

„Megastructures“

Ingo Salomon

That's the name of a program on the National Geographic Channel and my neighbors keep telling me that I watch this program far too often. Then there are the other neighbors that are convinced that I work for the KGB. All I really want to do is watch TV!

It started a little over a year ago. I came across an ad in my local newspaper: "Five-meter dish for sale, disassembled". In two hours I was at their doorstep, 170 km from home. But to my horror, half of it was missing and it turns out that it was a 15-year-old homemade antenna that was totally rusted. It belongs in a scrap metal yard. But since I was already here, I haggled with the seller on the price and ended up dragging everything with me back home.

The pieces of this antenna gathered dust at home for another year – 18 bent support arms with 18 deformed aluminum panels, three LNB holders and several unidentifiable pieces. And the center section was missing entirely. So I fashioned the center section myself with an outside diameter of 260mm and an inner diameter of 145mm. Every 20° was flattened and holes were drilled so that support arms could be attached. This I had to take care of myself.

Next it was time to assemble everything on the ground with the help of a 2-meter circle. After that the dented aluminum panels were straightened by passing them through a press and then everything was put together with 486 screws.

That was only the beginning since such an enormous antenna would need a correspondingly stable mast. I took sections of 150x150x6mm construction steel and welded pieces together to form a six meter mast. The next problem: how to set this all up vertically. In other words, who would want to be 8.5 meters off the ground to install an LNB? The answer was to use a hydraulic lift to move everything into place. What? The clothesline is in the way? No problem, just chop it down.

Naturally, the entire assembly had to be motorized.



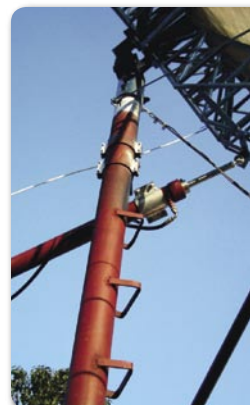
Ingo with his homemade five-meter dish.



The center section of the antenna with the 18 attachments spaced 20° apart.



All of the support arms are now installed; next comes the installation of the aluminum reflector panels.



An actuator welded to the mast serves to move the antenna.

Why go through all this effort if only to be fixed on one satellite? Ridiculous. And so another hydraulic cylinder with 4000Kg of force was needed so that this gigantic dish could be controlled by just one person.

Of course I wanted Ku-band reception as well as C-band reception so I cut off the end of an offset Ku-band LNB and extended it with a copper pipe and held it together with a polypenco or vesconite connection. And so that the C-band LNB can be rotated, it was inserted in a ring of ball bearings. A 65mm diameter ring was ideal for the C-band.

What did this all cost me? I only paid 100 Euros for the antenna and then another 300 Euros for those parts I had to come up with myself. And then there was all the time working

on this project as well all the help and patience from my family.

So now the big question: what can I receive with this monstrosity? From where I am in Johannesburg, South Africa it would be the C-band satellites Intelsat 903 at 34.5° west, NSS7 at 22.5° west and Atlantic Bird at 5° west. This large dish is not all that ideal for Ku-band reception although I am able to get the analog channels on Hotbird at 13° east.

It only took me four weeks to assemble the entire antenna. Its total weight amounts to 525Kg, not including the cement. Can you build an antenna like this yourself? The answer is "yes"! Those weak C-band signals are now so strong that rain and clouds no longer have any affect on my picture. For me this entire project was well worth it!



A hydraulic life raises the antenna to the vertical position.



The LNB and feed is fitted with ball bearings. If you can turn and mill yourself, you have a definite advantage.



Ingo on the milling machine. Without professional equipment like this, a do-it-yourself antenna of this size might not be possible.



The assembly of the reflector is complete; it can now be raised into position.