

## **Company overview**

### **Brief profile**

For nearly 80 years, Rohde & Schwarz has stood for quality, precision and innovation in all fields of wireless communications. The company is strategically based on four pillars: test and measurement, broadcasting, secure communications, radiomonitoring and radiolocation. Thanks to this strategy the company can address diverse market segments, including wireless communications, the broadcasting and electronics industry, aerospace and defense, homeland security and critical infrastructures. The electronics group, headquartered in Munich (Germany), is among the world market leaders in all of its business fields. Rohde & Schwarz is the world's leading manufacturer of wireless communications and EMC test and measurement equipment, as well as of broadcasting and T&M equipment for digital terrestrial television. The Executive Board is made up of Manfred Fleischmann (Chairman), Christian Leicher and Gerhard Geier.

As an independent, family-owned company, Rohde & Schwarz generates its growth from its own resources. Since the company is not bound by quarterly thinking, it can plan for the long term. Currently 8700 employees worldwide contribute to the success of Rohde & Schwarz. Almost 5500 of them work in Germany. In the 2011/2012 fiscal year (July to June), the company generated a net revenue of € 1.8 billion.

### **A company with a global presence**

To be always close to the customer, Rohde & Schwarz has an extensive service and sales network in over 70 countries. Exports account for approx. 90 percent of revenues. In addition to the Munich headquarters, there are regional headquarters in the US (Columbia) and in Asia (Singapore). Rohde & Schwarz is a high-tech company that thrives on innovations, and around 16 percent of the annual net revenue is invested in research and development.

To maintain its high quality standards, Rohde & Schwarz keeps almost the entire value-added chain within the company. Central R&D is located at company headquarters. Since its founding, the company's philosophy has been to have development and production close to each other. For this reason, most products are manufactured in the Rohde & Schwarz plants in Memmingen, Teisnach and Vimperk (Czech Republic), near the German border.

Outside Germany, Rohde & Schwarz has development centers in the US, Singapore, Korea, China, Denmark, France and Great Britain. These centers implement applications that are tailored to the requirements of local customers. In Asia and the US in particular, the company is concentrating on improving its offerings for the regional growth markets. The focus is therefore on rapidly expanding these two development locations. A production facility in Singapore has been up and running since early 2011, as has another plant in Malaysia since July 2011, in order to ensure production close to the company's R&D activities at the Asian headquarters.

## **Employees are the driving force**

Thanks to its highly qualified employees, Rohde & Schwarz ranks among the technology leaders in all of its business fields. The corporate culture is characterized by flat hierarchies and a family-type atmosphere. Rohde & Schwarz sets great store by identifying and promoting young talent in-house as early as possible, and usually selects people from inside the company for management and leadership positions.

More than 400 in-house training courses are offered per year, reflecting the importance that Rohde & Schwarz attaches to continuing education. The company is also committed to vocational training. In Germany, Rohde & Schwarz has prepared more than 4500 young people for professional life since 1934. The company offers a wide selection of vocational training programs, ranging from electronics specialists for instruments and systems to IT specialists and industrial administrators. In 2010, a Rohde & Schwarz apprentice finished training as Germany's best IT systems engineer.

Rohde & Schwarz puts people in the focus. This is reflected in the company's low personnel fluctuation rate. In a study by the Trendence survey institute among communications engineering students, the company was ranked the second most popular employer in Germany in 2012.

## **The business fields**

### **T&M equipment for wireless communications, general-purpose electronics and microwave**

Rohde & Schwarz offers test and measurement solutions for wireless communications. Currently LTE is going on air, and the first LTE FDD and TD-LTE networks have started operation in Europe, the US and Asia. Test and measurement equipment from Rohde & Schwarz makes a decisive contribution to the success of fourth-generation mobile radio. The company offers manufacturers a complete product portfolio for the development and production of chipsets, mobile terminal equipment and base stations. Network operators rely on Rohde & Schwarz products in the planning, setup and monitoring of their networks. Rohde & Schwarz is already venturing into LTE-Advanced and offers a first line of signal generators and analyzers.

Furthermore, the company covers almost all mobile radio and wireless technologies, from GSM, UMTS/HSP(+) and CDMA2000 to Bluetooth, GPS and wireless Internet access via WLAN. One out of every two mobile phones in the world is developed and produced using T&M equipment from Rohde & Schwarz.

The company also supports manufacturers of electronic devices wherever signals need to be generated and spectra or networks analyzed – from the audio range up to the high microwave frequencies. For the aerospace and defense industry, Rohde & Schwarz develops test and measurement solutions for microwave links as well as for radar and satellite communications systems. In addition, the company provides complete systems for EMC and field strength testing, for example to detect electromagnetic disturbance in automotive electronics.

In 2010, Rohde & Schwarz entered a new market segment by launching the world's first oscilloscope with digital trigger. Hameg Instruments GmbH, a Rohde & Schwarz subsidiary, also offers oscilloscopes. Hameg's T&M portfolio rounds out the Rohde & Schwarz product range in the lower price range.

### **Broadcasting and studio technology**

Almost all analog transmitter networks have now been replaced by digital terrestrial broadcasting. Rohde & Schwarz has shaped and contributed to this development from the very beginning. The company has been active in the field of TV and sound broadcasting for over 60 years. Today, Rohde & Schwarz transmitters and T&M equipment are in use for analog and digital television in more than 80 countries.

As the market leader for digital terrestrial television, Rohde & Schwarz supports the world's most widely distributed digital broadcasting standards. In North America for example, the company offers equipment for ATSC Mobile DTV, in Asia and Latin America for ISDB-T, and in Europe for DVB-T2. In the field of mobile TV, Rohde & Schwarz deploys its combined expertise from broadcasting and wireless communications.

The company also sells T&M equipment for the installation, maintenance and monitoring of broadcasting networks. The company is the market leader in this area with the R&S ETL TV analyzer. Satellite and cable TV providers also find suitable T&M solutions at Rohde & Schwarz. The company supplies manufacturers of consumer electronics with the T&M equipment they need for the development and production of satellite receivers and TV sets, including for the new HD and 3D formats. Every second set-top box in the world is tested using T&M equipment from Rohde & Schwarz.

At the end of 2010, Rohde & Schwarz acquired DVS Digital Video Systems GmbH. DVS is a leading international manufacturer of hardware and software for professional film and video post production. One objective of this partnership is the transfer of technology between studio and broadcasting solutions. Moreover, the expertise and resources of the two companies will create valuable synergies.

### **Secure communications for armed forces, government authorities and industry**

Military, government and civil authorities must be able to exchange information efficiently and securely. This is crucial for the success of national and international operations.

Rohde & Schwarz supplies interoperable radiocommunications systems for deployment on land, at sea and in the air. Rohde & Schwarz is working hard on the development of next-generation software defined radios (SDR). The German Armed Forces, for example, commissioned the company at the end of 2008 to develop an SDR base unit for their future joint radio system (SVFuA).

More than 200 airports around the world deploy Rohde & Schwarz radiocommunications systems. In 2011, the company enhanced its product portfolio for air traffic control (ATC) by adding voice communications systems. These systems are based on a product from Topex SA, a company in which Rohde & Schwarz acquired a majority interest in 2010. As a result, Rohde & Schwarz can offer complete, IP-based single-source system solutions, from the microphone at the controller working position to the radio system antenna.

Rohde & Schwarz SIT GmbH develops crypto products and systems for government agencies, the German Armed Forces, the military and for private industry that ensure that voice and data are securely transmitted. The subsidiary's high-security encryption technology is used for both wireless and wireline communications. As early as 2001, Rohde & Schwarz SIT had already set standards in secure mobile communications by launching the world's first crypto mobile phone.

### **Frequency management and radiolocation for internal and external security**

Although the frequency spectrum is limited, mobile wireless data volume is increasing drastically. Mobile telephony and radio for security authorities and organizations, navigation systems and broadcasting must operate smoothly. Rohde & Schwarz develops both stationary and mobile systems for detecting, locating and analyzing radiocommunications signals.

In many cases, threat scenarios can be identified early on through radio intelligence. Rohde & Schwarz provides authorities with solutions for identifying and locating suspicious communications activities. The company's receivers, direction finders, signal analyzers, antennas and customized systems have been used in internal and external security for many decades.

Satellite monitoring also plays an important role at Rohde & Schwarz. Solutions include both stationary and mobile systems for use on the ground, at sea and in the air. They enable government agencies worldwide to get an insight into satellite-based voice and data communications. In this field, Rohde & Schwarz is supported by its French subsidiary Arpège SAS, which implements customer-specific satellite monitoring systems in close collaboration with Munich headquarters.

In 2011, Rohde & Schwarz entered a new market segment by acquiring ipoque GmbH, a specialist in Internet traffic management and network monitoring. ipoque is a leading provider of software solutions that effectively detect, monitor and optimize network applications.

### **Service, support and system integration**

With a global service and sales network and 24-hour support, Rohde & Schwarz is always standing by to actively assist its customers. Qualified sales and service staff provide intensive customer support before, during and after purchase. Rohde & Schwarz services are completely tailored to customer requirements. In addition to calibration, maintenance, product upgrades and on-site services, the company offers its customers training courses specifically adapted to their requirements. Application engineers are ready to help customers with special applications.

R&S Systems GmbH develops and integrates turnkey systems within the Rohde & Schwarz business fields and puts them into operation at the customers' premises. This includes infotainment test systems for automobile production, mobile ATC systems as well as complete electronics workshops for technical service. In addition to standard products, R&S Systems offers customized solutions.

Another Rohde & Schwarz system house is Gedis GmbH. This subsidiary specializes in automatic test equipment (ATE) for testing electronic assemblies and modules. The product portfolio ranges from compact manual test systems to turnkey, automatic in-line systems.