Small rural 4 star hotel with 43 program TV system - case study

In the Hotelstars scheme, hotels aspiring to be a star have to meet stringent requirements. For example:

- TV service on a screen the size of the room, with remote control,
- International TV channels (from 4* upwards),
- Entertainment options (e.g. radio reception, stand-alone players or streaming services),
- WIFI internet connection in common areas and rooms,
- Bilingual guest information (printed or digital).

We often receive orders from hotels to fix and prepare the TV system, because this is also checked in the Hotelstars audit.

Here is a presentation of the TV system of a small 4-star hotel in the countryside, with the following aspects:

1. What exactly were the expectations
2. What technical solution have we chosen
3. Implementation drawing
4. Why we chose these solutions
5. List of materials
6. Real Channel List

1. REQUESTS

The hotel has mainly Hungarian, highly educated, retired guests. It was therefore important to have a varied choice of channels close to what they are used to at home, while the four-star rating meant that international channels were also necessary.

The previous provider was Magyar Telekom with about 25 channels, but they stopped DVB-C signal transmission and IPTV was not an option in the hotel. They did not want to build a network and a set top box next to the TVs is not an ideal solution in a hotel. So the existing TV sets (via coax) had to work with the new system.

This expectation seems so obvious, but it is something to be aware of, because we often come across hotels or guesthouses with older TV sets that do not work with DVB-T or DVB-C; or do work, but only with MPEG2 compression. So you have to be careful not to have any surprises when you set it up.

Other considerations were that the channel line-up should include HírTV and ATV, music and sports channels, and a larger line-up than before, since money is already being spent on its development. There was also an expectation that the hotel should have its own information channel.

2. PROPOSED TECHNICAL SOLUTION

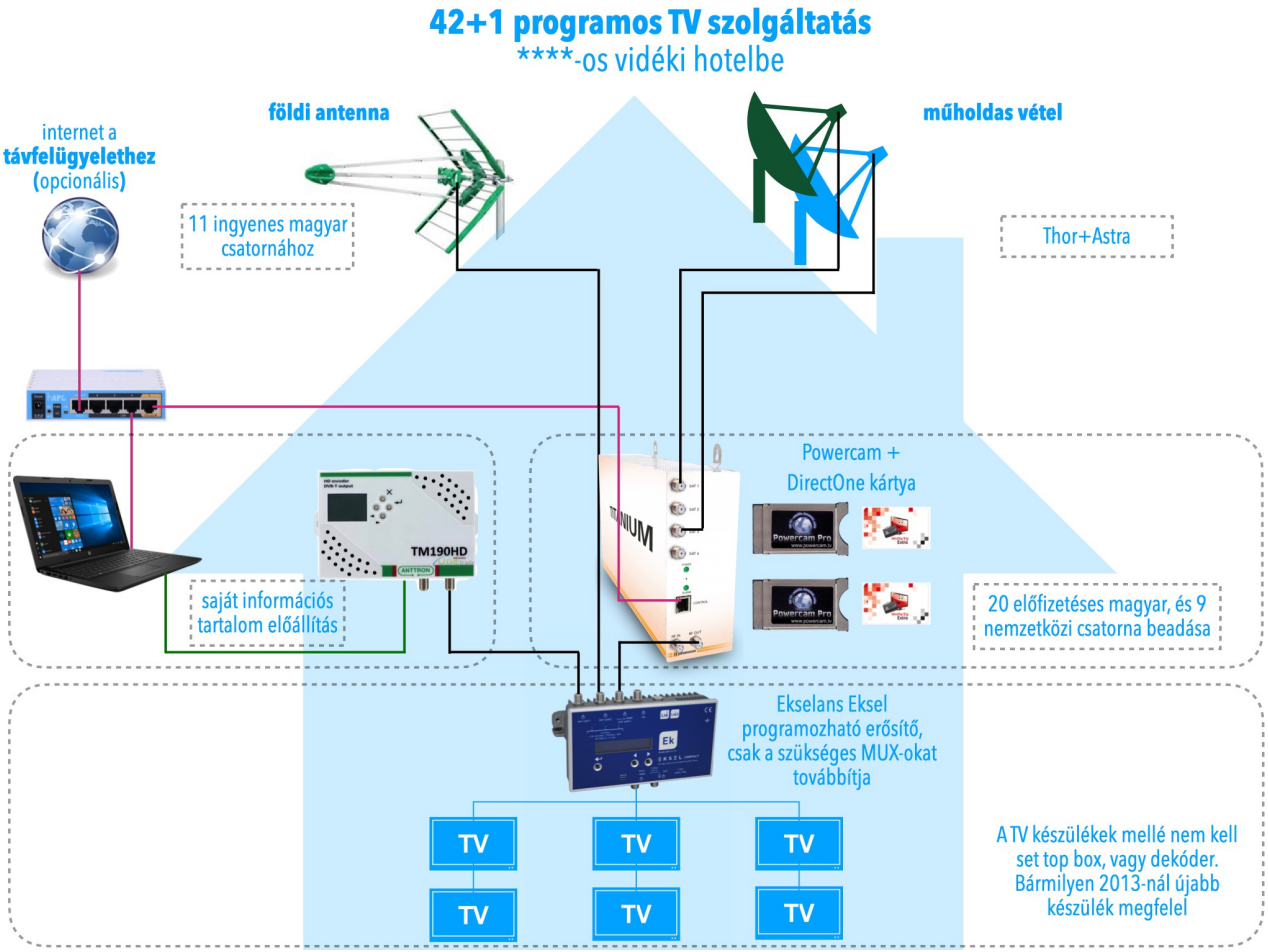
We have proposed a hybrid system where foreign programmes are received from a free satellite source, the ASTRA satellite. Hungarian language channels are collected from terrestrial broadcasting and Direct One satellite pay service.

The satellite channels will be opened with a Johansson Titanium compact headend and transmitted to the network using DVB-T modulation.

An Ekselans programmable amplifier is used to sum and level the signals.

The system also includes a MikroTik router, which establishes a VPN connection to the IT network of our service centre and allows remote monitoring and reprogramming of the devices.

3. IMPLEMENTATION DRAWING



4. TECHNICAL SOLUTION EXPLANATION

You can only request subscription channels from a service provider. There is a Telekom endpoint on site, but for the reasons mentioned above, it could not be considered.

The use of Telekom's and Digi's satellite service is made difficult by the fact that they use chip-pairing cards/decoders, which require several in a system and are therefore uneconomical.

Antenna Hungária's pay package could have been good, but the hotel still has older TVs that don't know H.265 compression, only MPEG4, and for AH channels you need an H.265 decoder.

Direct One's satellite service remains, which is a good choice for a hotel, both for the price and the range of channels. This was combined with the free-to-air MinDigTV channels to reduce the number of devices needed and make the investment more cost-effective.

As the free-to-air terrestrial channels are also included in the Direct One offer, their royalties are also covered by the Direct One subscription.

For satellite reception and decoding, we chose Johansson's Titanium 8-tuner headend, which also has a built-in multiswitch. We found this to be the most economical solution. We mounted twin heads on the antennas, so that we could reach the required transponders with a total of four cables.

The Titanium has two CI sockets in which PowerCAM modules and Irdeto cards are inserted to decode the encrypted channels.

Only UV-resistant black cable should be used for coaxial cabling, because the PVC coating of white cable for indoor use will crack and fray in the sun over a few years. Water infiltration will cause reception errors at first, and later total loss of reception. There have also been cases where water introduced by the cable has damaged headend equipment.

To generate our own information TV channel, we used a DVB-T modulator that not only receives HDMI sources, but can also play canned material from a USB stick.

The source signals are summed by an Ekselans Eksel Compact programmable amplifier, which ensures that all drivers have the same level at the output. This is important because large signal level differences on the network amplifiers would be likely to cause interference.

Since this is an old coax network, we programmed the amplifier to mix all MUXes down to the lower frequency range, where the network elements have less attenuation.

One more important feature of the Ekselans Eksel Compact was used. We filtered out the multiplexes transmitting the AH coded transmissions. This is good because if a guest retunes a TV set for some reason, it will not find any encrypted broadcasts and will not put them in the list.

It is also essential that the LTE2 filter is activated on all inputs so that mobile data traffic does not interfere with TV reception.

The components of the small control centre were installed in a glass door rack cabinet in the attic.

Before disconnecting the Telekom power supply, its signal level was measured and set 3 dB higher than the measured value at the Ekselans Eksel amplifier output. Thanks to the change of modulation (DVB-C instead of DVB-T) and the higher initial signal level, reception was perfect even at the furthest reception points, although there had been many complaints of fringing before.

5. ANYAGLIST

Article number	designation	quantity (pieces)
1434	D100 parabolic antenna	2
3739	Inverto twin head	2
3913	Ikusi Flash HD antenna	1
3549	Titanium 8701 8x4 headend	1
2913	headend programming (working hours)	4
938	PowerCAM	2
3947	Ekselans EKSEL Compact amplifier	1
3136	Mikrotik Router pre-programmed	1
4160	RACK cabinet + distribution bar	1
3752	Ekselans MDHD Easy RC modulator	1
1206	other installation materials	1

The list of materials does not include the tools and cables needed to mount the antennas, nor does it include the power distribution and amplifier, as these were provided on site.

6. CHANNEL LIST

LCN	channel name	Service	package	language	topic	source
1	M1 HD	alwaysTV	free	hun, mul	news, politics	A-MUX
2	M2 HD	alwaysTV	free	hun, mul	children, cultural	B-MUX
3	Danube HD	alwaysTV	free	hun, mul	General	A-MUX
4	M4 Sport HD	alwaysTV	free	hun, mul	sport	A-MUX
5	Duna World / M4 Sport	alwaysTV	free	hun, mul	General	A-MUX
6	M5 HD	alwaysTV	free	hun, mul	General	B-MUX
7	RTL Club	alwaysTV	free	hun, mul	General	B-MUX
8	Spectrum Home	alwaysTV	free	hun	educational	B-MUX
9	TV2	alwaysTV	free	hun, mul	General	B-MUX
10	Izaura TV	alwaysTV	free	hun	series	B-MUX
11	Dikh TV	alwaysTV	free	hun	Music	B-MUX
20	Hir TV	Direct One	plus	hun	Policy	0.8°W
21	ATV	Direct One	smart	hun	Policy	0.8°W
22	Film+	Direct One	smart	hun	movies	0.8°W
23	Film Cafe	Direct One	smart	hun	movies	0.8°W
24	Mozi+	Direct One	smart	hun	movies	0.8°W
25	Cinematic Universe	Direct One	plus	hun	movies	0.8°W
26	AMC	Direct One	smart	hun, eng	movies	0.8°W
27	Series+	Direct One	smart	hun	series	0.8°W
28	Jocky TV	Direct One	smart	hun	series	0.8°W
29	RTL II	Direct One	smart	hun	series	0.8°W
30	RTL+	Direct One	smart	hun	series	0.8°W
31	National Geographic	Direct One	smart	hun, eng	educational	0.8°W
32	Viasat History	Direct One	smart	hun, rom	educational	0.8°W
33	Viasat Nature	Direct One	plus	hun, eng	educational	0.8°W
34	Sport 1	Direct One	plus	hun	sport	0.8°W
35	Sport 2	Direct One	plus	hun	sport	0.8°W
36	Spiler 1	Direct One	plus	hun	sport	0.8°W
37	Spiler 2	Direct One	plus	hun	sport	0.8°W

38	Cartoon Network	Direct One	plus	hun, eng, rom	Children	0.8°W
39	MTV 80s	Direct One	plus	eng	Music	0.8°W
40	CNN International Europe	Canal+	free	eng	news	0.8°W
41	Sky News International	SES Astra	free	eng	news	19.2°E
42	France 24 (in English)	Globecast	free	eng	news	19.2°E
43	Euronews Germany	Globecast	free	ger	news	19.2°E
44	RTL Austria	SES Astra	free	ger	General	19.2°E
45	RTL 2 Austria	SES Astra	free	ger	General	19.2°E
46	VOX Austria	SES Astra	free	ger	General	19.2°E
47	Eurosport Germany	SES Astra	free	ger	sport	19.2°E
48	France 24 (en Français)	Globecast	free	fra	news	19.2°E
49	Euronews French	Globecast	free	fra	news	19.2°E
50	TV5 Monde	Direct One	smart	fra	news	0.8°W
100	Hotel info TV	own resources	free	hun	General	HDMI
101	Kossuth Radio	alwaysTV	free	hun	General	A-MUX
102	Petofi Radio	alwaysTV	free	hun	General	A-MUX
103	Bartok Radio	alwaysTV	free	hun	General	A-MUX
104	Danko Radio	alwaysTV	free	hun	General	A-MUX

For TV channel numbering, the LCN (Logical Channel Number) values 1 to 11 are currently occupied by the AH free channels, so the headend is programmed to start channel numbering from 20. This is because AH is likely to expand the number of free-to-air channels in the near future.

The number of TV channels that can be broadcast on the network is limited by the transmission capacity of the Titanium's four modulators. If more channels were required, either the 8 modulator version of the Titanium unit or a modular headend would have to be installed.
The TV sets are programmed to display the Hotel info TV channel (channel 100) when switched on.

If you have any questions about the case study or other systems, please feel free to contact me or my colleagues.

Gödöllő August 2022

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