Welcome to AntennaSelect™ Volume 43 – April 2019

Welcome to Volume 43 of our newsletter, AntennaSelect™. Every two months we will be giving you an "under the radome" look at antenna and RF Technology. If there are subjects you would like to see covered, please let us know what you would like to see by emailing us at: info@micronetixx.com

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End Fed UHF Slot Antennas – 10 Bays Max

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The reason that we do not recommend longer than 10-bays in end-fed slot-style antennas is because with increasing length, over the 6 MHz TV channel, the shift in the phase of the reflection coefficient referenced at the far end of the pylon antenna will change more rapidly with the same change in frequency components over the TV channel, as the reflection phase is evaluated moving along the pylon toward the input end of the end-fed antenna. Since most slotted pylon antennas are standing-wave pylon structures, whereby each of the radiating centers, (or slots), along the array are illuminated uniformly; ie. the relative slot illumination magnitude and phase are relatively the same, compared with one another, along the antenna's aperture.

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(This ensures that the main beam of the antenna forms properly, and is stable over the entire 6 MHz TV channel.) As the pylon length increases, for a given frequency band, (in this case, a 6.0 MHz TV channel), the phase of the reflection coefficient will shift more and more, for each half-wavelength along the antenna's length moving toward the input end, with the same change in frequency within the TV channel, referenced to the end of the pylon antenna that is furthest from the feed point, where the RF and DC grounding short circuit is located.

Since each slot in the array is coupled to the high impedance point, (maximum electric field magnitude), on the standing wave in the coaxial pylon, as the reflection coefficient phase length shortens and shifts **toward** the far end of the pylon at **higher** frequency components within the 6 MHz TV channel, and **lengthens** and shifts away from the far end of the pylon and **lower** frequency components within the 6 MHz TV channel, the absolute value of the illumination magnitude of the slots further and further away from the far end, (and closer and closer to the input feed point), of the pylon, begins to change as a function of frequency, over a standard 6 MHz TV channel.

For digital television transmission, we have recommended that there be no more than 10 wavelengths along a standing-wave pylon antenna, so as to be sure that the antenna never will introduce any, or contribute to any, bit error rates in a digital TV transmission channel due to poor amplitude constancy from the radiating slots closer and closer to the feed point of the antenna for arrays longer than 10 wavelengths. This is especially important, since modern digital TV data formats are both magnitude and phase sensitive. We also check the group delay difference in all of our antennas on the test rack as a matter of course, before they are shipped.

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If each radiating element in the array is matched to the feed system characteristic impedance along the aperture of the antenna, and the elements are fed corporately, or a traveling-wave feed system is used, then this situation is less important. However, a traveling-wave feed system antenna is usually much more expensive and can be less efficient.

WTMC DelDOT – We made it work!

Recently in Radio World they featured an article about WTMC – a radio information service operated by the Delaware Department of Transportation. Technology from Miconetixx made it happen to control both near field and far field radiation from its transmitter. We will cover this project in detail in another issue of AntennaSelect™. We already have several more up on the deck as well.

Notes from the Repack 2019

So here we are near the end of April. How are things looking from our point of view? As expected, very busy with both broadcast and non-broadcast work! For standard broadcast slot antennas our average delivery time remains about 9 weeks. With more specialized antennas, units that require pattern studies can take up to 14 weeks depending on weather. Why the difference? Weather. Our factory is in Maine. Winter delays of up to a week are not uncommon for any outdoor work to take place. So far 2019 has taken the cake as the worst Winter we have seen for this work in decades. 10 work days in a row were scrubbed due to ice, snow, freezing rain, with or without wind. Moving and putting together an 80 foot long array for test can take up to 4 hours and is no easy task! Okay, so much for the “fun” part of our daily lives”. Read on about our daily “normal”.

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So what happens when we get an antenna order? Most likely we have done a good part of the upfront engineering that allows us to build azimuth and elevation tables. The data are sent to design, the elevation pattern is then calculated and set to be machined as a row or rows of vertical slots. For the azimuth pattern, the data on slot position and adjunct is set for precision machining.

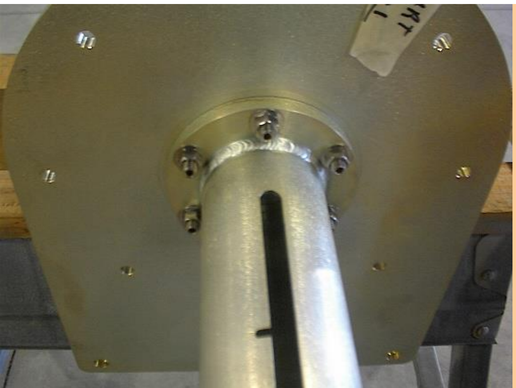
Once the shop order has been put out on the floor, the aluminum pylons and shapes begin to look like an antenna. A number of parts in some cases are TIG welded to the in-process pylon.

Depending on the work load, antenna parts might be batched to speed up the work flow. Welding, metal prep and final coatings all play a part in the finished antenna. We then assemble the pylon, which is assembly of frequency-sensitive parts and adding other external elements

So in just 6 to 8 weeks, the first steps in setting the antenna for final test have taken place. In a few weeks after extensive testing your new Micronetixx Antenna will be ready.

Well this is the behind the scenes of what goes on. If you have an antenna on order, stop on by and take a look. Can not visit? We will be happy to send you images!

Be on the lookout for the next volume of AntennaSelect™ coming out in June



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70 Commercial St. Lewiston ME 04240 U.S.A.
V 207-786-2000 www.micronetixxantennas.com