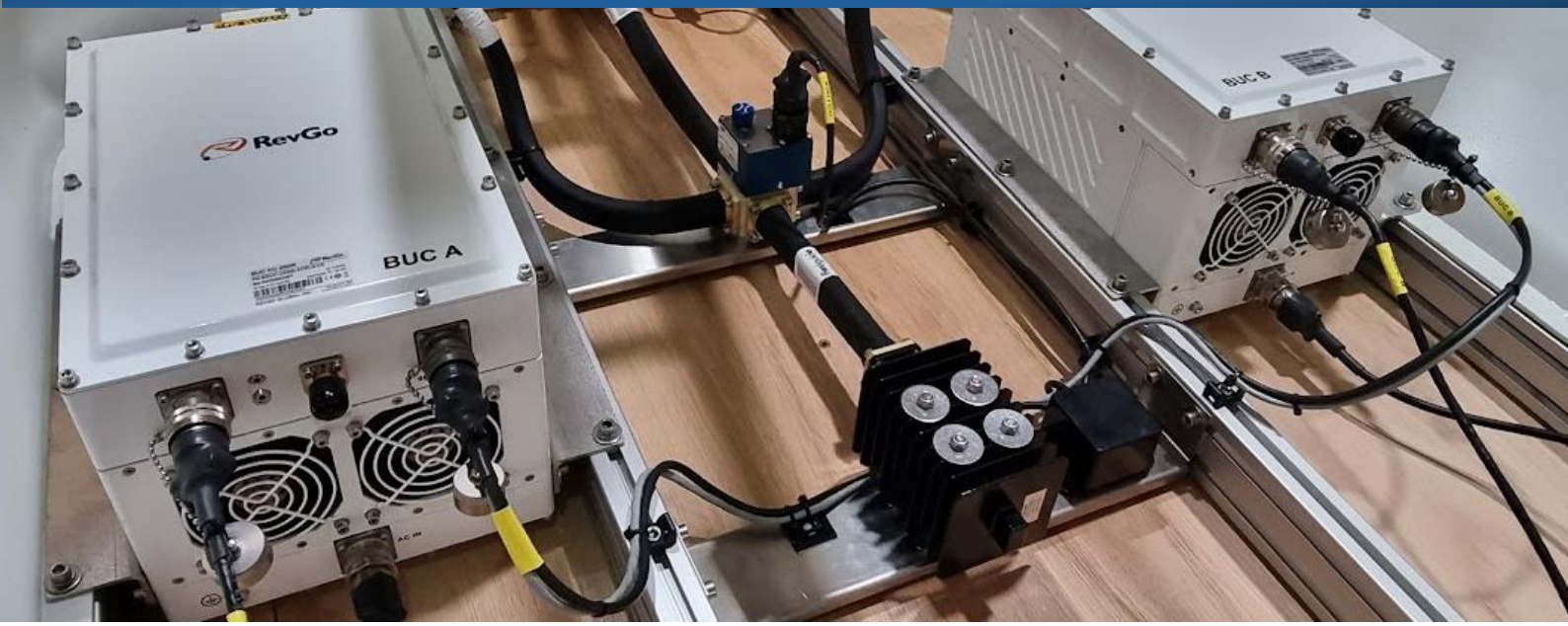

In an era where rapid technological advancements are commonplace, the broadcasting industry continues to rely on Digital Satellite News Gathering (DSNG) for its unique benefits, despite the emergence of newer technologies like GSM bonding and Low Earth Orbit (LEO) satellite systems.

DSNG provides unparalleled reliability, especially in remote or challenging environments where terrestrial networks may not be available or reliable. This is crucial for live news reporting, where the ability to broadcast without interruption is paramount.

Using point-to-point geostationary satellites, DSNG can offer a stable and consistent connection that is less susceptible to the physical and infrastructural limitations that can affect ground-based or public IP network solutions.

DSNG offers a high level of security for the transmitted content. The dedicated bandwidth and encrypted signals used in DSNG ensure that the data is protected from unauthorized access, making it a preferred choice for sensitive and high-profile broadcasts.

Comparatively, GSM bonding, which aggregates multiple cellular network connections, can provide cost-effective solutions with increased flexibility. However, it relies heavily on the availability and strength of local cellular networks, which can be a limiting factor in certain areas or during large events where network congestion is common.

LEO satellite systems, such as those provided by Starlink and OneWeb, are gaining traction due to their lower latency and potential for global coverage. They offer promising solutions for broadcast applications, with trials showing increased up-link data rates when LEO services are bonded together. However, these systems are still in development, and concerns about momentary outages and incomplete constellations raise questions about their current reliability and security.

DSNG operators are still at the forefront of broadcast technology, providing real-time news coverage from remote locations and secure back-up redundancy for critical broadcast events and as the demand for high-definition content and the need for rapid deployment of news teams increases, DSNG operators must future-proof their operations to stay competitive and efficient. Over the next five to 10 years, several key factors will be crucial for DSNG operators:

Understanding the integration of GaN Technology: Gallium Nitride (GaN) technology is revolutionizing satellite communication by offering higher power density, efficiency, and frequency operation. This technology could be essential for DSNG operators to enhance their transmission capabilities, reduce costs and improve repair lead-times and increase the power efficiency of their uplinks. I am not saying TWT's are not good, but I think we must consider the latest technology.

GaN amplifiers offer lower cost, lighter weight, lower power consumption, longer lifespan, and easier maintenance.

Below we will explain why you may need to think about changing from old TWT to new GaN BUC's and understand the benefits and challenges of this transition.

Lower cost: on average the cost of a comparable SSPA is 25% less than a TWT, with the rising costs of tube replacement, TWT availability times and service centres waiting, it can be a lower cost option to replace the complete TWT amplifier with a GaN equivalent rather than to replace a tube.

Lighter weight: GaN transistors have a high breakdown voltage and a low on-resistance, which means they can operate at high voltages and currents without overheating. Due to this temperature characteristic the overall packaging can be reduced giving an overall size reduction for the equivalent TWT power level.

Less power consumption: A GaN amplifier draws low current at low output power because the transistors are mostly in the off state, and only switch on briefly to amplify the input signal. As the output power increases, the transistors switch on more frequently and for longer durations, which increases the current draw. Therefore, the current of a GaN amplifier is proportional to the output power.

Longer life span: A GaN amplifier has a longer life span compared to a TWT because it does not rely on a cathode inside the electron gun to generate electrons. A cathode has a limited life due to the emission of electrons from its surface, which causes erosion and degradation over time. A GaN amplifier uses a semiconductor material that can produce high power and efficiency without a cathode and can operate at higher temperatures than a TWT.

Easier Maintenance: As SSPA is not based on thermionic vacuum tube technology it is relatively maintenance free compared with the fragile processes you need to follow to

keep your TWT in good working order. There is no heater warm up time on SSPA or any set procedure to turn off and cool down.

Investment in Versatile Equipment: Operators need equipment that can withstand diverse environmental conditions and offer quick deployment. The modern-day uplink must be versatile to operate on any satellite and network with the ability to seamlessly change between.

Holkirk Broadcast Equipment: Our TP120 1.2M Flyaway system is characterised for use with the Eutelsat fleet and offers a combination of global reach, reliability, quick deployment, managed services, cost savings, and flexibility, making it a superior choice for DSNG teams requiring dependable remote communication unlinking world-wide.

The RM150 1.5M DSNG vehicle mounted system is also fully characterised by Eutelsat for use across their fleet and provides robust performance, reliability, and ease of use, making it a preferred choice for broadcasters and communication professionals who require dependable satellite communication capabilities. The RM150's compact and robust design, with integrated BUC control and auto-pointing capability, fits onto any vehicle, making it ideal for mobile units that need to set up and broadcast in a matter of minutes.

The Holkirk TP120 flyaway and RM150 vehicle mount systems can be equipped with either 400W TWT or the latest GaN technology, ensuring that DSNG operators have access to equipment that is not only ready for the current market demands but also prepared for future advancements. The integrated antenna control unit with GaN BUC 1:1 control system mitigates the need for independent controllers saving cost and weight in the uplink package.

In conclusion, DSNG operators must focus on integrating advanced technologies, investing in versatile and robust equipment to future-proof operations for many years to come.