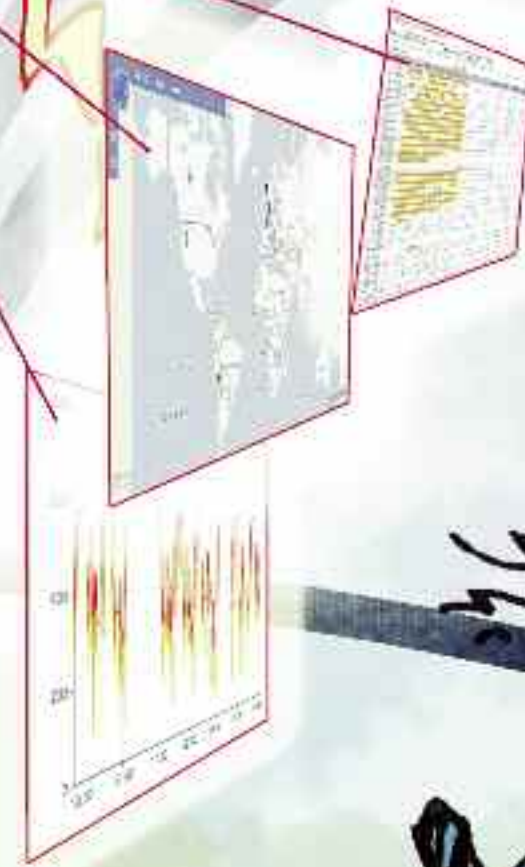
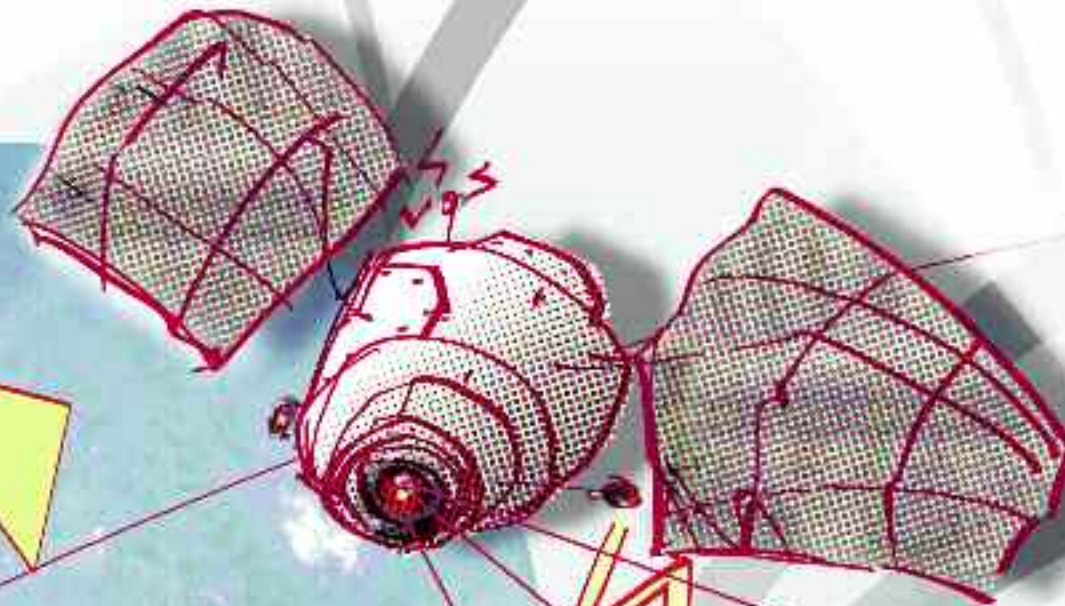


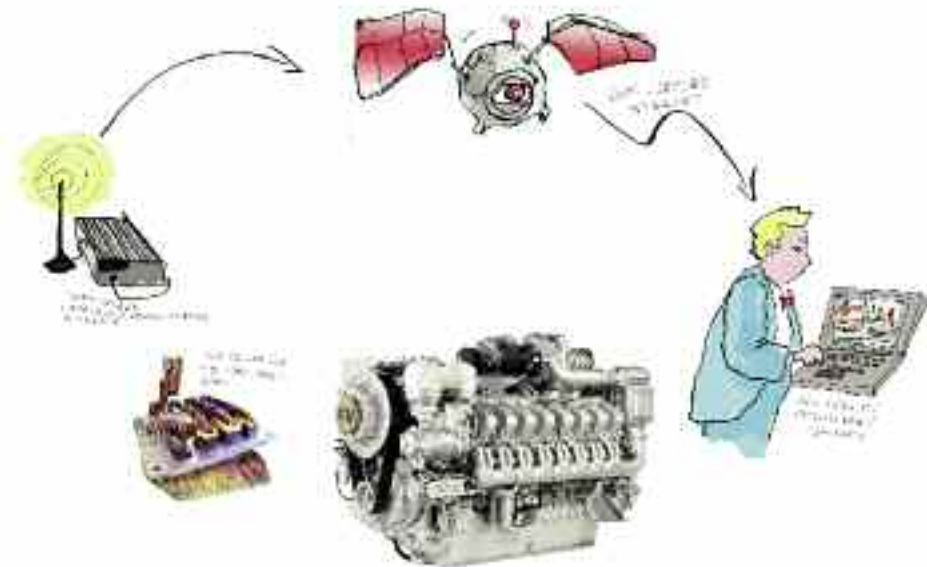
Remote Services for engines: reliable access from any distance

# On air

Instead of documentaries, dramas or sport, customers with remote data services can watch their own version of reality TV. By logging onto a password-protected website they can check on the latest operating data from their engines in real time. Rapid reaction times, effective fault prevention and flexible response options in the event of problems are the standout benefits of remote services.



Efficient management: fleet administrators, service agents, distributors and maintenance shops make use of real-time engine data monitoring whenever high levels of availability are demanded.



Direct transmission from engine antenna via satellite to computer screen: when customers, MTU service staff or distributors view the engine data, it has usually traveled hundreds or even thousands of kilometers.

The three technicians study their screens intently. They have been keeping a watchful eye on the rows of figures flashing across their monitors since the start of the morning shift. Despite a certain similarity to the football results or share price tickers, this is a slightly different type of daytime TV. Engine speeds, oil temperatures and fuel consumption are the main items on the morning listings. The data on the monitors comes from the engines of numerous mining vehicles used in a Chilean open-cast copper mine. From a control room close to the mine, the technicians track and analyze all the measured data transmitted to their desks by radio signal. If, for example, the oil temperature rises above a certain level, they immediately look into the possible causes and examine other relevant operating data – from a distance, without having to interrupt ongoing operation.

**Breaking news: gensets, rail engines and marine applications to benefit too.** Engines for mining vehicles can already be ordered with remote services right now, but other systems are also being tested out. Remote services covers all services that can be performed with the aid of remote data communication. In future they are to be automatically included in maintenance contracts for clients. They include remote diagnosis and maintenance as well as status monitoring for engines or complete systems. Whatever the application, it's a similar picture when you look at the possible uses of remotes services on screen. Regardless of whether the data is coming from a

working-vessel engine, a locomotive or a generator drive unit, real-time transmission supplies fleet administrators, service agents, distributors and maintenance depots with up-to-the minute operating data from the systems in use. Which is why remote services are especially worthwhile for applications in which high levels of availability are demanded or which are sited in remote locations.

**Live transmission.** Normally, the operating data can only be read off directly from the engine using special diagnosis tools. With a laptop plugged into the engine management computer and the appropriate software, a technician can check on the temperature of the coolant or the fuel pressure, for example. That requires that the necessary software and hardware for connecting to the engine is available. It is the only way the service engineers wishing to obtain a picture of the condition of the engine can read and analyze the operating data. Which is where remote data communication comes in. Instead of having to plug

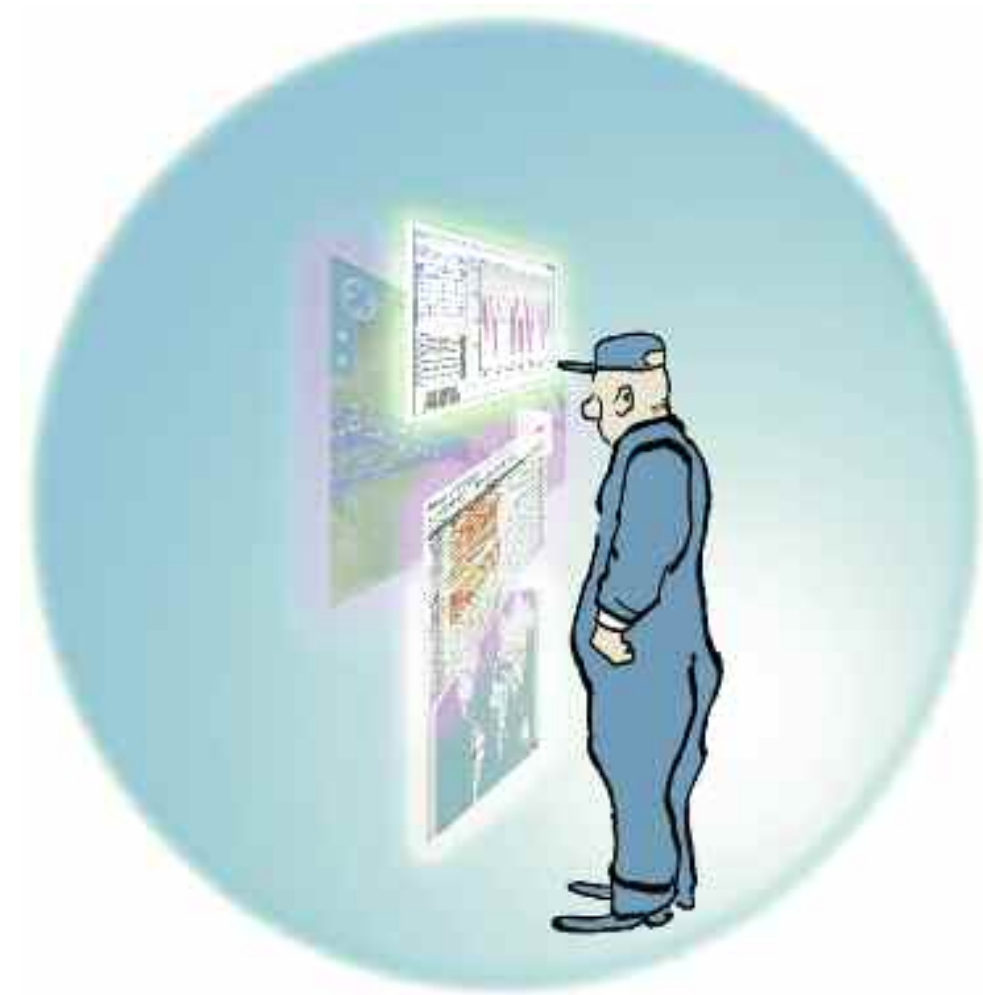
into the engine onsite, the operator can retrieve the relevant data remotely from wherever in the world the engine happens to be at the time. The information is updated every ten minutes and can even be accessed in real time if necessary. The customer is provided with a data recorder (telemetry unit) plus antenna and connecting lead for the purpose – and a SIM card. They are also given access to a web-based application through which they can retrieve and analyze their operating data. But it's not simply a case of logging on with a user name and password. A G-On stick is also required to be able to access the data. "In that way we can make absolutely certain that only the properly authorized people can see the data," explains MTU project manager Reinhard Haller.

**Prime time for transmissions? Morning, noon and night!** The essential piece of kit for remote data transmission is a little silver box. About half as big as video cassette, the data recorder collects all relevant engine data 24 hours a day. It obtains the information directly from the engine management electronics via an existing CAN data link. It also picks up a GPS signal so that its location can be determined at any time. So that the relevant operating data can be transferred via a secure VPN link, the data recorder has an integral SIM card. As with a mobile phone, the SIM card uniquely identifies the transmitter and allows the data to be sent via a mobile communication network. As soon as the data arrives on the MTU server, it is securely stored and automatically analyzed. Authorized users can then check on the condition of their

engines at any time of day or night by logging into the MTU corporate client portal with a PI and password. The only other requirement is PC with internet access and a web browser. Viewing variety is taken care of by a range of individual settings on the user interface. Options such as the time interval for data transmission and alarm thresholds can be specified. If the engine data recorded then moves outside a previously defined tolerance range, it appears in red on the web page and the client can respond immediately. Over the course of the next year an e-call facility is to be added as well. Clients who can't or don't wish to log on at regular intervals will then receive an automatic notification by text message or e-mail if a problem occurs.

**Data recorder always on air.** There's nothing more annoying than not being able to get to TV when your favorite program is on. Which is why, of course, the TV recorder has become such a popular product. The remote monitoring data recorder functions in a similar fashion in combination with the MTU remote server. At regular short intervals, it temporarily stores incoming data. That prevents snow appearing on the monitor screen when a mining vehicle drives through a transmission dead-spot, for example. Because the data is regularly saved, operator or technician can view the last available readings on the website despite the temporary break in communication. In addition, ... engine data for at least four weeks can be retrieved in order to simplify the planning of maintenance work and future deployment. If so desired, all data can be stored from the time the engine is commissioned so as to provide a complete operating history.

**Always in the picture.** Information such as intake air temperature or the current engine speed is arranged in tabular form on the monitor screens. Viewers can also graphically compare up to six different data sets with one another. If several engines need to be compared, their locations can also be indicated by flags on a simplified world map or a satellite image, rather like



With the benefit of remote data communication, important engine data such as oil temperature, current location and hours of duty completed can be retrieved any time from anywhere in the world – whether you're watching in Europe, the Far East or South America.

the route planners available on the internet. "As well as the engine data, which can be received and analyzed in real time, the biggest advantage of remote data communication is that you can check on the engines regardless of location and can initiate remedial measures immediately if there is a problem," Haller concisely summarizes the benefits of remote services. "Not only does that save the expense of traveling to remote sites, it also makes it easier for operators or distributors whose engines are scattered separately across the globe to maintain and service

them – especially when it comes to minimizing or even entirely eliminating unscheduled incidents." Which is why remote services customers are fans of the small screen when they need maximum availability based on effective fault prevention.

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MEMO

**Recommended viewing: remote services**

MTU naturally broadcasts its top-rated Remote Services program at prime viewing time. In the starring roles are the services provided with the aid of remote data communication such as remote diagnosis, remote maintenance and engine or complete installation status monitoring. The operating data is recorded locally and then transmitted via the mobile phone network to wherever optimized operation is being controlled from. The service staff can then access the latest data via a secure website from anywhere in the world and respond quickly if there is a serious problem. Absolutely riveting!  
 Pick of the programs: \*\*\*\*\*