

COMPANY BROCHURE

# MUSIC, NEWS AND EDUCATION WE MAKE THE TRANSMITTERS



# TRANSRADIO – RELIABILITY BY EXPERIENCE



Historic administration building of TRANSRADIO in Nauen

Under the new name TRANSRADIO, the former TELEFUNKEN SenderSysteme Berlin AG enters the new digital age of broadcasting – Digital Radio Mondiale (DRM). In 2005, TELEFUNKEN SenderSysteme Berlin AG changed its name to TRANSRADIO SenderSysteme Berlin AG.

The name TRANSRADIO dates back to 1918 when TRANSRADIO was founded as a subsidiary of TELEFUNKEN. A year later in 1919, TRANSRADIO made history by introducing duplex transmission. Paying tribute to the famous name TRANSRADIO, our new name symbolises the **TRANS**ition from the analogue to the digital world of **RADIO**.

We at TRANSRADIO would like to take this opportunity to thank all our valued customers, our unique team of employees, our committed investors, our dedicated partner organisations and our reliable suppliers – in short, all our esteemed friends and collaborators, who have stood by us steadfastly, even in difficult times.

We are now proud to say that our efforts have paid off handsomely, with a much expanded workforce and positive financial results to match. Thoroughly up-to-date products and a motivated staff are the key factors where consistent growth is concerned.

The use of new digital broadcasting technology, plus continued development of analogue transmissions techniques, is the hallmark of TRANSRADIO's range of unique products.

Today TRANSRADIO can build on 100 years of TELEFUNKEN expertise and international reputation in broadcasting technology and the name TRANSRADIO expresses our desire to continue at the leading edge in this field.

Jochen Huber

CEO, TRANSRADIO SenderSysteme Berlin AG



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# SUCCESS NEEDS A SOLID FOUNDATION

## ■ Flat-hierarchy environment for better team spirit

Our success can be traced directly to the motivation and commitment of our highly skilled team. TRANSRADIO provides a flat-hierarchy environment in which team spirit is fostered through coaching and in which creative collaboration between team members is encouraged.

## ■ Quality Management-Certification DIN EN ISO 9001

Products from TRANSRADIO are renowned for long life expectancy and reliability. We make sure that quality assurance is one of the main guidelines through all the processes of production and delivery.

## ■ Highly skilled team

Our specialists, with their individual skills are the driving force behind TRANSRADIO. Regular employee training is the answer to the constant change and development in broadcasting technology.

## ■ Long-term after sales service

Broadcasting equipment requires high investments. We guarantee our customer spare parts deliveries over decades to secure their investments.

## ■ Customer care

TRANSRADIO delivers custom-tailored solutions for the needs of our customer. Our services range from the delivery of transmitters and the management of turnkey projects, including all facilities to operate a broadcasting transmitter. Professional customer care helps to ensure the best performance of our products.

## ■ Helping our partners to succeed

We view our customers as partners in our success. Developing long-term relationships with our customers and maintaining close relationships with suppliers enables us to develop high-quality products, services and support.

## ■ Concentration of core competence

Experience has shown that concentration of a limited number of specialised market segments is the best long-term strategy for our company. We put our main effort into the development of DRM, AM and FM technology along with antennas.

## ■ Highly motivated staff

Most of the employees of TRANSRADIO are also share holders in the company. Contributing directly to the success of the company brings out the best in our staff.



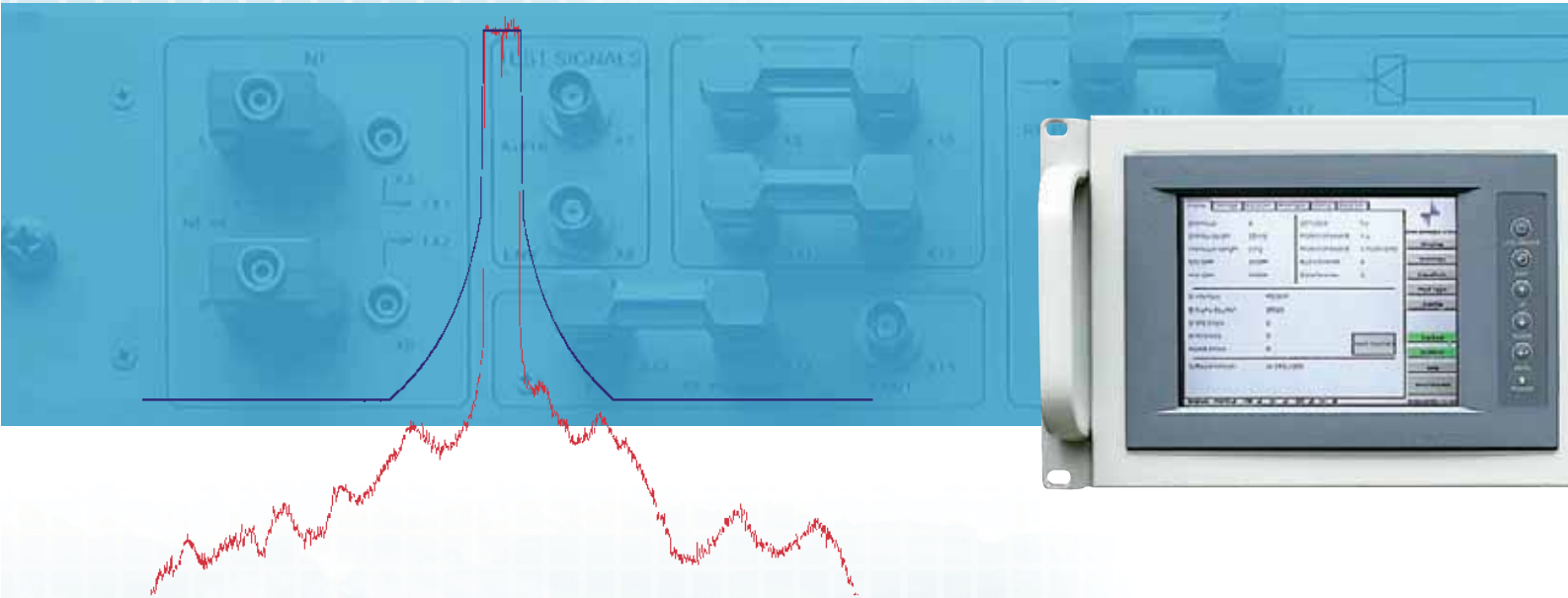
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# DRM – THE DIGITAL TECHNOLOGY FOR THE CENTURY



Despite new emerging technologies to distribute radio via web, cable and satellite, radio broadcasting is still undoubtedly the most efficient and convenient medium to receive radio, particularly for mobile applications.

The major advantage of LF, MF and HF broadcasting in the frequency range below 30 MHz is the huge coverage.

While all the other technologies need an extensive network or a high number of transmitters, AM broadcasting requires just a small number of transmitters, providing a program to particular target groups in a large geographical area.

Getting used to the high quality of VHF broadcasting required AM to be upgraded with a new technology providing the same standard of quality.

Digital Radio Mondiale (DRM) is the name of the international consortium, which defined the standards for digitalisation of AM broadcasting. DRM enables broadcasters to combine the advantage of VHF quality with the national and international coverage of AM broadcasting. TRANSRADIO, formerly TELEFUNKEN SenderSysteme Berlin, as a founding member of this consortium has tremendously influenced the standard with its experience and knowledge in broadcasting.

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DRM DMOD2

TRAM 50 MF Transmitter Equipped With DRM-DMOD2

As DRM is the sole digital broadcasting system using the same frequency range and bandwidth as the existing analogue systems, broadcasters are offered major advantages as they can use the same frequencies and often the same transmitters as before.

DRM is characterised by transmitting one high quality program over a small AM frequency band. Consequently, DRM is also suitable for local broadcasters, who are interested in transmitting only a single program. Due to the limited availability of MF frequencies, local broadcasters alternatively can use the 11m HF-band from 25.67 to 26.1 MHz.

Nationwide or international broadcasting will be possible on short wave using single frequency networks in all frequency ranges.

For the listener a new generation of receivers will select channels by content, rather than broadcasting frequencies, thus automatically choosing the best available transmission channel.

During 2005, DRM technology evolved past the testing phase as an increasing number of broadcasters initiated routine schedules of DRM transmissions. TRANSRADIO has established itself as the world's leading DRM provider. Today, TRANSRADIO has the highest number of installed DRM transmitters in service.

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# INNOVATION IS THE KEY TO SUCCESS

Single TRAM 300 Transmitter combined to a TRAM /P600 in Marnach

In 2005 Broadcasting Center Europe (BCE), operator of several high power radio transmitters in Luxembourg, successfully completed the implementation of the TRANSRADIO medium wave transmitting system TRAM /P600 in Marnach to manage Digital Radio Mondiale (DRM) Services. Moving towards the era of digital broadcasting via DRM, the RTL-Group is transmitting its German program from the medium wave station in Marnach on 1440 kHz.

The transmitter develops a carrier power of 600 KW, provided by two combined air-cooled TRANSRADIO TRAM 300 transmitters. The adjusted DRM power is 240kW during the day and 120 kW at night. The paralleling concept offers a higher redundancy compared to a single TX system due to its active reserve. Accordingly, this reserve strategy was continued at the exciter level. Thus TRANSRADIO installed a passive reserve exciter system consisting of two DRM modulators (DMOD2) and the corresponding automatic switchover unit. TRANSRADIO was the first company in the market to supply a double DRM exciter configuration.



DRM Double Exciter System

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Broadcasting Center Europe Station (BCE) in Marnach



Eugène Muller, BCE Head of TV & Radio Transmission, said:

**“The preparation and installation of the new solid state transmitters was done within 4 months by the technical staff of BCE and TRANSRADIO. Together with the BCE DRM shortwave transmitters of Junglinster, a national German DRM radio program will be possible.”**

TRANSRADIO delivered the third generation of transmitters to the BCE station in Marnach. With the new TRAM /P600 transmitter in service, the first generation transmitters (S1445/2) will be dismantled.



## DRM Monitoring Receiver DT 700

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# CONCENTRATING ON THE CORE COMPETENCE IS THE BEST LONG TERM STRATEGY

TRANSRADIO SenderSysteme Berlin AG specializes in research, development and design of modern DRM, AM and VHF/FM broadcasting systems and delivers custom-tailored solutions to meet the needs of our customers. The professional service of TRANSRADIO ranges from the delivery of transmitters, antenna, power supply and air-conditioning systems to the management of turnkey projects, including all facilities needed to operate a broadcasting station.



## Did you know that ...

- ... TRANSRADIO continues the 100 year TELEFUNKEN tradition of building innovative broadcasting transmitters.
- ... TRANSRADIO was a subsidiary of TELEFUNKEN and was specially founded in 1918 to transmit telegrams and phone calls via wireless connection around the world.
- ... the first digital 1KW transmitter with T<sup>2</sup>M technology was built by TELEFUNKEN together with the Deutsche Telekom in 1994 in Berlin-Köpenik.
- ... in 2001 TELEFUNKEN made history when it carried out the first DRM synchronised SFN transmission using 3 transmitters broadcasting simultaneously (1485 kHz).
- ... due to the replacement program in Switzerland in 2004, over 100 TELEFUNKEN Transposers were installed.
- ... in 2005 TELEFUNKEN built the first DRM exciter standby system in Marnach (Luxemburg).
- ... as a result of the ongoing development of new products and further modification of existing ones, TRANSRADIO has the highest number of installed DRM transmitters in service.
- ... in 2005 TRANSRADIO introduced a new 10KW and 20KW VHF/FM active transmitter reserve system, combining high redundancy with cost efficiency.
- ... in 2006 TRANSRADIO is planning the first ETSI conform DRM transmission on long wave with modern solid state transmitters (TRAM line).

## PRODUCT SEGMENTS

1. DRM (Digital Radio Mondiale)
2. AM Transmitters from 5kW to 2000kW
3. VHF/FM Transmitter from 5W to 30kW



1903

2006



# BBC BROADCASTS WITH TRANSRADIO DRM-EQUIPMENT IN ROUTINE SCHEDULES



Kvitsøy Radio Broadcasting Station (Norway)

Many broadcasters still use transmitters built in the 1970s and 1980s. TRANSRADIO delivers the solutions to upgrade these systems with DRM exciter.

The DRM exciter DMOD2 1591 has not only proved its compatibility to transmitters built by TELEFUNKEN but also its ability to operate with transmitters from other companies.

Securing investments is an important issue for broadcasters. Therefore an increasing number of broadcasters made the decision to upgrade their transmitters with DRM exciter. In 2005, Telenor Networks successfully started DRM short wave transmissions for the BBC World Service in Kvitsøy (Norway).

The transmitter, a Pantel 500KW S4005 with SSB option, was built by TELEFUNKEN in 1984 and was modified by TRANSRADIO for DRM operation in 2005. After a short test period the BBC operated the service in routine schedules.

Mr. Ramsvik, the responsible senior engineer from the AM Department of Telenor said:

**"I was very impressed that good DRM quality could be achieved with an old TELEFUNKEN 500KW Pantel S4005 transmitter. These DRM quality parameters are usually achieved only with new modern transmitters.**

**The TELEFUNKEN 500 KW Pantel transmitter with SSB option offers a wide range of tuning possibilities necessary for transmitter linearity settings for DRM operation"**

John Sykes, BBC Project Director, Digital Radio was impressed by the reception obtained in Berlin.

**"We drove around Berlin in a demo car with a prototype DRM car radio, and obtained very good short-wave reception from both Kvitsøy and Rampisham"**



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# PEOPLE BEHIND THE SUCCESS OF TRANSRADIO



*“ Customer satisfaction is not just about a good product. Delivery in time and competent training based on practical experience makes the difference.”*

**Michael Wittling, Senior Engineer – testing, commissioning and customer training**

- Michael is meanwhile over a decade in charge of quality testing, system installation and commissioning and has taken part in many projects covering a wide range of different broadcast technologies.
- He is presently responsible for our TRAM transmitter product range, particularly international systems commissioning and customer training.



*“ Shaping the technology of tomorrow needs all our experience. Positive feedback of our customers is best reward for our effort.”*

**Harald Zank – Senior Engineer, Development Department**

- Harald is a Senior Engineer in the Development unit and is developing the TRAM line of TRANSRADIO. He plays a major role in optimising AM technology for DRM.
- He has extensive engineering background in analogue and RF circuit design and joined TRANSRADIO/TELEFUNKEN in 2003.

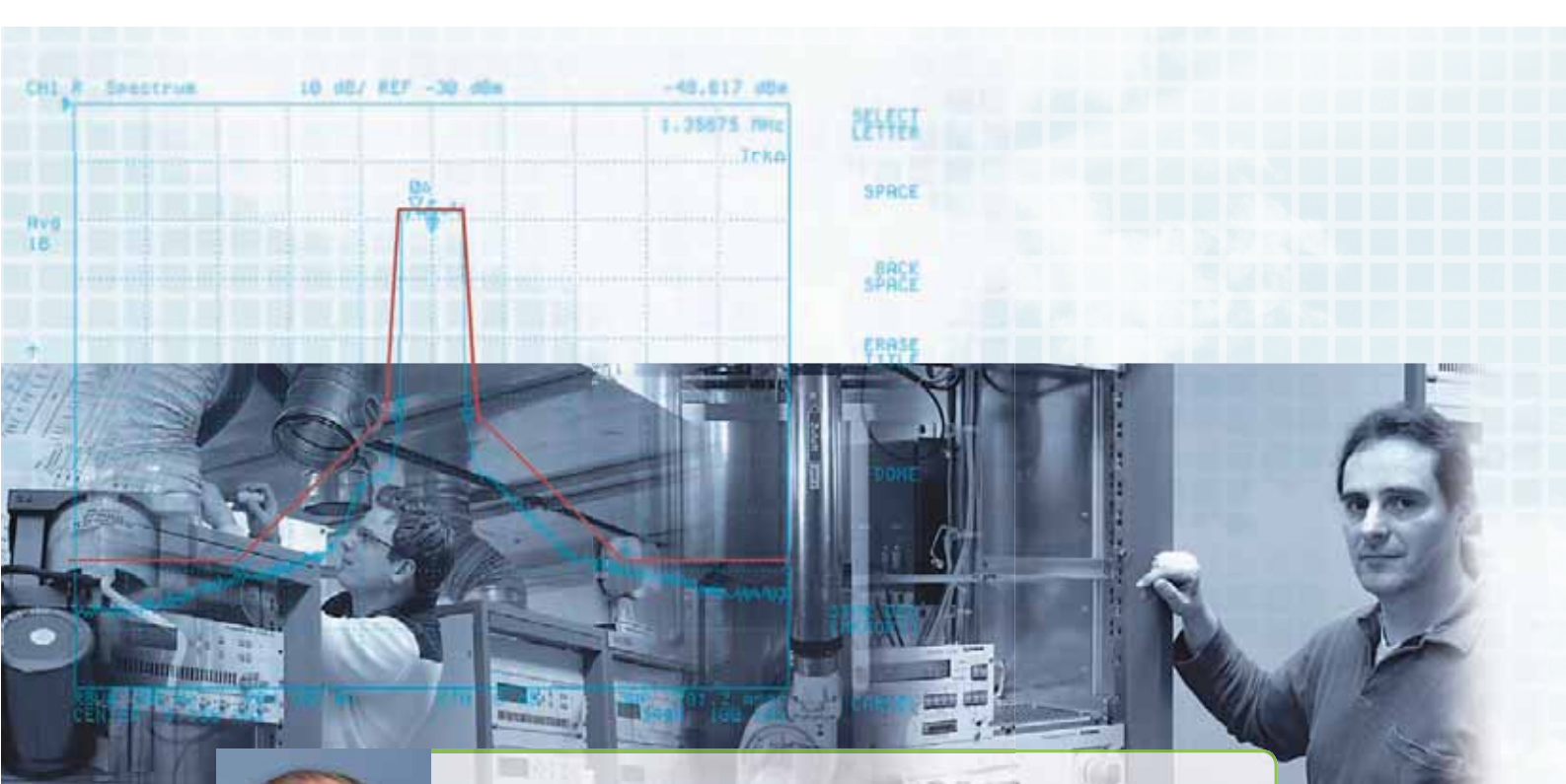


*“ Engineering the future of broadcasting is the fundamental driving force behind our activities. DRM is a major step to improve AM technology.”*

**Klaus Weber – Head of Development**

- Klaus is responsible for the entire Development unit. He has over 25 years experience in broadcasting technology and was a key player in developing the TRAM transmitter line.
- He has been at TRANSRADIO/TELEFUNKEN since 1977.





*“Antennas require high investment layouts from the broadcasters and must have a long life-time. Tailor-made ideas and reliable quality secures the investment for decades.”*

**Bernd Waniewski, Senior Engineer, Development Department – antenna specialist**

- Bernd is responsible for the development and design of antennas.
- Joining TRANSRADIO/TELEFUNKEN in 1973, he has 33 years of experience in developing antennas and their tuning elements.



*“Working together with our suppliers in close partnership is the precondition for providing the benefit of the most suitable and cost-efficient components and assemblies for our customers.”*

**Thomas Wichmann – Head of Purchase**

- Thomas is responsible for purchasing materials, modules and units of the highest quality based on a partnership of close cooperation with all suppliers.
- Thomas has a background of more than 20 years with vast experiences in project management for industrial turnkey projects and sales.
- He joined TRANSRADIO/TELEFUNKEN in October 2002.

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SenderSysteme Berlin AG  
Mertensstraße 63  
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fax: +49 30-3 39 78-599  
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