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Preventing downtime in an unpredictable climate

We are living in an era of changing weather patterns that are extreme and unpredictable. Pummeling winds, sub-zero freezes, record snowfalls, flash floods, and unrelenting heat have become the norm. Suffering through these meteorological assaults is bad enough, but what if communications go down as well? For the last 43 years, Walton De-Ice has devised an array of solutions to protect ground station antennas, no matter what kind of weather happens.

Ray Powers, Director of Sales and Marketing for Walton De-Ice

In the last few years, we have witnessed an increase in extreme weather patterns around the globe. One study, recently published in the journal, *Science*, has linked Arctic warming to a chain of processes called a stratospheric polar vortex disruption. This, researchers say, is what may be causing the extreme cold in areas like the Midwest, the East Coast, Texas and parts of Asia. Another disturbing weather pattern, noted by the authors of a paper published in the *Journal of Geophysical Research* last September is called "weather whiplash". This term is used to describe abrupt swings in weather conditions from one



Photo courtesy Walton De-Ice ●●●

extreme to another as was exemplified by the 340,000 acre wildfire that was followed by torrential monsoons in New Mexico last summer.

Startling headlines about the weather seem to be daily fodder regardless of geographic location—tornadoes, dust clouds, downpours, record-breaking temperatures, and widespread drought. It's clear that these weather patterns can wreak havoc on just about every aspect of our daily lives, including satellite-based communications. What's not so clear is how not to be caught off guard.

AVOIDING DISRUPTION AND DOWNTIME

Most teleports and ground stations are very well thought out, but bad weather can cause physical damage to sub reflectors and feeds. Heavy winds can send projectiles flying into reflectors and terminals. There are all sorts of ways that the elements can cause disruption to service

COST AND ENERGY SAVINGS OF USING THE WALTON ICE QUAKE SYSTEM

Annual Snow & Freezing Rain Fall in Hours	Cents per Kilowatt Hour Commercial Charges	2.4 to 3.0 meter Antennas Full Reflector De-Icing Systems		3.2 to 4.2 meter Antennas Full Reflector De-Icing Systems		4.3 to 4.8 meter Antennas Full Reflector De-Icing Systems		5.0 to 6.3 meter Antennas Full Reflector De-Icing Systems	
		Annual costs shown below		Annual costs shown below		Annual costs shown below		Annual costs shown below	
		Electric Heat 4000 watts	IQ System 45 watts	Electric Heat 6000 watts	IQ System 90 watts	Electric Heat 12000 watts	IQ System 90 watts	Electric Heat 45000 watts	IQ System 200 watts
450	\$0.1477	\$265.86	\$2.99	\$398.79	\$5.98	\$797.40	\$5.98	\$2,990.93	\$13.29
350	\$0.1477	\$206.78	\$2.31	\$310.17	\$4.65	\$620.20	\$4.65	\$2,326.28	\$10.34
250	\$0.1477	\$147.70	\$1.50	\$221.55	\$3.32	\$443.00	\$3.32	\$1,661.63	\$ 7.39
150	\$0.1477	\$88.62	\$0.90	\$132.93	\$1.99	\$265.80	\$1.99	\$996.98	\$ 4.43
50	\$0.1477	\$29.54	\$0.30	\$44.31	\$0.66	\$88.60	\$0.66	\$332.33	\$ 1.48

The chart above is for comparison only and the costs may vary depending on location. The chart shows the costs savings of using the Walton Ice Quake System over the conventional electric heater pad or heat tape systems. Shipping, installation, and maintenance would be another cost saving factor when using the Ice Quake System ●●●



Photo courtesy Walton De-Ice ●●●

and that, ultimately, can lead to financial loss and angry end users.

Down time is not only inconvenient for customers and audiences, but it can also be catastrophic for business. One broadcast company with whom we work has redundant systems and backups. If they lose communications on one antenna, they can simply move to another terminal with just a second or two of interruption. However, if the reflector is not protected from the elements, the presence of ice and snow can disrupt the signal for a significant period of time. For a company that has lots of channels and advertisers, that can cost upwards of US\$1.2 million a minute.

There have been some pretty harsh winters in areas that often go a whole season without ice or snow. For example, last year a ground station in Athens, Greece experienced an unusual cold snap that caused a complete loss of communications because ice developed on the reflectors of the antennas, and they weren't prepared for it. Now they are looking at long range protection where they may not need a De-Ice system for two or three years, but these days, you never know. At least with a system in place, they're ready, come what may.

PROTECT AGAINST ANY EXTREME

Walton De-Ice products include passive and heated systems for a wide variety of requirements and antenna systems, from small to large.

The Walton De-Ice Plenum System has a unique hot air enclosure (the plenum) that mounts behind antennas

ranging from 3.7 to 32 meters. Unlike electric pad or heat tape anti-ice systems, our offering provides uniform



Photo courtesy Walton De-Ice ●●●

surface heating that minimizes distortion losses. There are several options for heating—**gas heaters** with their economical operation advantages or the low maintenance **stainless steel electric heaters**. Over the years, we've refined our systems to make them easier to install and operate. In addition to automatic heat and moisture monitoring and control, our systems are field-proven for Ka-band.

With **Ka-band**, it's imperative that the entire reflector surface maintain an even balance of the temperature of that reflector. Even in mid-summer, there can be issues just from solar reflection. The benefit of having the plenum, even in areas that are not susceptible to snow and ice, is that we can use what is called a temperature balance control inside the plenum that automatically measures the rate of change from one area of the reflector to other areas. If it measures anything from 2 to 15 degrees Fahrenheit the system is activated automatically to circulate that air and balance the temperature so that it is always within a variable of 8 to 10 degrees at any point on the reflector, day or night.

Our Snow Shield Cover is designed for antennas ranging from 0.6 to 6.3 meters in diameter (including Ka-Band). It consists of coated material stretched over the satellite antenna (either the **PTFE with a usable life of 20 years**, the **Kynar® coating**, or the **Tedlar® coating**, both of which will last 10-15 years) which is virtually invisible to RF. What's more, there is no need to remove the covers during warmer months.

Snow Shields can be upgraded with the addition of an electric or gas heater or our Ice Quake, Rain Quake, or Solar Cover systems at a later date. The **Ice Quake system** enhances the reliability of a passive Snow Shield Cover by enabling the de-icing of a 4.5 meter antenna with only 150 watts of power and a 2.4 meter antenna with only 50 watts of power, thereby greatly reducing costs. (see Chart entitled, "Cost and Energy Savings of Using the Walton Ice Quake System"). The **Rain Quake System** can also be used with the Snow Shield. This activates during a rainstorm to keep water from sheeting on the reflective surface of the antenna. **A Solar Cover system** can be added as well to keep the temperature within the cavity the same as the outside temperature.

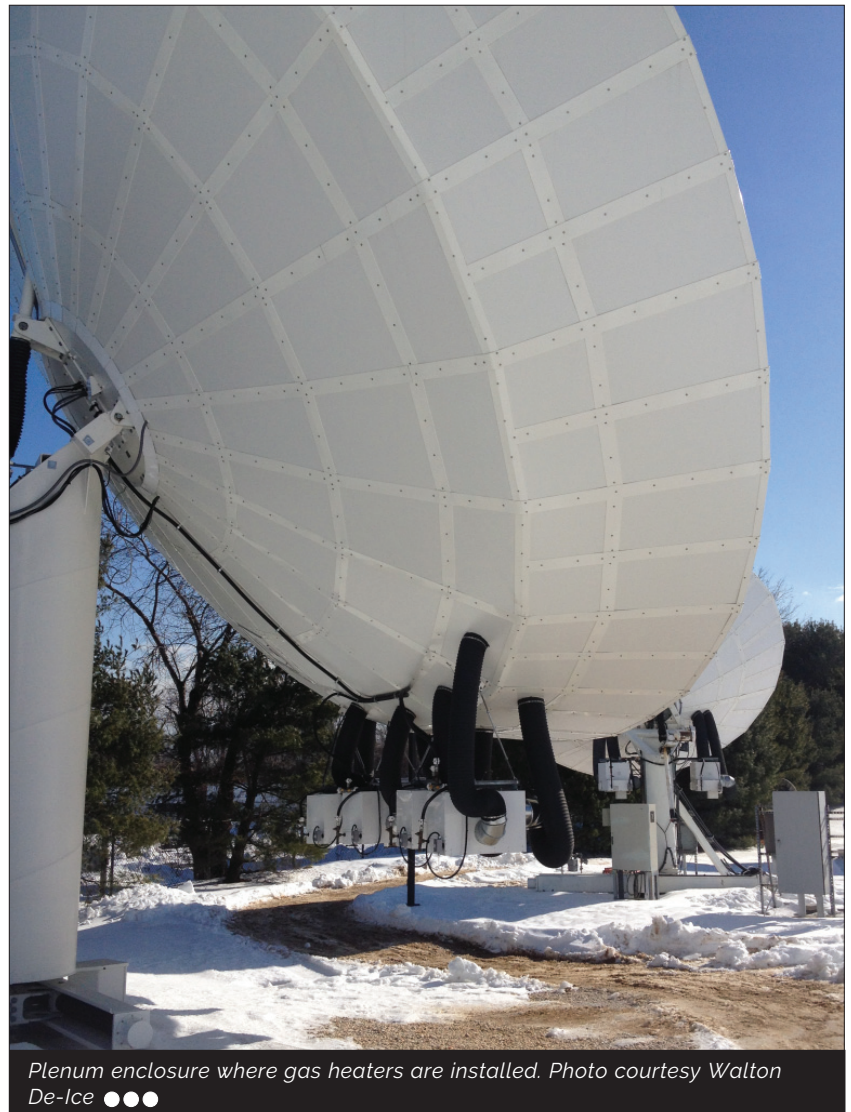
To keep those using Coms-on-the-Pause (COTP) and Coms-on-the-Move (COTM) one step ahead of bad weather, we created **the Walton Portable Radome** with optional de-icing. Designed to protect satellite terminals used by military personnel, first responders, vehicular and similar VSAT and smaller Earth station sites, the Radome can withstand all kinds of extreme weather including sandstorms and heavy winds. In very hot climates, it can be cooled using a forced air/HVAC system to protect equipment and prevent damage. Made of RF transparent hydrophobic architectural fabric to maximize protection and minimize antenna G/T reduction,

the Radome takes less than one hour to install.

WE'VE GOT YOU COVERED

Turnkey integration, installation, maintenance services and 24/7 tech support are offered for every single system we manufacture. Our highly trained Field Technicians know our products inside and out. Not every customer takes advantage of our **technical services**. Some have their own on-site personnel and we offer training to those individuals so that they can maintain our equipment properly. There are those cases where customers are trying to save a nickel and maintenance goes by the wayside. Wear and tear takes its toll, but no repairs are made.

This happened not long ago to a broadcast company that handed the upkeep of our systems over to a subcontractor. It was college bowl season and a huge storm hit the area. Ice began to form on the feeds, disrupting the signal. With another storm about to roll in, the customer called us and we rushed in, handled the repairs and prevented further downtime. Of course, the moral of that cautionary tale is let Walton keep you up and running. ●



Plenum enclosure where gas heaters are installed. Photo courtesy Walton De-Ice ●●●