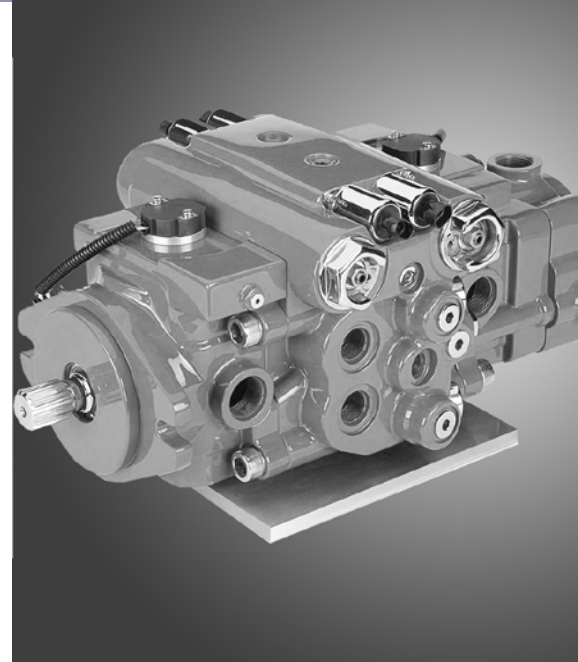
Critical Component

Hydraulic systems are highly critical in mobility and industrial applications. The pumps and motors are most susceptible to damage due to high operational speeds and minimal sliding clearances. Damage in the pump can be fatigue or wear related and its failure can lead to functional failure of the entire system.

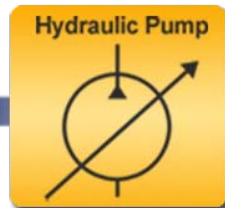
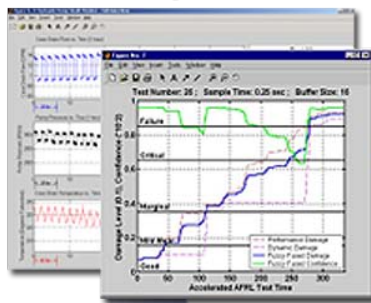
Automated Monitoring Solution

Impact Technologies, LLC has developed a new state-of-the-art pump health monitoring system that has the following features:

- Uses standard/existing pressure, temperature and case drain flow signals
- Produces diagnostic features sensitive to wear and fatigue mechanisms
- Automatically evaluates pump health state and assesses degradation
- Employs an embedded computing system located near the pump
- Provides advanced real-time monitoring



pLm™ Analysis



Potential Damage



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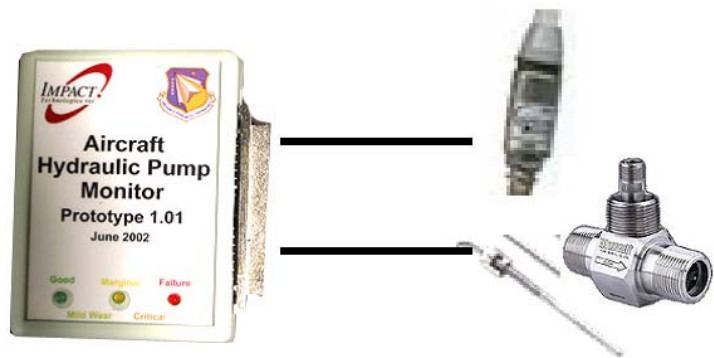
Reduce the risk of safety-related system failures

The “pump Life monitor” (pLm™) provides advanced, real-time monitoring for reciprocating hydraulic pumps and motors. It can be directly read as a status indicator or wired to a remote station for reporting.

Embedded Features:

The pLm is based on fault diagnostics developed from many examples of in-line piston pump failure including bearing, piston, and swashplate problems experienced during failure tests. It was developed under the demanding service conditions of aircraft applications. The monitor includes:

- Advanced feature extraction algorithms
- Sensor data fusion analysis
- Performance and degradation modeling
- Automated health assessment
- Real-time embedded system processing



The fully automated output of the pLm monitoring system is available as a digital readout or can be transmitted through the plant-wide network. Ultimately, the product may also support wireless transmission to a maintenance management computer or portable maintenance aid for review by maintenance personnel.

Benefits:

Better on-line diagnosis of hydraulic systems through the use of the pLm monitoring system will:

- Reduce the risk of safety-related system failures
- Provide suitable maintenance lead times
- Decrease costly inspection routines or preventative maintenance testing
- Allow for component replacements through a risk-based, maintenance optimization technique (Condition- based Maintenance)

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