

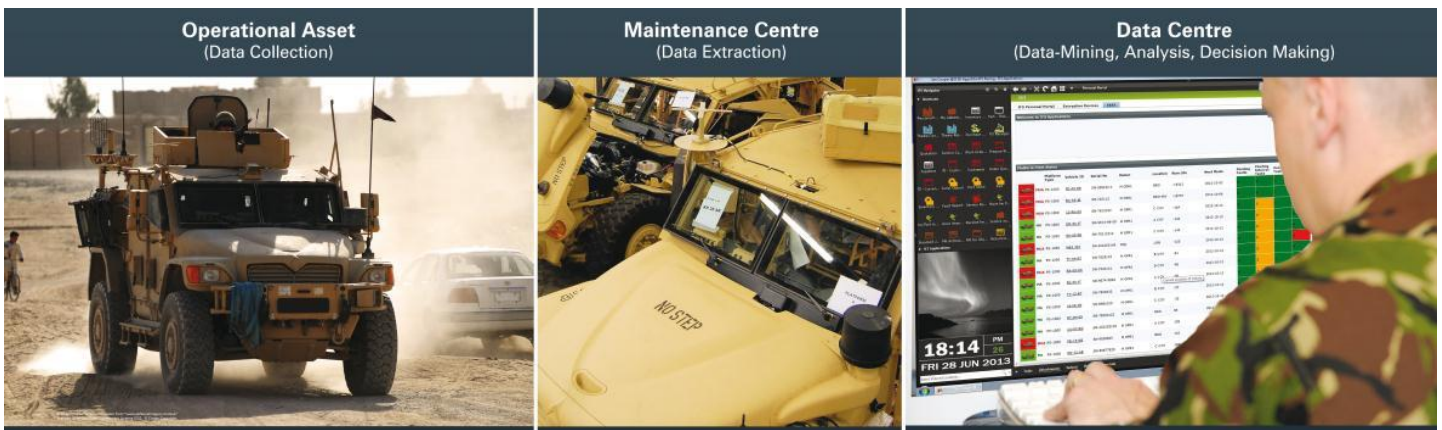


Health and Usage Monitoring Systems

Exsel Dytecna has a proven capability in the delivery of Health and Usage Monitoring Systems (HUMS) for mobile, remote or high value platforms subjected to severe operational use in extreme environments.

Exsel Dytecna monitoring units have been adopted on an international basis and have been incorporated into military land vehicles and equipment, naval vessels and civilian trains. In collaboration with industry partners, Exsel Dytecna can demonstrate full End to End HUMS connectivity that:

- **Optimises data acquired from the asset in real time**
- **Provides accurate and tailored asset data**
- **Permits informed financial, operational & strategic decision making**



HUMS implementations work by measuring how the asset is used, what environmental inputs are encountered and the effects that this has on the monitored components. This builds up a 'life-style' overview of the complete asset thus providing knowledge to the operators and owners that enables:

- Increased user awareness of input effects
- Quantitative appreciation of system and component reliability
- Predictable maintenance free operational periods
- Improved asset availability
- Vision of component or system degradation as definitive measurements
- Predictive maintenance requirements
- Condition based maintenance
- Root cause fault diagnosis
- Mission profiling & trials support

Exsel Dytecna condition VMU and VIDI monitoring and data logging equipment have provided backbone information for Contractor Logistic Support (CLS) agreements between contractors and procurement authorities and as such is contract critical.

Exsel Dytecna HUMS solutions are proven on military applications worldwide, are entirely configurable and flexible and have demonstrated significant enhancement to fleet maintenance regimes by providing accurate and timely information to decision makers.

The Exsel Dytecna range of configurable health & usage monitoring and data processing products include:

VMU hardware – configurable for the specific asset information required.

The VMU range of configurable condition monitoring and data processing products are designed to meet the technical and performance needs of military users. This has led to a range of extremely rugged products suited to use on mobile, remote or high value platforms subjected to severe operational use in extreme environments.

Typical VMU Technical Specification:

Communication and discreet sensor interfaces:

- 10 Analogue inputs
- 8 Digital inputs
- 2 Frequency inputs
- 2 CANbus Channels including J1939 and MilCAN
- J1708/1587 databus and OEM Comms Protocols
- RS232, RS422, RS485

Internal functionality:

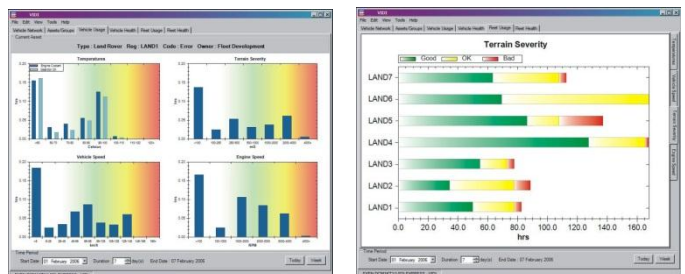
- Low-power CPU providing data computation and control
- Filtered and monitored PSU
- 3 Axis accelerometer
- Ambient temperature sensing
- 16MB on-board storage
- Data transfer of the stored information:
- MilCAN / J1939 to USB
- GSM / GPRS capable

VIDI software – for providing data analysis and display in a user friendly format.

The Exsel Dytecna VMU range is complemented by the VIDI applications suite – developed specifically for providing data analysis and display in a user friendly format. Reliable, fast data download and configuration uploads from a PC to all VMU products via the Exsel Dytecna Data Download devices ensures minimal user intervention. VIDI apps operate on a Windows PC or laptop.

Features:

- VMU Data Download, Configuration File and asset information upload
- Conversion of binary data includes .csv/.xml/.pdf
- ‘Ticker tape’ display of signal inputs to a VMU
- Offline generation of Configuration Files for upload to VMU
- Data collection schema and Fault Codes
- Offline configuration of .pdf



Case Study – Health & usage information for specialist vehicles

DEMAND: A method to provide health and usage information for a specialist vehicle fleet to determine the extent of usage and state of asset health.

SOLUTION: The Exsel Dytecna VMU device delivered the ability to capture all CANBUS messages, and a varied number of Analog and Digital sensors in the platform. The device is designed to withstand the demanding environment of military land vehicles.

The innovative software configuration is used to ensure that only information that is in exception of a defined normal is captured and allows the VMU to operate for extended periods of time in recognition of the challenges of maintenance and information capture in extreme locations.

The VMU allows the captured information to be displayed to the crew as well as exported to Information Management Systems.

ACHIEVEMENT: The VMU was fitted to a fleet of front line vehicles delivered by a leading UK defence Prime contractor and is used to measure the performance, health and usage of a number of on board vehicle systems, engine systems, and special to role systems.

BENEFIT: In addition to routine analysis of asset usage to drive Condition Based Maintenance (CBM) regimes the data delivered by Exsel Dytecna HUMS also enabled:

- Informed analysis and mitigation of engine drive belt failures
- Significantly contributed to post incident investigations
- Improved driver training regimes to eliminate:
 - improper operation of the transmission
 - incorrect release of the handbrake
 - attempting an incline in an incorrect gear ratio

and thereby improve whole vehicle reliability.

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