ISAAC INSTRUMENTS

Vehicle Telemetry

Vehicle Telemetry for underground mining equipment




ISAAC Instruments' Vehicle Telemetry is the right tool to improve productivity, safety and fuel economy of underground mining equipment.

The solution will help to:

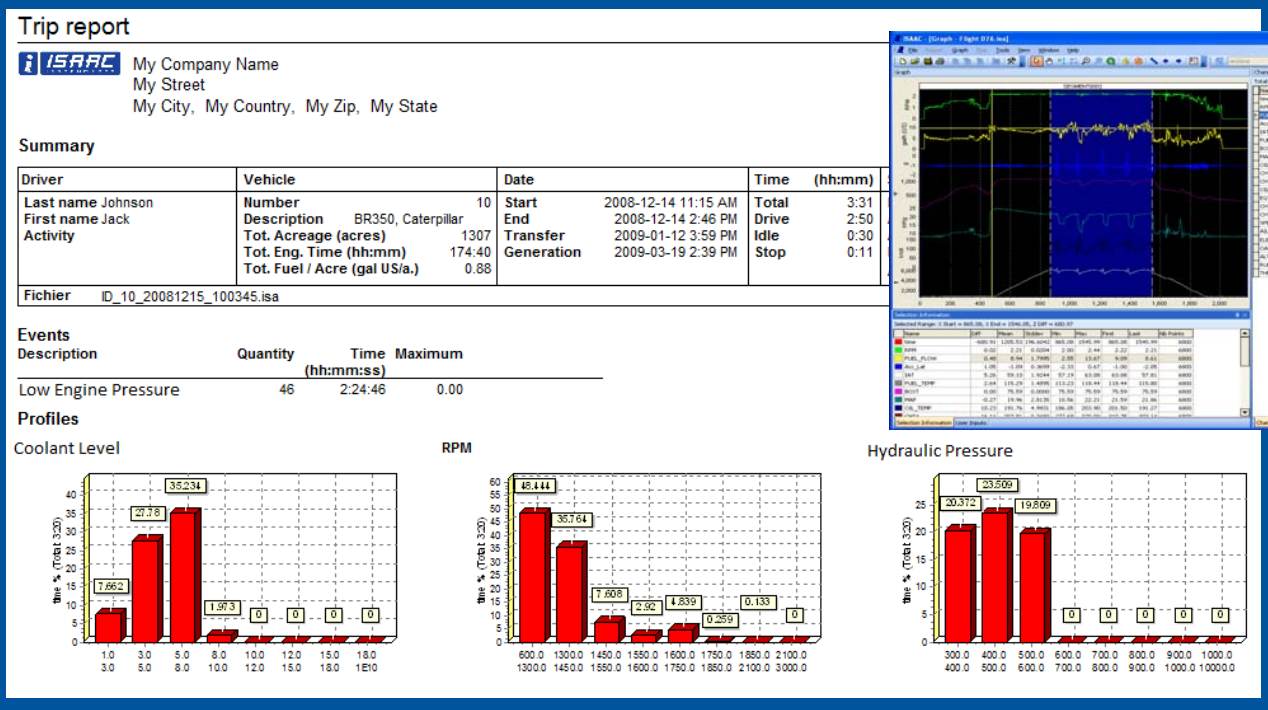
1. Predict when underground vehicles will require maintenance to prevent unsuspected vehicle failures
2. Measure the fleet productivity
3. Improve the operators' efficiency
4. Optimize the equipment/operator combinations

Using the vehicle data bus and other purpose built sensors, this proven mobile telemetry will monitor and report parameters such as:

- ü Engine coolant temperature
- ü Transmission clutch
- ü Engine Diagnostic Trouble Codes (DTC)
- ü Payloads
- ü Engine oil pressure
- ü Hydraulic system pressure
- ü Tire pressure
- ü Transmission and torque converter temperature
- ü Engine RPM and idle time

ISAAC Instruments' unique solution key features are:

- Compatibility with CAN Bus of mobile equipment from most manufacturers
- Compatibility with purpose-built sensors for payload, tire pressure, oil pressure, electrical current, etc.
- Connectivity with Minetrax™ real-time tracking and data communications infrastructure



Trip report

ISAAC

My Company Name
My Street
My City, My Country, My Zip, My State

Summary

Driver	Vehicle		Date		Time	(hh:mm)
Last name Johnson	**Number**	10	**Start**	2008-12-14 11:15 AM	**Total**	3:31
First name Jack	**Description**	BR350, Caterpillar	**End**	2008-12-14 2:46 PM	**Drive**	2:50
Activity	**Tot. Acreage (acres)**	1307	**Transfer**	2009-01-12 3:59 PM	**Idle**	0:30
	Tot. Eng. Time (hh:mm)	174:40	**Generation**	2009-03-19 2:39 PM	**Stop**	0:11
	Tot. Fuel / Acre (gal US/a.)	0.88				

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Events

Description	Quantity	Time (hh:mm:ss)	Maximum
Low Engine Pressure	46	2:24:46	0.00

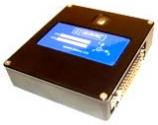
Profiles

Coolant Level

RPM

Hydraulic Pressure

Data Recording Units - 900 series

	900	908	908-SLD	916
				
Internal sensors	3 internal accelerometers ±2G or ±6G Recorder temperature Recorder voltage			
Universal external inputs	0	8	8	16
Communication ports	2 x CAN 2.0a/b (SAE-J1939, SAE-J1979, ISO15765) 1 x SAE-J1708/SAE-J1587 3 x COM ports (Wi-Fi, Bluetooth, Cellular-GPRS, 1x, Ethernet) 1 x USB 2.0 full speed			
Sampling rates	Up to 4 kHz per input (non-aggregate)			
Memory size	512 MB (4GB option)			
Memory backup	All data is protected in case of power loss			
Operating temp.	-40 °C to +85 °C			
Enclosure	IP65 Blue Anodized Aluminum 10 x 11 x 2.5 (cm)	IP65 Black Anodized Aluminum 10 x 11 x 2.5 (cm)	IP67 Black Anodized Aluminum 10 x 11 x 3 (cm)	IP65 Black Anodized Aluminum 10 x 11 x 4.8 (cm)