

DigiSTREAMER

More Than Another Solid Acquisition System

ADVANCES IN ACQUISITION

A reliable, low-noise acquisition system is essential to the productivity and quality of marine seismic surveys. ION developed an integrated solid data acquisition system, DigiSTREAMER™, to meet HSE requirements and acoustic performance while improving productivity.



SOLID AS THE NEW STANDARD

It's well established that solid streamers improve image quality and cycle time for customers seeking low noise, extended operations. The last few years, solid streamer adoption has increased 4-fold and now almost half of all cables are solid. In fact, many view solid streamers as the only option for outfitting modern seismic vessels.



STANDING OUT FROM COMPETITION

However, DigiSTREAMER is more than just another solid cable. The evolutionary design features innovative improvements that build on the benefits of a comprehensive, tightly integrated acquisition system.

IMPROVED SEISMIC IMAGES

Low Self-noise

Towed streamers are susceptible to noise generated by the vessel, tail buoy, and external positioning equipment. In marginal weather, noise is often the primary cause of downtime. Reducing noise increases productivity by extending the operational weather window, reducing cost per square km, and improving image quality, particularly for deeper objectives.

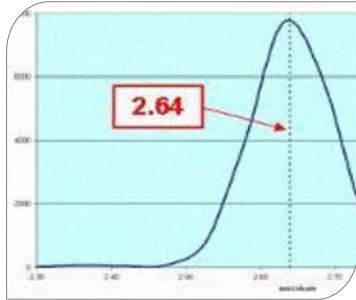
DigiSTREAMER is engineered to generate low self-noise (approximately 2.7 μ Bar at nominal sea state). The streamlined system's 53 mm active section diameter is similar to that of the electronic modules, reducing drag. Proprietary fill material produces constant and consistent streamer buoyancy.



Broad Bandwidth

Broad bandwidth is critical to capturing a wide range of frequencies for improved image quality.

The system's 2 Hz analog low cut filter provides the highest overall bandwidth of any commercial towed streamer system. Composed of both the electronic module and active group capacitance, the low cut filter remains at the quoted value when the electronics and active sections are connected.



Full Synchronized, Continuous Acquisition

Continuous recording means the assembly of the complete shot record is not constrained to occur within the real-time shot cycle. Traditional recording systems require a hardware 'time-break' from the source system to synchronize seismic data with the shot record, which requires the shot record to be assembled during the current shot cycle and before the start of the next one.

DigiSTREAMER's continuous recording capability removes the real-time dependence upon collecting all shot information during the shot cycle. External data such as header information can be merged with the seismic record at any time. It also enables the output of multiple shot records per shot point.

REDUCED COSTS

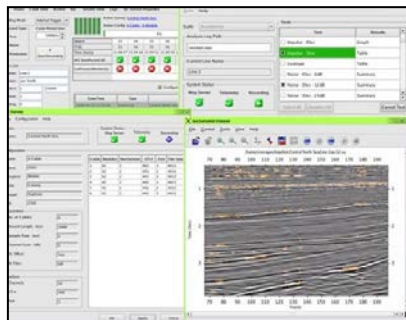
Increased Productivity

Modern seismic vessels tow 80+ km of cables. As streamer length and count grow, umbilical support and productivity become increasingly important to operations and margins. A 10% increase in productivity can translate to millions of dollars per vessel a year.

DigiSTREAMER supports 20+ streamer operations at 1 ms, enabling operators to cover survey areas more efficiently. Improved acoustic performance and unique cable design extend the operating weather window for increased productivity. The patent-pending acoustic model has innovative pseudo-random hydrophone spacing that allows the smaller diameter streamer to acoustically perform as well as a larger, more traditional solid. In addition, advanced user interfaces and automated seismic QC tools improve efficiency. RAID data storage systems guard against data loss.

Cost-effective

Acquisition systems are almost half the investment required to outfit a modern seismic vessel. However, it's not just the initial cost that needs to be considered.



QUALITY CONTROL

Automated QC features and advanced reporting tools increase survey efficiency.

DigiSTREAMER's proven, robust design is cost-effective to purchase and operate. Forward- and aft-specific active sections increase the mean time between failure. In addition, the two sections keep the wire bundle small and the group design simple to minimize the diameter (53mm), which facilitates easier handling and storage. Proprietary fill technology eliminates Isopar requirements and continuous re-ballasting. Finally, the field-repairable sections eliminate costly shipping for minor damage.

DigiSTREAMER leverages low risk and low cost technology. Built on a foundation of established designs, DigiSTREAMER leverages existing and commercial-off-the-shelf (COTS) technology with the expertise of experienced design and manufacturing partners.

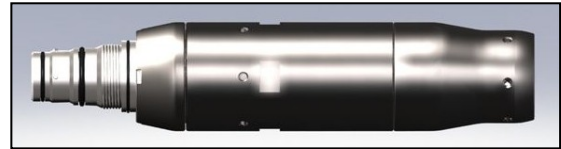


Longer Asset Utilization

Towed streamers are deployed in harsh conditions for several years so it's essential that the system works reliably for the duration and adapts to new innovations.

DigiSTREAMER sections are designed to have a life expectancy of over seven years. Electronic module titanium-alloy housing is stronger, lighter and better resists corrosion.

The advanced system architecture increases efficiency for future integration. An additional power and telemetry backbone easily enables the addition of in-line positioning technology, ensuring the investment will pay off for years to come.



LOWER HSE EXPOSURE

To ensure long-term sustainability, it's essential to protect employees, communities, and the environment in which we work. ION develops and leverages the latest technologies to mitigate risks and minimize the impact of seismic operations.

DigiSTREAMER's eco-friendly design consists of solid active sections. Unlike traditional liquid or oil-filled streamers, DigiSTREAMER's proprietary solid gel buoyancy material is "zero-discharge", eliminating potential in-sea leakage even if the skin is damaged.



The cable architecture minimizes wire requirements, enabling a significantly reduced streamer diameter while maintaining acoustic performance. The small, light, flexible cable reduces drag and carbon emissions while easing handling.

The system is extremely reliable, leveraging commercial-off-the-shelf technology and a proven streamer design. The high reliability combined with uniform ballast should significantly reduce in-sea maintenance and work boat activity.

In addition, ground fault protection increases back deck safety. Real-time tension monitoring along the entire length of the cable pro-actively alerts the crew of a potential problem.



PROTECTING THE PLANET
ION technologies, such as solid streamers, are designed to reduce our customers' environmental footprint.

PROVEN RESULTS

The imaging and operational benefits materialized for Fugro-Geoteam, who successfully deployed ION's first DigiSTREAMER solid streamer acquisition system. During a 2D commercial program in the North Sea, Fugro-Geoteam confirmed acoustic performance, acquired and recorded seismic data, and verified ease of operations and deployment.

Svein Dale, Technical Manager of Fugro-Geoteam said, "ION's DigiSTREAMER system was delivered, installed and mobilized on time and has been in robust production."

Due to its successful design and performance, ION utilized DigiSTREAMER in 3 ArcticSPAN programs.

When oil companies needed to information to make exploration decisions in icy Arctic waters where modern seismic data didn't exist, they turned to ION. ION leveraged its Marine Imaging Systems division to develop a custom technology solution capable of overcoming challenges of in-ice acquisition.



ION responded to the challenge by creating and employing new technologies to enable data acquisition under the ice. DigiSTREAMER served as the backbone of the reliable, low-noise acquisition system. It increased the operating weather window and excelled in the harshest conditions, delivering <1% technical downtime in over 5,000 hours of Arctic operations.

As a result, we acquired data further north than ever before and dramatically extended the traditional acquisition season.

SUMMARY

Solid streamer acquisition systems improve data quality and productivity. DigiSTREAMER is a low-risk, solid streamer data acquisition system with advantageous features that distinguish it from competing systems. DigiSTREAMER achieves the appropriate balance of acoustic performance, cost of ownership, and HSE.