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DAB VHF Transmitter Family R&S® NA 7000

Liquid-cooled high-power DAB transmitters

The new liquid-cooled DAB VHF Transmitter Family R&S® NA 7000 helps operators to significantly cut costs for installation and in particular for operation.

Expanding the DAB transmission networks

Digital audio broadcasting (DAB Eureka project 147) has been introduced in numerous countries since it offers more programs with excellent audio quality plus new auxiliary features. The nationwide full-coverage emission of digital sound broadcast programs presents a challenge to broadcasting companies. Trailblazers are Germany, Great Britain, Belgium and Spain, where the capability to receive digital broadcast programs in band III (174 MHz to 240 MHz) has already made enormous progress.

Particularly powerful DAB transmitters with more than 1 kW transmit power are needed in order to set up the main transmitter network. Air-cooled systems cover this range only partially (see box on the right).

Liquid cooling with flair

Based on positive results with liquid-cooled TV transmitters, Rohde & Schwarz now also offers DAB transmitters with this technology, thus providing operators with the following advantages:

- ◆ Higher power classes
- ◆ Minimum space requirements for transmitters and cooling system
- ◆ High reliability without maintenance
- ◆ Long-term stable operating parameters
- ◆ High efficiency of the entire system
- ◆ Less disturbance due to noise
- ◆ Flexible und straightforward installation of the entire system
- ◆ One cooling system for several transmitters

More information and data sheet at www.rohde-schwarz.com (search term: NA 7000)



The liquid-cooling system (FIG) is designed in such a way as to ensure that the cooling medium cannot leak even when amplifier modules are replaced. Redundant components ensure high operational reliability. For example, the two integrated pumps can replace each other in the case of failure. Two fans cool the heat exchanger; in this case, too, full operability is maintained if one of these fans fails or is replaced. This innovative cooling system always keeps the transmitter in the optimum operating temperature range, ensuring longer service life. The heat exchanger can be operated in a very wide temperature range.

Liquid or air cooling?

The effectiveness of the entire system is pivotal

When considering the effectiveness of broadcast transmitting systems, the efficiency of the transmitter plays a key role. The higher the efficiency, the more effective and cost- and energy-saving the normal operation. All the same, transmitters radiate considerable excessive heat that must be dissipated.

In the past, air-cooling systems were the standard solution with the focus solely on favourably priced transmitters. However, the expenses incurred by investing in, installing and operating an air-cooling system are not to be ignored either, since filters, wide-diameter air lines, air chambers and separate rooms for fans and elaborate air treatment facilities require considerable space.

A cost analysis of complete transmitter systems, taking into consideration the entire facility, shows that liquid cooling is more economical for transmitters starting at 1 kW in power.

Uniform transmitter concept presents advantages

The concept of the DAB VHF Transmitter Family R&S® NA 7000 is based on digital VHF TV transmitters and offers transmission power ranging from 0.9 kW to 3.6 kW. Key components such as amplifier, power supplies, housing, combiner and cooling system are identical, ensuring immediate availability and a uniform service concept.

If liquid-cooled DTV and DAB transmitters are operated together at one location, the operator also benefits from the fact that the cooling system can be shared by both transmitter types – thus space requirements can be significantly reduced.

High redundancy ensures operational reliability

Not only the cooling system with its redundancy and operation monitoring has been designed to be highly fail-safe. The transmitter itself also features facilities that maintain operation if internal components experience interference. All amplifier modules are equipped with their own power supply so that operation errors and failures are limited to one amplifier module. In such a case, the transmitter remains in operation with the transmit power somewhat reduced. Defective components can be replaced during operation.

A redundant exciter is available as an option; in this case, too, separate power supplies are used.

The ETI transmitter signals can be applied in duplicate at the transmitter. If one signal fails, switchover to the second ETI signal is performed seamlessly without interference.

Liquid cooling: a winning solution

The new DAB VHF Transmitter Family R&S® NA 7000 helps operators to significantly economize on installation and operation, not to mention the costs saved through its minimum space requirements. Customers, in Great Britain for example, have already been won over by the advantages of the liquid-cooling system and its uniformity with other transmitter families from Rohde & Schwarz (see Newsgrams on page 62).

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43-392/6

The liquid-cooling system boasts high operational reliability and minimum space requirements.