

Rapid Growth For Slovenia's STN



JAMES CARELESS on Eastern Europe's largest satellite teleport, capable of radio, HD and SD broadcasting

This May, Slovenia's Satellite Telecommunications Network (STN) opened its state-of-the-art new facility in Dob pri Domzalah, about seven miles outside of Ljubljana, the capital.

Measuring 54,000 square feet in size, the new STN facility is actually the first phase of a larger project. This phase is primarily a multi-channel satellite teleport, currently providing edit, re-voice, and playout for 15 conventional channels and 100-plus turnaround feeds, with

the capability to expand further. Still to be built is an equally large television production complex.

"Our new facility is the largest of its kind in Eastern Europe," says STN Managing Director Tomaz Lovsin, "It provides the fastest possible turnaround in getting multiple channels to air. We have the space to provide virtually unlimited signal processing capability, and we safeguard signal quality through a rapid diagnosis and response management system that spans

our entire network facility."

Capable of handling analogue/digital radio as well as television signals, STN's Dob pri Domzalah facility can handle HD and SD programming in MPEG-4 and MPEG-2 formats.

The only thing more surprising than STN operating Eastern Europe's largest satellite teleport is the fact that the company was only founded in 2004. Its birth was spurred by the rise of regional commercial broadcasters in this region; broadcasters who needed to reach wider audiences via satellite in order to thrive.

Add the demand for American and West European TV signals, and the market case for STN gelled quite quickly.

"When we started just five years ago, we were one-fifth the size we are today," says STN Sales Director Mitja Lovsin, "Such is Eastern Europe's appetite for channels, that we outgrew our original facility in Ljubljana within 18 months of moving in. Knowing that this growth is likely to continue, we decided that we needed room to grow where space was not limited. This is why we moved out to the rural area of Dob pri Domzalah. Our site here has room for 216,000 square feet of facilities."

First and foremost, STN is a satellite service provider. As a result, its Dob pri Domzalah facility has sufficient antennas to communicate with all European, most Asian, Middle-Eastern, African, and Trans-Atlantic satellites. "We uplink to Hot Bird, Eutelsat W2, Eutelsat AB4,

Eutelsat W1, Hellas Sat 2 Middle East beam, TelStar 12, Intelsat-10, Atlantic Bird 1, and many other satellites," says Lovsin, "Hot Bird, AB4 and W2 serve the direct-to-home market, while the others are used for cable retransmission, receiving feeds from regional broadcasters, and contribution services from Western Europe and the United States."

STN also operates three fibre optic routes (two primary and one backup) for signal distribution, and has satellite hubs in Los Angeles and Washington DC for uplinking US content back to Dob pri Domzalah.

However, STN doesn't just provide simple signal turnarounds: The Dob pri Domzalah plant has the ability to edit incoming feeds for other markets, adding commentary in a range of languages as needed. The company also offers encryption and sub-titling for its video feeds.

All of this is managed from one centralised master control. Currently, it assembles and outputs 15 playout and 100-plus turnaround channels via satellite, and has room to expand.

The Technology

Every signal that comes into STN's Dob pri Domzalah facility is automatically synchronised to the company's Evertz 5600MSC master sync and clock generator, in 1:1 redundancy. It serves as a broadcast quality master sync pulse generator (SPG) and a master clock.

"From the first point of signal

entering our premises, to off-air monitoring of the same signal, we have set up an advanced monitoring system using the Miranda Kaleido X system," Lovsin says. The system monitors 192 video and up to 4608 audio channels, and displays everything across 12- x 50-inch high quality 1080p plasma displays.

For more advanced video and audio monitoring, STN uses Harris' Videotek VTM analysers. As well, STN has deployed Miranda's iControl system, which Lovsin says is "highly adapted and customised to STN's needs (in a) monitoring package for our multi-channel environment."

For playout, STN uses either its customised Matrox X.mio-based solution (capable of HD/

SD channel playout) or Miranda's Xchannel HD/SD channel playout with advanced graphics capabilities. Xchannel comes with an HD/SD character generator; it is controlled by a Pebble Beach Neptune automation system.

The facility uses Tandberg Television compression systems. They include Tandberg E5700 series MPEG-2 encoders (including E5775s for multi-pass processing), and Tandberg E5900 series encoders for MPEG-4 applications.



"For smaller applications we use (Tandberg) MX5640 multiplexers, while for the larger we use MX8400s; all protected by 1:1 redundancy," says Lovsin.

STN routes its audio and video signals using Network Electronics' VikinX 128x128 HD-SDI routers,



which come equipped with built-in dual redundant power supply and fully redundant controller functions. For sound STN uses Junger Audio b46-series digital four-channel audio levelling processor boxes with SDI interface and other C8000 Level Magic modules for the C8000 modular system (see sidebar).

This all ensures that the television and radio audio

passing through the facility retain all of their original quality.

On the satellite side, STN's dish farm consists of 2.4m to 4.0m antennas for Ku-band, and up to 5.6m antennas for C-band applications. "We use 4.9m to 5.6m motorised ASC Signal high quality receive/transmit antennas with beacon receivers to constantly track the satellite," says Lovsin.

To uplink signals, STN uses Newtec satellite modulators capable of transmitting MPEG transport streams in either DVB-S, DVB-DSNG, or DVB-S2 modes. "Our HPAs are all XiCom models that have integrated linearizers," he notes.

On the antennas themselves, STN relies on High IP3, low noise figure, and low phase noise LNBs with high LO stability; all of which are powered from ETL LNB hot swap power supply units. L-band signal distribution is done via DEV 2180 L-Band Distribution System or ETL Enigma L-band matrices. Whether for uplinks or downlinks, STN monitors the satellite spectrum on a per-transponder basis using AvCom spectrum analysers.

Currently STN does not have its own studio space. "Any programming we produce ourselves is done remotely, using our OB vans," says Mitja Lovsin. That will change when STN adds studios to the Dob pri Domzalah complex. But even with the room available on its current site, Mitja Lovsin isn't sure how long they'll be working at this facility. "We've grown so fast in such a short time – at the rate we're going, we'll likely need an even bigger home in a decade, or less!"

AUDIO CONTROL AT STN

As a playout and transmission centre, STN deals with a wide range of incoming audio signals, all of which can vary enormously in terms of audio level and loudness. To guarantee its audio quality so that viewers don't have to keep reaching for their remote controls to change volume, STN has invested in Jünger Audio's Level Magic technology, which allows it to control audio output so that peak level and dynamic range don't vary between programmes or between different segments of the same programme.

STN researched various level control options before choosing Jünger Audio's b46 four-channel digital dynamics processor. This unit incorporates the company's sophisticated Level Magic adaptive level control algorithm, which is designed to adjust the level from any source at any time, with no pumping, breathing, or distortion. Capable of using any kind of I/O (analogue and digital) sources, as well as SDI, HD/SDI, Dolby 5.1, and all its related metadata, Level Magic is based on a simultaneous combination of an

AGC, a Transient Processor for fast changes and a 'look ahead' Peak Limiter for continuous unattended control of any programme material, regardless of its original source. It is also available in a variety of configurations to suit different applications.

STN has installed 12 b46 units, four with Jünger Audio's SDI option. It has also invested in two Jünger Audio b45 four-channel digital audio delay units for its ISDN-equipped sports commentary booths.

Tomaz Lovsin, Managing Director of STN, says: "We were looking for a unit that was not only a compressor/limiter/gate/normaliser, but also incorporated a great AGC." He added: "Ideally we wanted a unit that had an SDI/IO interface so that we could eliminate the need to de-embed and re-embed audio from (HD) SDI sources. The Jünger Audio b46, with its optional SDI card, gave us everything we were looking for – and because the system is entirely automated we are able to use it in

a 'set and forget' manner without ever having to worry about making manual adjustments."

Eight of the b46 units are being used in ingest where they provide complete control over level changes from different feeds, whether from VTRs, satellite, or fibre.

"Because we also do some sport programmes, we have six commentary booths, two of which have ISDN codecs (AEQ Eagles) for live-feed events," explains Lovsin.

He adds: "To ensure the quality of these audio signals we have invested in two b45 digital audio delays that allow us to inaudibly change the delay time of an audio signal under live conditions."

Once the programme material has been ingested and is in digital form, all of STN's signal paths from that point onward use (HD)SDI with embedded audio. "This is why we have installed four b46 units with the SDI option," says Lovsin. "Before we had these units we were relying on de-embedders and re-embedders. This not only increased our costs but also, more importantly, created an additional possible point of failure. Since investing in Jünger Audio's technology we have been able to retire all of our DBX Quantum II processors in ingest. Our audio output is now perfect!"

