When several firefighting brigades are involved in an incident the system automatically updates any new information, including the geographical positions of incoming fire trucks.

Incident data at your fingertips

Rosenbauer is world famous for its fire trucks – but what about its information management systems? Ann Marie Knegt finds out about the latest development.

Modern fire vehicle design and mobile data management can no longer be separated, believes fire apparatus manufacturer Rosenbauer, which is why it has now developed a revolutionary new system that makes incident data directly available to an incident commander – EMEREC.

Funded by the Austrian Government, the information management system EMEREC (EMErgency and RECord) is the outcome of a two-year project and part of a larger initiative to create an improved critical infrastructure for emergency services. It was developed with the Institute of Applied Sciences Campus Hagenberg, the Austrian Association of Firefighters, Mobilkom Austria and Siemens Austria.

The outcome of EMEREC was presented last year during a large-scale exercise in the Noitzmuhle Tunnel, which is located on a major motorway in Austria. The exercise was carried out by the Wels Fire Department, and involved a collision that included multiple vehicles and resulted in the rescue of trapped persons as well as the handling of hazardous materials, all with the support of EMEREC.

Gerhard Grossberger, the project's manager at Rosenbauer, explains that EMEREC was initiated after discussions with several Austrian fire departments. "We always strive to come up with new concepts in firefighting technology, and we noticed that there was a high demand for reliable information management systems. So we brought a team of experts together to develop a system that can help firefighters fulfil the requirements of their day-to-day job.

"It was brought to our attention, that there is a huge delay in the available incident information for the commander in charge. To know the right thing, at the right time, is imperative, and this lag is increasingly becoming a problem for firefighters. Based on this we developed EMEREC."

EMEREC links mobile data terminals to a data management system, which in turn with links to a central operation control computer, and other external systems. It is not intended to manage the command and control process within the hierarchy, but to supply the best possible information to the commanders.

Although there are several applications on the market that deal with information support (such as digital mapping, hazardous materials databases; weather forecasts; and information on river levels), there is nothing available that streamlines and manages these information sources in one system. Grossberger emphasises that the system doesn't intend to produce new information, but combine existing and available information under one data management system with a consistent interface.

EMEREC: key elements & apps

- Area maps
- Navigation
- Situation reports
- Fire protection plans
- Alarm plans
- Checklists
- Hydrant maps
- Hazardous materials data sheets
- Vehicle rescue maps
- Weather forecasts
- Resource management and allocation modules.

The commander can see on a map (with a support screen) where the incident is, who is involved, what the incident type is, and where his resources are. It also shows the status of the resources, providing a complete overview on the scene with symbols and figures. This means that when several different firefighting forces are involved in one incident, all of these can be synchronised into the system, meaning that when one commander puts information into the programme, it will be available to the others automatically.

The system consists of different modules that contain basic functionalities such as a synchronisation screen. It comprises a plug-in infrastructure where new modules can be integrated, and a sophisticated rights management and security module that enables secure access to databases. The security module ensures that information is managed securely during the whole event, and only authorised users can access the available databases.

It is not only live information that is synchronised, but the changes in static info such as databases with medical information, are updated automatically, and delivered to the end users, meaning there is no need for major updates two or three times a year.

According to Grossberger the infrastructure of the system is open and intuitive. For instance it features digital maps that show all the GPS positions of the vehicles via satellite receivers.

Access to several European hazardous goods databases has also been integrated, and any new databases can be added to the system at any time.

Grossberger emphasises that one of the most interesting features is the integration of live video, as demonstrated in the tunnel exercise. "We have connected the image stream of the surveillance system in the highway tunnel live to the system. This enabled the commander to access these images during the drive to the incident, as well as enabling him to review images of the immediate past, providing a valuable insight into the nature of the incident."

The system works on public communication links such as mobile internet, GPRS and UMTS – whatever is available in the area – and consists of several sub-levels for fallback beginning from the highest available speed down to lowest. Agreements with communication infrastructure providers are in place to ensure that even when the voice network is completely blocked, the system has the assurance that the data channels will be kept free.

"We focussed on publicly available networks because they supply a higher bandwidth, and a quality of service that is much more suitable for data-based systems such as EMEREC. The radios used by the firefighters themselves are not compromised by our system.

During the trial in Austria live video streaming from the tunnel was integrated in the data management system.

If customers operate their own systems (eg TETRA) we can interface to those too of course."

The system has been extensively tested on two different levels. During the first test fire brigades carried out usability tests, and based upon the results, external specialists adapted the user interface and several elements of the critical user interface.

Secondary formula tests were carried out, for which test procedures were especially designed, based on the initial project specification. A team of seven people carried out a high number of tests according to those procedures. This delivered a great volume of input for the developers, which enabled them to iron out bugs and streamline the software.

Grossberger insists that the system is usable anywhere in the world, and by any fire brigade, and it is highly adaptable to customer's needs. Any type of data format can be integrated, as the current information sources for firefighters all have very different interfaces and protocols. "This system can bring together all these different types of data on one platform, and the user will not even notice that they come from different sources."

EMEREC has also been designed for police and major incident management, and in the first part of 2010 the full system will be ready for market. "We can really see the demand for these types of system increasing. The fire apparatus market is interesting in itself, but we can see that data management will play a major role in information management in the future."

A new multifunctional speaker mike: the CT-MultiCom

A new universal remote unit for two-way radios has been launched by German company CeoTronics.
The CT-MultiCom is more than a simple speaker mike as it also offers additional accessory ports. In addition to a 3.5 mm jack socket for an earplug, the CT-MultiCom also comes with a fully featured four-pole jack socket to connect with various CeoTronics communication systems.
Conveniently, a large surface PTT button on the front comprises nearly 50% of the surface which means it can be easily operated with thick gloves, or with the elbow and even when worn beneath clothing.
When supported by a radio the two soft-keys can be individually programmed: e.g. mute, emergency call, channel selection or for switching between TMO/DMO (Trunk to direct mode operation).
Depending on the model of the connected radio a LED can provide the user with visual status feedback.
The CT-MultiCom is certified IP65 (dust and water jets-proof) according to EN 60529; offering a high protection even in the standard version.
The multifunctional remote unit can also be ordered in ATEX with protection class II 2 G Ex ib IIC T4 (94/9/EG).
"No other remote hand mike PTT unit facilitates the two-way radio usage this much," commented Berthold Hemer, CTO and head of CeoTronics' R&D. Adding that the unit has been designed with ease-of-use, universality, and quality in mind. "That's what two-way radio users expect from their accessories. Exactly that and even more is what the CT-MuliCom delivers."
The CT-MultiCom's own power is supplied by the connected two-way radio, and on the back of the unit is a robust 360° belt clip.

Repeater enhances radio comms

Fern Communications, a provider of two-way radio communications systems to the international upstream oil and gas industries, has announced that its FRX-1 Portable Radio Repeater dramatically enhanced radio communications for fire and rescue teams in England and Wales during a series of recent trials.

According to Fern, by placing the FRX-1 in strategic locations that normally disrupt the radio signal, the FRX-1 dramatically improves radio coverage by eliminating radio "black spots. Trials included:

- Rail tunnel in Old Warden, Bedfordshire (Bedforshire & Luton FRS, UK)
- Concrete air raid shelter, Bedfordshire (Bedforshire & Luton FRS, UK)
- Underground corridors, Cardiff Barrage (South Wales FRS, UK).

Fire trial: Adrian Busby & John Cox

Fern Communications hopes that its radio repeaters will become the industry standard for reliable radio communications. "During the past year, every single organisation that has run a trial with the FRX-1 has experienced significant improvement in its radio communications," said Clive Cushion, Technical Director of Fern Communications. "With such a strong record of improving communications and safety, we are confident that the FRX-1 and the waterproof FRW-1 radio repeaters will be the system of choice, whether it's for the crew working offshore on a platform in West Africa, firefighters in the UK or workers in refineries in Norway. Its track record and adaptability signal the way forward," he added.

Extension for Paris Fire

EADS Defence & Security has signed a contract to extend the ACROPOL network to the Paris Fire Brigade.

The extended radio network will ensure efficient and secure interventions for Paris Fire Brigade's 8,000 firefighters.

EADS Defence & Security was awarded a contract by the French Ministry of the Interior to extend the radio communications network of the French Police.

This complementary network – named ANTARES – entails the deployment of a secure radio communications infrastructure based on TETRAPOL technology initiated in the French provinces in 2007.

This infrastructure is fully interoperable on a national scale, linking all the French departments, and is intended for use by all of France's security and rescue forces. By using this network, National Police, Paris Fire Brigade and fire and rescue services of Paris' suburbs will be able to coordinate their interventions more efficiently and securely. The network will ultimately comprise about 50 radio stations and more than 20,000 terminals. Services include geo-localisation of units and transmission of status reports to make operations more efficient and secure.

Zealand's new radios

Motorola has won tenders to supply the Fire Departments of Lolland and Guldborgssund, in the Danish region of Zealand (Sjælland), with its ATEX TETRA portable terminals including the MTP810Ex and MTP850Ex that will provide high quality communication and safety for its firefighters.

Motorola, who recently supplied terminals to Denmark's North Zealand Fire Department, have partnered with Finland's Savox on the project. They worked closely with both departments to understand their specific requirements and rolled out the terminals by end of 2009.

In addition to providing seamless communication and user safety, the intrinsically safe MTP810Ex and MTP850Ex offer class leading ATEX specifications that allow for use in high-risk environments containing potentially explosive gas, dust and water as well as a powerful set of features that use the capability of TETRA.

"In our profession fast communication is paramount and we wanted to equip our fire services personnel with robust, safe and secure products that allow them to focus on the job at hand. Motorola is a global leader in the design, development and deployment of TETRA and ATEX products and their solutions were perfect for our requirements" said Peter Søe, Fire Chief, Guldborgsund Fire. "With these terminals we are able to keep our task forces safe and informed at all times."

The ATEX TETRA terminals have been designed to be intuitive and easy to use in hazardous environments and include a host of state-of-the-art features. These include an integrated GPS receiver that can locate personnel, improving user safety and resource management as well as an internal "man down" alert. This is a fully integrated solution that triggers an emergency procedure when the carrier of the radio remains motionless for a period of time.

Both terminals include a simplified keypad with a large button surface that makes them easy to use with gloves and their weight is also just enough to ensure the user can feel that the product is there. The easy to use interface includes large scalable display fonts and icons to facilitate operation in difficult environments with limited visibility.

Recently Motorola´s ATEX devices have been certified at IP 65 standards. The higher standard will benefit the emergency services industry where seamless communication and safety is imperative. Whilst the devices are already certified against gas and dust in hazardous environments, the new certification confirms additionally the durability against water, such as high power water jets and heavy seas.

Drive down fire truck collisions

Rendsburg Fire Station (Germany) has successfully trialled a mobile network video recorder and is now deploying the systems throughout its fleet.

Rendsburg Fire Station has installed on each vehicle one Plustek NVR 4200V and two AXIS 209MFD network cameras. The solution includes wireless data transmission to allow true "real time monitoring" from either back at base or any PC/laptop/phone with access to the Internet.

The security installation provides emergency staff with video access to all vehicles over IP, allowing the viewing of live or recorded video from the internal hard disk drive. The ability to review a fire engine's course of action in an emergency callout is vital for improving safety standards and minimising road accidents.

This solution will help to monitor emergency driving and incident reporting in order to help drive down accidents from fire engines on the road and increase their efficiency.

The mobile network video recorder has been specifically designed for transit applications and it can multiplex record up to four cameras at up to 60 frames per second, while concurrently handling panic/system alarms, processing GPS positing data, transmitting positional co-ordinates via SMS and using intelligent power management.

Key Features of the NVR 4200V:

- Robust embedded Linux system for low power consumption
- Optimised RISC microprocessor cores for reliable surveillance
- Live view monitoring and real-time recording from IP-based cameras
- Easy access live-view manual PTZ control
- Multiple recording methods: schedule, alarm, and manual
- Dynamic remote monitoring and playback management

through Web browsers and MultiManager software (up to 16 channels from PC)

- Supports ActiveX and Java script for various Web browsers on the market
- Multiple levels of security management for user access control
- Maintenance free! Continuous recording, automatic over-write for 24/7 all day/night surveillance
- Ring buffer ability, where old recordings and images can be overwritten automatically or deleted after the user-defined time
- Supports Megapixel IP-based camera recordings
- Withheld ~1G shock vibration test, in accordance to ISO 16750-3.

The solution aims to decrease accidents by monitoring emergency driving and incident reporting.