rosenbauer

CONNECTED WITH THE FUTURE

Annual Report
2020

ABOUT ROSENBAUER

1,072.1

ORDER BACKLOG
(AS OF DEC. 31, IN € MILLION)

1,044.2

GROUP REVENUES
(IN € MILLION)

57.9

EBIT
(IN € MILLION)

Rosenbauer is the world's leading manufacturer of firefighting and disaster protection technology. The company develops and produces vehicles, fire extinguishing systems, equipment, digital solutions and systems for preventive firefighting for customers on all continents. All the main standards are covered by products manufactured in Europe, the US, and Asia.

Today, Rosenbauer has a sales and service network covering over 100 countries and 4,000 employees. We want to further our successful growth on this basis in the years to come – as a quality leader and with our claim of offering the best value for money.

CONTENTS

IN DISCUSSION WITH THE CEO

Fire departments will be increasingly networked in the future. We already offer vehicles that can be operated by radio and communicate with each other. Control centers coordinate emergency vehicles via the Internet. Components such as fire detectors or drones are integrated into a network that supports fire departments in fighting fires. In addition, digital tools help with maintaining entire vehicle fleets and the preparation and follow-up of operations. In the future, we will offer our customers additional digital solutions so that they can have all the information they need and can thus provide targeted support for effective firefighting.

We connect the fire department with the future.

MR. SIEGEL, HOW WILL DIGITALIZATION CHANGE FIRE DEPARTMENTS?

SIEGEL: I don't think the fire department of the future will be much different structurally than it is today. A few years ago, for example, it was feared that the volunteering system was coming to an end, but it is now clear that the popularity of volunteering continues unabated.

However, there will be changes in everyday operations. Here, digitalization will primarily support analog work and free the emergency services from restrictions. Numerous routine firefighting operations will be automated or digitalized. Assistance systems will be integrated into analog technology and play an increasingly important role.

WILL THE FIRE SERVICE VEHICLE OF THE FUTURE POSSIBLY BE AUTONOMOUS?

SIEGEL: I don't think there will be autonomous emergency vehicles. But we will adopt sensible developments from this area. I'm thinking, for example, of the automatic detection of people or objects to make emergency driving safer.

WHAT IMPORTANCE WILL DEPLOYMENT MANAGEMENT SYSTEMS HAVE?

SIEGEL: These systems will take emergency service communications to a new level. Fire and rescue services not being able to communicate directly with each other will be a thing of the past. Digitalization will connect them. There will be a wealth of opportunities to obtain data relevant to operation while they are still on their way to the scene, thus quickly

Digitalization

eliminating information deficits in deployment planning. In the future, these systems will also be able to access sensor data from smart cities.

WHAT CHANGES WILL DIGITALIZATION BRING TO PRODUCT DEVELOPMENT?

SIEGEL: We will need to take a more integrated approach to the products and also think about digital features when further developing conventional technology. And of course we are breaking new ground, having to initiate developments that we can't be sure will become established on the market. This requires intensive basic research: you have to build up new expertise within the company, and you also need an equivalent minimum level of resources.

In addition, something tangible and demonstrable is needed at an early stage of product development. That's why you can't just do lots of trials, but must focus quickly and then develop professionally and purposefully. And last but not least, every innovation should be accompanied by a business model.

HOW DO YOU ACHIEVE THIS FOCUS WHEN THE TOPICS YOU ARE DEALING WITH ARE IN PART COMPLETELY NEW TERRITORY?

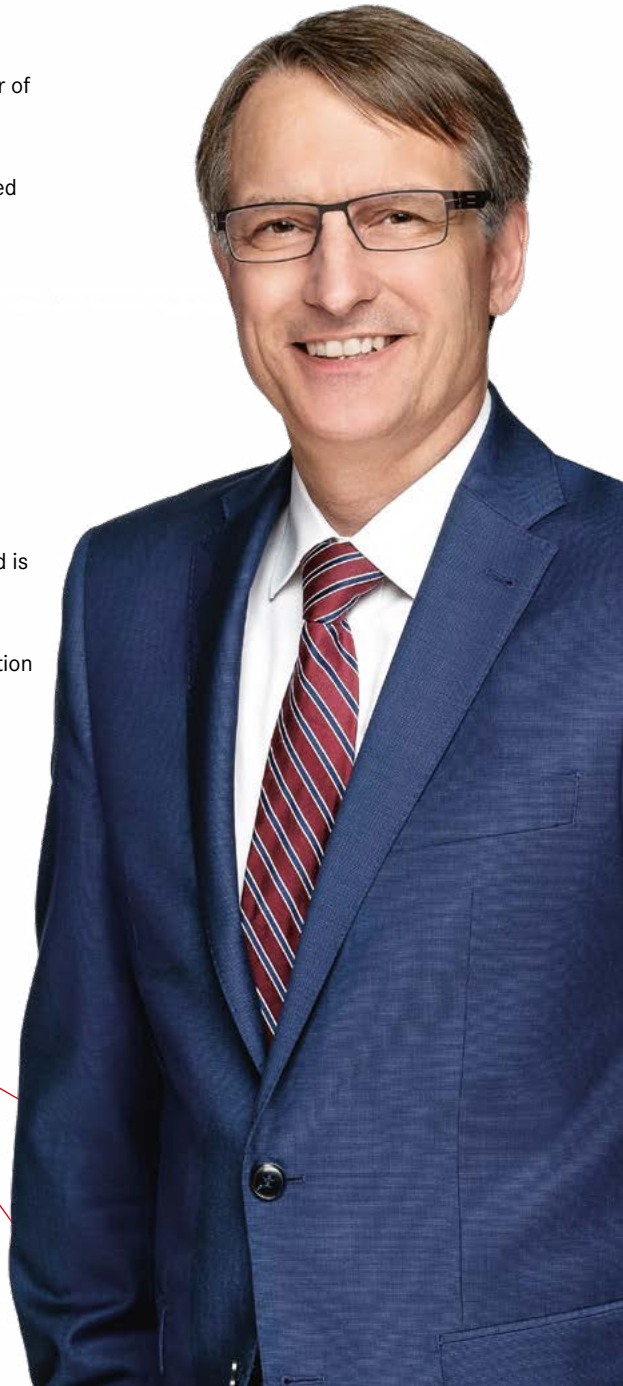
SIEGEL: In this case, you cannot focus on facts, but only on "best beliefs." In addition to the premises mentioned earlier, this requires an early dialog with users in order to assess the development for its practicability and, if necessary, cooperation with other companies, for example specialized start-ups from the technology sector.

In addition, an alternative form of organization is likely to be chosen internally. For example, we outsourced the engineering of our electric drive car of the future to a separate development company where the vehicle was developed to series maturity and then handed back to our regular organization for production.

IS THE ROSENBAUER GROUP ON THE RIGHT TRACK WITH THE ELECTRIC FIREFIGHTING VEHICLE?

SIEGEL: Yes, because this product is open to further drive developments and is precisely tailored to fire departments. Moreover, from a current perspective, there will be little comparable competition from vehicles built on electric series chassis.

Fire departments all over the world are enthusiastic about the vehicle and confirm our beliefs, one of which stands above all others: our efforts are directed at people who, out of personal drive, help others and society in dangerous situations. We want to support these people in the best possible way.



WE HAVE THE RESOURCES TO BREAK NEW TECHNOLOGICAL GROUND.«

DIETER SIEGEL, CEO

THE NEXT GENERATION OF DIGITAL PRODUCTS

The future belongs to the connected fire department, and Rosenbauer's "Revolutionary Technology" (RT), the world's first firefighting vehicle with an electric drive, is pre-empting it. In the fall of 2020, the RT was presented to the global public and further digital product solutions that will support fire departments in the future were launched.

IN THE FIRE DEPARTMENT OF THE FUTURE, EVERYTHING WILL BE NETWORKED: firefighters, emergency vehicles and all the emergency technology, from pumps to turrets, from generators to robots.

Networking

With digitalization, the Internet of Things, Industry 4.0 and Big Data, future technologies are increasingly about networking. In the future, the everyday life of fire departments will also be characterized by connectivity. The emergency services will use digital platforms to obtain all the information they need in the respective emergency situation. They will supplement and share the data in real time, just as people have become accustomed to doing in the virtual world.

Rosenbauer provides fire departments with two platforms: the EMEREC operations management system and the RDS Connected Fleet vehicle management system. EMEREC can be used to handle the entire firefighting operation, while Connected Fleet provides important information about emergency vehicles and technology and enables complete fleet management.

THE NETWORKED EMERGENCY VEHICLE

With the RT, the new firefighting vehicle with an electric drive, fire departments have access to both platforms. The vehicle is connected to the EMEREC high-security server, on which all information about the respective area (route and building plans, attack routes, water maps, etc.) is stored. In addition, the RT provides direct access to the Internet (hazardous materials and other databases, vehicle rescue maps, weather and traffic information) or, in the future, to the Internet of Things. The cockpit of the RT with its 17" display in the middle becomes the central control point. Not only is all the information obtained and distributed via the touchscreen, but most of the vehicle and firefighting technology functions can also be controlled in this way.

THE ESSENTIAL FUNCTIONS OF NOT ONLY MODERN ELECTRIC VEHICLES, but also the RT, will be controlled via a large touchscreen installed centrally in the cockpit.

In addition, the RT sets up its own WiFi, which enables all emergency personnel at the scene to be connected and, if necessary, for technical equipment to be operated remotely. This also applies, for example, to drones, which in the future will be increasingly used for situational awareness or when searching for people. Their images, such as the aerial perspective of an operation site, will be transmitted via EMEREC to the display in the vehicle.

USEFUL ADDITIONAL INFORMATION

Connected Fleet provides fire departments with a complete overview of their emergency response equipment. In the case of vehicles, for example, the system provides telemetry data such as kilometers driven, engine speeds or brake pressures, and provides information on the fill levels of fuel and extinguishing agent tanks, exact position and route data, and also the operating data of installed or mounted equipment.

In addition, mobile equipment such as the FOX portable pump or the new RTE Robot crawler vehicle dock onto Connected Fleet. In the future, more and more products will have CAN interfaces and GPS modules, providing fire departments with useful additional information in the field.

> **WITH OUR INNOVATIVE PRODUCTS,** FIREFIGHTING OPERATIONS CAN BE COMPLETELY DIGITALIZED – FROM RESOURCE PLANNING TO OPERATIONAL COMMAND AND FROM DOCUMENTATION TO EVALUATION.«

ANDREAS ZELLER, CSO

A NEWER, UNIVERSAL ASSISTANT

In the future, fire departments will also receive support via modern assistance systems such as Rosenbauer's new RTE Robot, a robust and all-terrain crawler vehicle with an electric drive. It is operated via radio remote control and has a multifunction interface that accommodates payloads of up to 650 kg and allows functions to be quickly adapted to the respective operational situation. For example, the RTE Robot can be used for logistical tasks, such as transporting heavy equipment to a remote site, can be used as a reconnaissance and recovery vehicle, and can be equipped with special turret modules for firefighting. The dimensions of the crawler are such that it can fit into any logistics vehicle that can also transport a Euro-pallet. The most important advantage of the firefighting robot is that it can be used wherever it is too dangerous for humans.

FOR MORE INFORMATION ON THE SUBJECT

PLATFORMS
Operating systems for fire departments

The EMEREC and Connected Fleet applications run on all end devices such as deployment management computers, tablets or smartphones.

DRONES
Flying camera and sensor systems

Drones provide an aerial perspective and are used for situational awareness, when searching for people, and in the future may also be used for the detection of hazardous substances.

AROUND 14 t

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could be saved per year with an electric firefighting vehicle.[1)]

FUTURE BOX

September 2020 saw the international sales launch of the RT and the handover of the first three customer vehicles. It was possible to follow the launch event at the Ars Electronica Center in Linz via livestream. The launch was met with great interest around the globe. The feedback and numerous further orders confirm that Rosenbauer is on the right track with this vehicle.

RTE ROBOT

A flexible assistant for firefighting operations

The RTE Robot can be deployed wherever it is too dangerous for humans.

1) According to expectations by the Berlin Fire Department in comparison to one of its firefighting and rescue vehicles with conventional diesel drive (electric firefighting and rescue vehicles compared with regular firefighting and rescue vehicles).

THE FACTORY OF THE FUTURE

The virtual world has long since arrived at modern production facilities. Today, the entire value chain is digitally controlled, and communication largely takes place via platforms.

DATA MAKES MODERN PRODUCTION RUN SMOOTHLY. This image shows the robot-assisted ladder production at the Karlsruhe location.

Since products can be designed on computers and manufactured with the aid of computers, data has played a central role in industrial manufacturing. It forms the basis of production planning and supply chain management systems and, with today's networking technology, allows the virtual mapping of entire value chains. Rosenbauer is thus able to digitally mirror its two main plants, Leonding I and II, and to plan, control, and monitor them on the virtual interface. "This gives us access to evaluations of our processes at any time, for example whether the real output of production corresponds to what we have input in the virtual world," says Daniel Tomaschko, CTO of Rosenbauer. Trend developments and deviations, from production output to the availability of individual components, are thus available at a glance.

A further advantage of mirrored production is the ability to run simulations with operational data. In this way, individual work steps through to complex processes can be analyzed and optimized

Automation

DATA CREATES FACTS AND BRINGS DECISION-MAKERS TOGETHER AT THE FACTUAL LEVEL.«

DANIEL TOMASCHKO, CTO

without having to interrupt production for this purpose. In addition, the data obtained in production is also used in product development, quality management and for the preventive service.

"Data creates facts and thus a factual basis for identifying potential, recognizing trends and being able to do what we set out to do better," says Daniel Tomaschko.

NETWORKED SUPPLIERS

Supplier management at Rosenbauer is also organized digitally. All the players involved meet on an online platform through which inquiries and orders can be placed and processed automatically. Suppliers are directly integrated into the Rosenbauer planning matrix and receive all the necessary documents and information from the system in order to supply production with their goods on a just-in-time basis. The portal is also used to evaluate and certify suppliers, monitor the quality of deliveries, and allow interested parties to offer their services.

Customer relationships are also managed on a digital platform. The complete quotation and order process is documented in Customer Relationship Management and can thus be traced by all authorized persons in the Rosenbauer organization. By continuously updating the data, a detailed overview is obtained over time, which is used to systematically shape customer relationships.

PROGRAMMED PARTS

In production, data represents one of the most important operating resources. It is created once in the course of engineering or order planning and then used throughout the entire production process: in the machine centers for the fully automated production of pump components, in the laser cutting plants for the high-precision series production of printed circuit boards, in the welding of complex pipe cross sections and in the robot-assisted production of extinguishing agent tanks, sprinkler pipes and aerial ladder superstructures. The robots at the Karlsruhe location, for example, work with around 1,500 data records when they produce the ladder set of a standard aerial ladder. Rosenbauer is thus the only manufacturer that has so far succeeded in digitalizing and robotically producing the ladder set.

PRECISE COMPONENTS OF THE SAME QUALITY form the prerequisite for harmonizing series, as Rosenbauer has done in the municipal vehicle sector in 2020.

FOR MORE INFORMATION ON THE SUBJECT

4.2

MILLION EURO

Rosenbauer has invested € 4.2 million in robot production at the Karlsruhe location.

AUTOMATED TANK PRODUCTION

Precision through industrial production

The extinguishing agent tanks are cut to size by portal milling machines and welded by 9-axis robots.

GUARANTEED QUALITY

Digitalized production technology

Data from engineering flows directly into automated production.

INDUSTRY 4.0

Interfaces to the IT world

All production-relevant information is available on assembly cockpits.

FUTURE BOX

In September 2020, Rosenbauer opened a new production plant at the Karlsruhe location. It is the world's first, robot-assisted production of ladder sets for aerial ladder vehicles. The almost complete digitalization of production has created a factory of the future.

DIGITAL WORKING

Digitalization is changing all business processes and bringing new forms of collaboration. The COVID-19 pandemic has further accelerated this trend (keyword: “new work”).

IN THE FUTURE, THE CONTROL STATION IN PRODUCTION will be directly linked to the ERP system.

The world of work experienced an unprecedented surge in digitalization last year. Due to the COVID-19 pandemic, many companies were forced to adapt their work processes to contain the coronavirus and put daily teamwork on a new footing. At Rosenbauer, this conversion to digital platforms was already on the way, so it worked perfectly right away.

TELECOOPERATION AND E-LEARNING

One example of digital working at Rosenbauer is the “DigitAll” project that aims to introduce a new, Group-wide ERP system. Here, the project team is in contact with employees from all over the world several times a week, and there was virtual collaboration even before COVID-19. All team meetings and discussions are held online, and documents and presentations are edited together in the cloud. In March 2020, only the office workstations were swapped with the home office and work continued seamlessly and without disruption.

Another example is the Rosenbauer e-learning platform, which employees and

Collaboration

service partners can use to gain further qualifications and complete training courses independently. In the previous year, it was particularly used for mandatory compliance training, to certify Sales and Purchasing as well as Rosenbauer executives in accordance with the latest compliance guidelines.

In 2020, the annual financial officers' conference was also organized for the first time as an online event rather than a face-to-face event. More than 50 employees from all companies took part in the three-day event and exchanged views on the latest strategic and operational topics. "We recorded all presentations, webinars, and discussions and were thus able to make them available to the entire finance organization after the conference," says Sebastian Wolf, CFO of Rosenbauer International.

VIRTUAL LOADING AND HANDOVERS

But digitalization is not only on the rise in internal collaboration; it is also becoming more and more prevalent in processes involving customers. For example, bodyshell meetings and vehicle handovers now take place online when international customers are unable to travel to the location or wish to do so. The systems are also used to conduct teletraining and to provide international partners with information and demonstration material so that they can independently conduct vehicle handovers and training on behalf of Rosenbauer.

ONLINE PRODUCT DAYS

Digitalization is also becoming increasingly important in marketing. Rosenbauer hosted the first Online Product Days event in December 2020. Visitors to the virtual trade fair were met by avatars at information stands and in the exhibition hall, could take part in webinars, and directly download product information, data sheets, and presentations. Product managers and specialists from the development departments were available as virtual contacts, and employees from the area sales organizations were also available for the second edition of the event in March 2021. This enabled international customers to contact the respective area sales managers directly.

Moreover, the market launch of the "Revolutionary Technology" (RT), Rosenbauer's first fully electric firefighting vehicle, took place in September 2020 with global participation. The event, which included the official handover of the first three customer vehicles, was available via livestream and was met with great enthusiasm by the global firefighting community.

BODYSHELL MEETINGS AND VEHICLE HANDOVERS are conducted online.

FOR MORE INFORMATION ON THE SUBJECT

»**DIGITAL WORKING** MAKES IT MUCH EASIER TO COLLABORATE AND WORK ACROSS BORDERS AND TIME ZONES.«

SEBASTIAN WOLF, CFO

OVER 10,000 FOLLOWERS

Rosenbauer Product Days recorded over 10,000 followers every day.

NETWORKED FIRE DEPARTMENT COMMUNITY

Facebook, Instagram & Co.

The Online Product Days events were supported on all Rosenbauer social media channels.

3D VEHICLE EXHIBITION

Virtual presentation and interaction

Virtual vehicles can not only be viewed from all sides but also loaded with equipment.

FUTURE BOX

At the end of 2020, Rosenbauer hosted the world's first virtual firefighting trade show. At the Rosenbauer Online Product Days event, the new products for the year were presented in a realistic, three-dimension exhibition space, while avatars allowed interaction with the trade fair audience.

LIVE CHAT WITH EXPERTS

Up-to-date communication

Visitors to the trade fair were able to take part in webinars or chat with employees.