Two Satellite DIY enthusiasts

Have you ever built a satellite receiver yourself? Not many have, but Rainer Schulz from the small town of Tröbitz an der Lausitz in the East of Germany is one of the very few who achieved just that in 1988. And he didn't stop there: He even built a 1.5m antenna to go with it. It's no surprise then that he chose to become self-employed and founded a small satellite dispatching business which today is run by his daughter Daniela Knott.

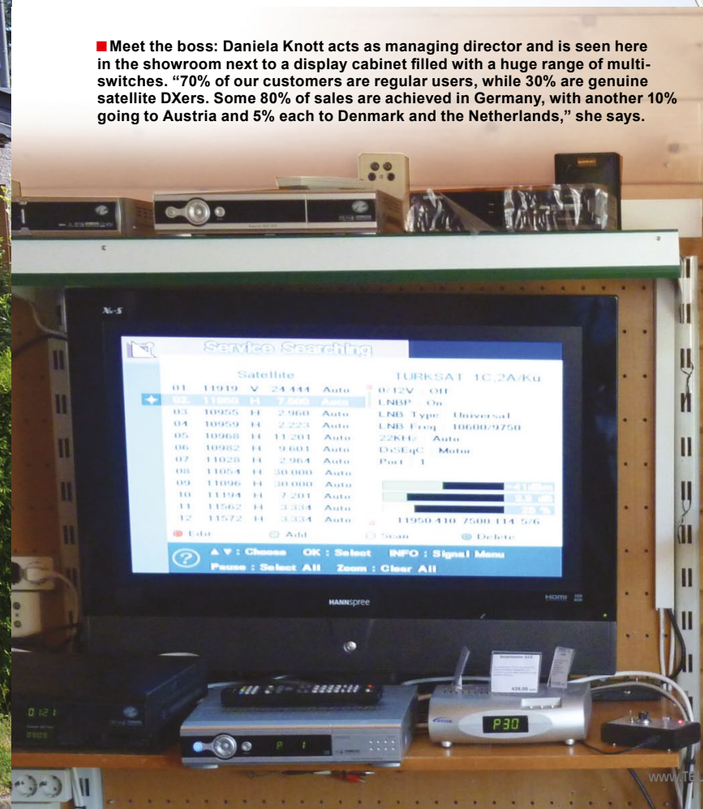
■ There's no doubt: A house with such huge antenna in the front yard must be occupied by DXers. In case you're wondering – the antenna can be rotated and therefore receives signals from 31 satellites in an arc from 83° East to 58° West.

Rainer Schulz's company is based in a pretty family home that looks just like many others in the Lausitz area. A huge 3.66m satellite antenna that is surrounded by several smaller dishes reveals what's going on inside. In an annex next to the garage visitors find a small showroom with receivers that might be interesting for DXers, above all. These boxes are equipped with low-threshold tuners and a reliable blind san mode, both of which are key features of DX receivers. "This box, for instance, comes with an extremely accurate signal quality indicator," Rainer Schulz explains and points to a receiver providing immediate feedback with regard to changing signal quality. "19% means there is stable video, 18% means some artefacts will occur and 17% means reception is not possible anymore." Such attention to detail is additional proof of Rainer Schulz's DX credentials.

It all started in 1988 when he was manager of the measurement and control systems department at a large manufacturer of agricultural machinery in Eastern Germany. At the time the Berlin Wall was still in place and there was no way you could get your hands on satellite receivers, LNBs or antennas in what was the German Democratic Republic. Yet, Rainer Schultz was in a privileged position: "I also used to work in customer service for

■ A multi-band antenna right out on top of the showroom: The Ku band LNB in the centre is surrounded by a C band LNB for linear polarisation and a second C band LNB for circular polarisation. The whole system is motor-powered for automatic alignment.

■ Meet the boss: Daniela Knott acts as managing director and is seen here in the showroom next to a display cabinet filled with a huge range of multi-switches. "70% of our customers are regular users, while 30% are genuine satellite DXers. Some 80% of sales are achieved in Germany, with another 10% going to Austria and 5% each to Denmark and the Netherlands," she says.



■ How it all began: Rainer Schulz's first self-made receiver dating back to 1988. He sourced individual components such as the tuner and a chipset from West Germany, but all the rest is 'proudly made in the GDR'.

■ Rainer Schulz even built his own meter. Here he shows the original device from 1988.

my employer, which meant I was allowed to undertake business trips to West Germany." There he obtained a tuner, an LNB as well as a wiring diagram and smuggled everything back to East Germany. He used the workshop of his employer to build his first self-made receiver with the components and information collected in the West. "I even went so far as to build an antenna as well," he walks down memory lane. "I made a parabolic mould using concrete in my backyard, laid it out with epoxide resin and glass-fibre sheet and in the end had a perfectly usable 1.5m dish." Up to this day Rainer Schulz is proud of his early achievements and even digs up the receiver he made back then from the basement. And as if that wasn't enough, there is even a signal meter around that he also built himself back then.

Obviously, his technical knowledge didn't go unnoticed and so it came about that he built a total of ten receivers himself. "They were sold on for tons of money," as CATV head-ends, in particular, were interested in satellite receivers and paid up to 6.000 marks per unit. After the Berlin Wall had come down all this was to change dramatically. Truckloads of satellite equipment were sent from West Germany, but also farming equipment from the West all of a sudden was available alongside homegrown products. The transition from centrally planned socialist economy to free market was felt first-hand by Rainer Schulz, as sales of his employer's company slumped and he was laid off.

What he did then was turn his tumbling blocks into stepping stones. "It was the second of July 1990 when my first company 'Antennen- & Satanlagenbau Rainer

■ Berndt Rosenberger has been a satellite DXer for just as long. Here he considers his options of how to convert a mast mounting system to make it fit to an actuator. A dish manufacturer has asked Rainer and Berndt to find a solution for that.

■ Another invention: Thanks to a small motor the Ku band LNB can be skewed. On the second picture you can see the component before installation, and the third picture shows the control unit.

■ This is controlling the LNB, this time for the C band: the motor (red) turns the LNB. Next picture shows the control unit.

■ C band reception with only a small antenna? No problem, if you know how and where to mount the LNB. One antenna manufacturer has equipped a 1.2m dish with alternative rods that allows to arrange both the Ku band LNB in the focal point and the C band LNB outside the focal point using a rail system. Even the DiSEqC switch fits in. "At our location this system allows reception of three C band satellites at 40° East, 5° West and 30.5° East," explains Berndt Rosenberger.

■ A look inside the AVCOM LNB: Only the cross-shaped element in the background is rotated. Depending on the 45° turn either linear or circular signals can be received.

Schulz' opened for business." In 2000 satshop24 was established as a second string to Rainer Schulze's bow and in 2004 the registered name was changed to 'E-Commerce Schulz & Knott GbR (satshop24.de)'.

Berndt Rosenberger used to work for 'Antennen- & Satanlagenbau R. Schulz' from 1990 until his retirement. Before that his career had been similar to that of Rainer Schulz. He, too, built his first satellite antenna himself, even though he sourced his first satellite receiver from friends of a friend's friend – as was the case with so many things in former East Germany. "What I did invent – so to speak – was a rather peculiar way of setting up polar mount antennas," Berndt Rosenberger remembers. "We waited for a pitch-black night and then used a tube which we aligned exactly towards the polar star. This meant we had a precise northern alignment and this is how we then erected the antenna mast."

With Berndt and Rainer in the background the business embarked on a route of steady success. The first few years were immensely successful. "We were able to sell some 500 fully-fledged systems per annum, and we also installed

Another innovation of the two satellite experts: The original LNB rail of this multi-LNB antenna did not have enough space to squeeze in another LNB for reception of HISPASAT at 30° West. But then again, who says you can't extend the rail? Right, but you have to take into account that an extended rail needs a modified shape. As you can see on the picture what they did was use a piece of empty pipe as dummy LNB and attached the HISPASAT LNB in an upward bend. "While you can't receive every single transponder, most of them are still available," Berndt Rosenberger says.

most of them ourselves," they remember the initial days of their cooperation. Starting in 1994 business slowed down and they shifted their focus on cable systems in turn. In 2003 they began experimenting with the C band and installed a 1.2m antenna with two LNBs: One for linear signals and the other for circular signals.

Two years later the huge 3.66m antenna – purchased from satellite wholesaler DOEBIS – followed suit. With this new equipment they were able to experiment some more and aim for reception under extreme conditions as well. Of course this also allowed them to gain additional expertise. "For C band reception we constructed a special skewing mechanism: Depending on the reception sample either circular or linear polarisation was received. This way a dielectric was not required any longer."

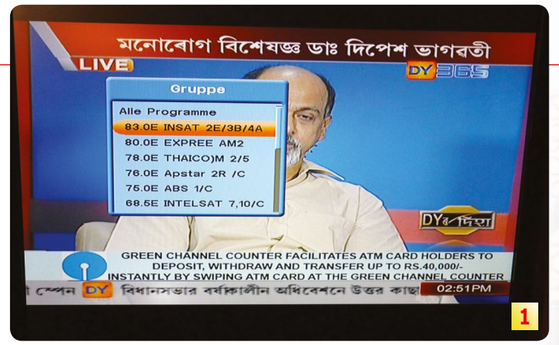
For Ku band reception they have some innovations in store as well when it comes to extreme reception conditions: "If you use a polar mount antenna this is of particular importance, as polarisations are not always set at a precise 90° angle," Berndt Rosenberger explains the reason behind. Using the best LNBs, the most suitable receivers and their own inventions for LNB skewing they managed to receive signals from satellites that are far out of footprint at their location.

In the meantime, they had worked up a solid reputation in the DXing scene and they still organise a DXer meeting every year. "Last year a total of 300 DXers from all over Germany took part," Rainer Schulz – who is also known as Ponny on the Internet – remembers. "Some participants even travelled from Austria, the Netherlands, Poland, the Czech Republic or Hungary to be at our get-together," he adds. Anyone interested in attending next time should mark 11 June 2011 on their calendar. It will be a brilliant chance to have a chat with a top-notch DX professional.

Rainer Schulz and Bernd Rosenberger are no longer involved in the day-to-day management of their business. "I retired in 2009 and my son Carsten Schulz took over receiver and antenna construction as well as my share in the company." Rainer Schulz's daughter Daniela Knott is the managing director and reveals some inside information. "We only sell to end customers, with our top-selling product being the T90 multi-LNB antenna." Almost 90% of sales are generated with this product alone. "Some 5% of sales are with the 1.2m antenna," Daniela Knott adds. Connecting rod motors required for rotating antenna systems also sell well.

This product list alone is proof enough for the fact that special requirements are at the heart of the company's business. After all, large dishes as well as multi-LNB antennas are only required by satellite enthusiasts looking for more than just your standard fare. For them the company also offers a wide range of accessories such as multi-switches required for simultaneous reception of more than one satellite position.

Rainer Schulz and Berndt Rosenberger have chosen the right path and turned they hobby into their profession. They are rewarded not only with a flourishing business, but also with a reputation of being profound DXers willing to help and assist anybody who cares to ask. With their annual DXer meetings they spread their knowledge in the satellite community, which makes them a valuable asset.



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Extreme reception in the Lausitz region in the east of Germany

With the right equipment – read: huge antenna, excellent LNB, extremely low-threshold tuner in the receiver, perfect alignment of the LNB to the focal point – it's possible to receive channels that are no where near the official footprint of a satellite.

1. Reception of INSAT at 83° East with the 3.66m antenna on the C band.

2. Reception of North Korean channel KCTV on THAICOM at 78.5° East, also with the 3.66m antenna.

3. Common wisdom says this channel cannot be received, but here it is: RSACOM at 2.8° East focuses on Africa, but is available even in eastern Germany with a 3.66m dish.

4. The HD channel of Japanese broadcaster NHK via INTELSAT 9C at 58° West.

5. In order to receive INTELSAT 9C the 3.66m antenna has to be aligned exactly to that position. The extremely low elevation of just 2.7° is most striking. This means the antenna is at an almost upright position and hardly points above the horizon. As layers close to the earth's surface cause more attenuation this makes for very tricky reception, apart from a myriad of physical obstacles like trees which obstruct a clear view to the satellite.