

## DTV in France – transmitters installed at 2876 m

**Rohde & Schwarz supplied and installed about 30 liquid-cooled high-power transmitters of the R&S® NV7000 series for network operators in France. Nine of these transmitters were installed under adverse conditions at the Pic du Midi (2876 m) in the Pyrenees.**

Since an observatory is located at the summit of the Pic du Midi, it was essential not to mar the atmosphere with heat generated by the transmitters.



Foto: Autor

Since September 2005, 50 % of the French population has gained access to digital terrestrial television. The primary objective is to reach 85 % of TV viewers by 2007. Rohde & Schwarz actively participated in the rollout of this project. The Munich-based company supplied and installed the corresponding transmitters despite extremely short deadlines.

A very special station for this rollout was the site Pic du Midi covering the Toulouse area with more than two million viewers. Eight transmitters for four multiplexes are operated in passive standby, a fifth multiplex is served by one transmitter with dual drive. They provide power of 500 W and 650 W at an effective radiated power of 13 kW. But two major problems had to be solved for this site: access and cooling.

Since the summit of the Pic du Midi can only be reached by inclined railway or helicopter, one of the main difficulties was transporting the material. Air transport was selected for all material. This was not very easy – even if the weather was pleasant in the valley, it was always very windy at the summit and helicopters had to cope with these conditions. The task was extremely difficult since the mast had to be approached within less than 1 m. Only very skilled pilots can manage such flight maneuvers.

Cooling required special engineering for two reasons: Temperatures drop to as low as  $-35^{\circ}\text{C}$  in winter. For this reason, heat exchangers have to run in a kind of air mixing chamber. Moreover, only a minimum of warm air could be expelled to the outside – an observatory is located at the summit making it essential not to mar the atmosphere. As a result, an indoor solution was selected. The cooling units were installed in a jacket tube connected to a bypass system. The warm air was fed back to the inlet of the cooling unit. A second identical cooling system was installed for passive standby.

The French company Klein SAS received the order for planning and implementing the site-specific cooling system and the French company Sogetrel was responsible for installing it. The complete project was managed by ROHDE & SCHWARZ France, whose technicians were responsible for installing the system and stayed several weeks in the Pyrenees to accomplish the task on time.

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