# Pump monitoring

## Hazardous area installations of the SKF Multilog On-line System DMx

*By Dave Mellor and Marcel de Boer • SKF*

### Introduction

Amongst the many thousands of pieces of rotating equipment found in a typical oil and gas refinery or chemicals plant, only a few are instrumented with vibration monitoring systems for machine protection or condition monitoring purposes. The vast majority of machines – most commonly electric motor driven pumps – carry either no such instrumentation at all, or very simplistic devices of limited use to a plant asset management program.

Plants would like to provide on-line monitoring and protection similar to API-670 standards on the more important (semi-critical) pumps, but in the past have been unable to justify installation costs of traditional 19" rack architecture systems.

This short application note illustrates how this sizeable retrofit market can be cost-effectively addressed with the SKF Multilog On-line System DMx.

### SKF Multilog On-line System DMx

The SKF Multilog DMx is a new concept in vibration monitoring; provide machine protection and condition monitoring in a compact, modular, field-based device that is intrinsically safe for hazardous area use.


***SKF Multilog On-line System DMx module.***

The SKF Multilog DMx is designed to be multi-functional and provide:

- API-670 protection capability in a compact four channel device
- Dual communications links for transfer of data
- Amplitude and status data for machine control and protection
- Dynamic vibration data for condition monitoring
- Zone 1 mounting, adjacent to the machine

The distributed nature of the product reduces installation costs which otherwise often exceed half of the project budget.

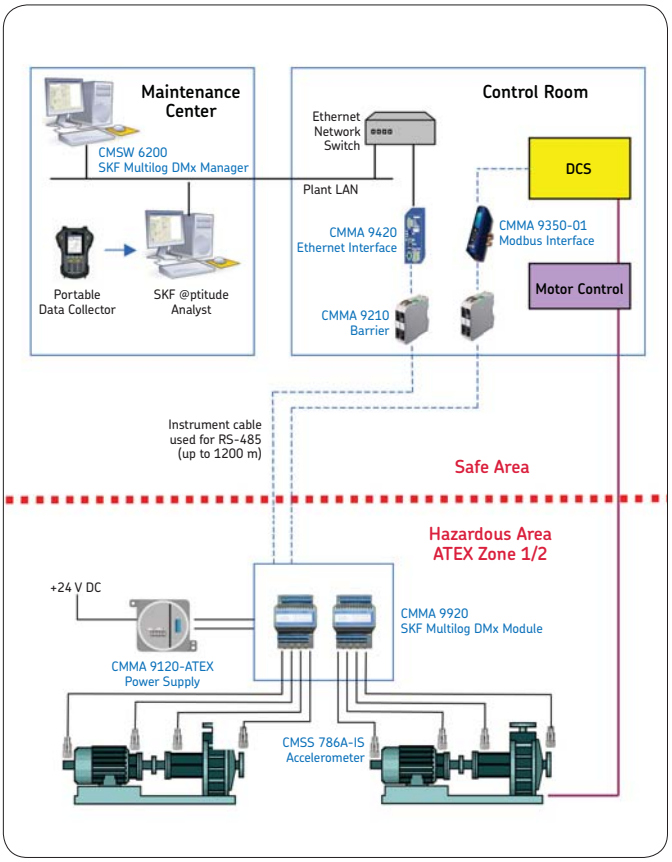
Each pump is fitted with four accelerometers, one at each bearing location, mounted in radial or axial directions. Two SKF Multilog DMx modules and their IS power supply are located centrally between the two pumps.

Twin RS-485 communications links may be used. The first data path is to the DCS for status indication and motor control:

- Continuous indication on the DCS of not just overall level of vibration, but also selected frequency band values related to specific common problems such as bearing damage, misalignment, and cavitation.
- API-670 standard voting logic is employed by the SKF Multilog DMx to generate alarms that are sent to the DCS over the link, and may be used to initiate a motor shutdown.

The second RS-485 data path can be utilized for use within a Predictive Maintenance Program, where SKF @ptitude Analyst is already deployed. An interface module enables access via an Ethernet LAN to the spectral and other dynamic data held by the SKF Multilog DMx.

## Typical system schematic




## Typical Bill of Material

| Item | Quantity | Model number | Description |
|---|---|---|---|
| **For two each pumps** | | | |
| 1 | 8 | CMSS 786A-IS | Accelerometer, 100 mV/g, ATEX certified |
| 2 | 8 | CMSS R6QI-9100-16 | Accelerometer cable assembly, isolated, IP 68 connector, 5 m length |
| 3 | 2 | CMMA 9920 | SKF Multilog DMx, four channel with transducer power, ATEX certified |
| 4 | 1 | CMCP150-08 | Enclosure, NEMA 4X, stainless steel |
| 5 | 1 | CMMA 9120-ATEX | Power supply for SKF Multilog DMx. Input +24 V DC, ATEX certified |
| **Control room – for all pumps** | | | |
| 6 | 2 | CMMA 9210 | Barrier, RS-485, GM INT, for SKF Multilog DMx |
| 7 | 1 | CMMA 9350-01 | Interface module/protocol converter, Modbus RTU output (other protocols available) |
| 8 | 1 | CMMA 9420 | Interface module/terminal server, Ethernet output |
| 9 | 1 | CMMA 9170 | Power supply for SKF Multilog DMx interface modules, 110/220 V AC input, +24 V DC output |
| 10 | 1 | CMSW 6200 | SKF Multilog DMx Manager configuration software |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**PUB CM3126 EN** · October 2009