

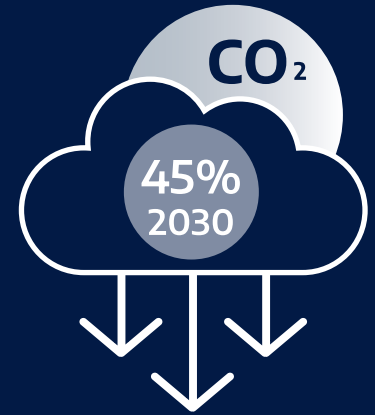
The Ultimate Guide to Reaching Net Zero Using Low Bandwidth VMS

Stream from
1
Kbps

A practical guide towards decarbonising and digitalising complex onshore operations, supported by the market's lowest bandwidth Video Management System (VMS) solution.

A new era for energy infrastructure represents a new set of challenges and opportunities.

Accounting for around 15% of total energy-related emissions worldwide, the pressure is mounting on the oil and gas industry to invest in renewable technologies and reduce emissions by **45% by 2030 to achieve a net-zero transition by 2050.**



Updating the way data is stored, processed and visualised is often the first step towards digitising and decarbonising high pressure operations - a principle that equally applies to the oil and gas sector.

Low bandwidth VMS for remote onshore Oil & Gas operations

As energy transitions advance to prepare for a greener future, global oil demand is still forecast to be 3.2 million barrels per day higher in 2030 than in 2023. Driven by emerging economies in Asia, in contrast, oil demand in advanced economies is expected to continue to decline - falling from 46 million barrels per day in 2023 to under 43 million barrels per day by 2030.

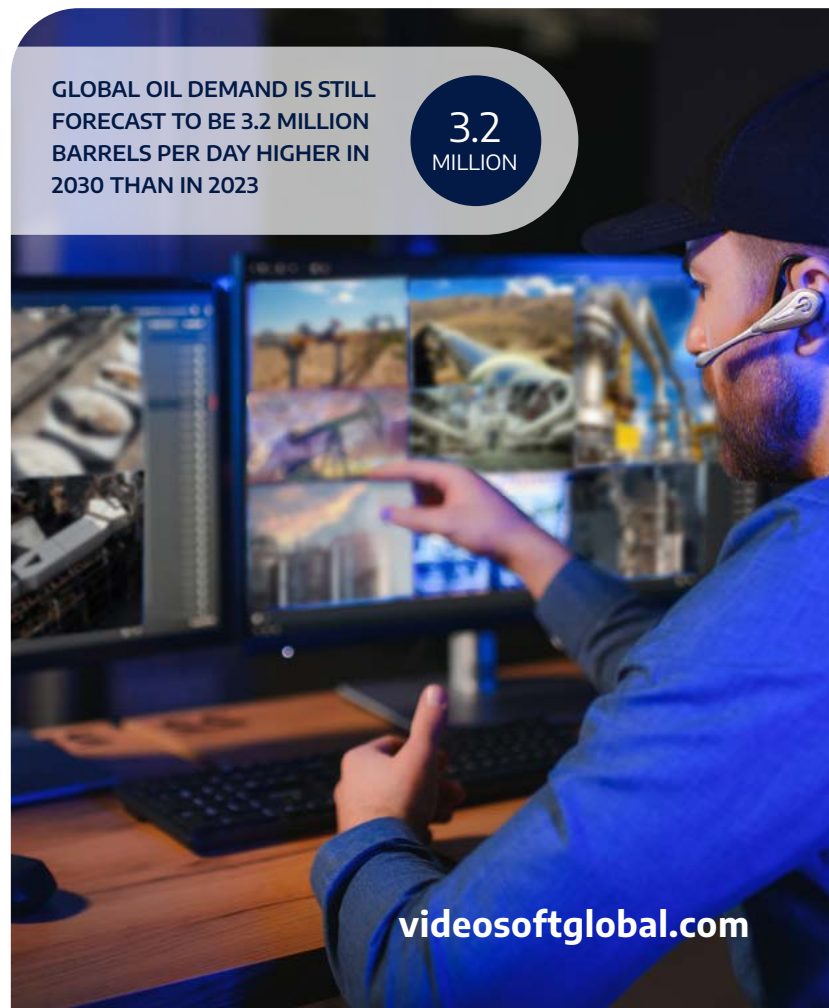
That said, as swathes of renewable energy sources continue to emerge, and the decarbonisation deadline edges closer, the need for digitising complex onshore oil and gas operations intensifies.

As we enter a new digital era, it's essential that oil and gas companies have constant visibility of their assets to quickly detect and fix any issues as they arise. However that's easier said than done, especially when outdated video surveillance systems are unable to withstand a constant connection. Power failures, extreme temperatures, harsh weather, disconnected landscapes and on-site video tampering also play a part in traditional VMS signal interruption.

With this in mind, this guide will explain how onshore operations can eliminate these threats, whilst reducing carbon emissions, data usage and downtime at the same time.

GLOBAL OIL DEMAND IS STILL FORECAST TO BE 3.2 MILLION BARRELS PER DAY HIGHER IN 2030 THAN IN 2023

3.2 MILLION





CONTENTS

1. NEXT-GEN NON-DESTRUCTIVE VISUAL INSPECTIONS (NDT)	4
Essential tools to close the digital divide	
2. WIRELESS HIGH-SPEED CONNECTIVITY	5
Essential tools to close the digital divide	
3. DIGITISING REGULATORY COMPLIANCE	6
Essential tools to close the digital divide	
AN ADVANCED NVR VIDEO SURVEILLANCE SYSTEM	7
Not all real-time VMS systems are created equal	
WHAT IS ULTRA-LOW BANDWIDTH STREAMING?	8
Low bandwidth & video compression	
WHAT DO OUR CUSTOMERS SAY?	9
A VMS SOLUTION THAT SUPPORTS YOUR DECARBONISATION GOALS	10
REFERENCES	11

1. NEXT-GEN NON-DESTRUCTIVE VISUAL INSPECTIONS (NDT)

Non-destructive visual inspection is essential for creating safer testing environments in high-pressure onshore environments, such as inspecting and analysing the condition of remote onshore pipelines and detecting and repairing surface corrosion early. Improving safety and accident prevention, supporting regulatory compliance and minimising disruption to natural habitats, NDT is a crucial technique used by onshore oil and gas operations around the globe.

Enhancing safety, efficiency and data collection across the board, the Drone For Oil and Gas Market size is set to take off between 2024 and 2030, with an impressive compound **annual growth rate of 39.1% forecast**. From inspecting welds and metals for defects right through to supervising delicate onshore decommissioning processes, many onshore O&G operations are implementing the latest **drone technology** to take NDT, digitisation and decarbonisation strategies to the next level.

However, implementing this technology comes with its own set of challenges. Issues such as collision avoidance, limited space, gas leaks and intense heat necessitate integrating extra features like video, sensors, mapping and task automation on equipment.

As a result, oil and gas operations seek out top technology providers to supply these additional tools to ensure competency and reliability for the tasks in hand.

AI-ready, secure and reliable, from lithium-polymer powered drones to carbon-neutral hydrogen powered drones, forward-thinking oil and gas companies are using our ultra-low bandwidth drone monitoring tools to digitise vital operations by capturing and sharing data in real-time. This data can be used to accurately estimate and forecast CO2 emissions and pinpoint areas of excessive emissions to actively reduce them.

Furthermore, proven to save over **180 man-hours** per real-time drone inspection, our remote video monitoring solutions support decarbonisation goals too by reducing the need to travel and make trips to dispersed oil and gas sites.

Our product incorporates a range of exciting video enhancement tools. Our **Total Recall™ function** is a real game changer for remote onshore operations, as it allows operators to recall hi-resolution images and video footage through the Videosoft client viewer to their desktop even if the encoded live stream doesn't provide the detail needed. For example, navigating unreachable pipeline inspections or detecting leaks or other system faults.

39.1%

THE DRONE FOR OIL AND GAS MARKET SIZE IS SET TO GROW BY 39.1% OVER THE NEXT DECADE.

180+

180+ MAN-HOURS SAVED PER REAL-TIME DRONE INSPECTION.



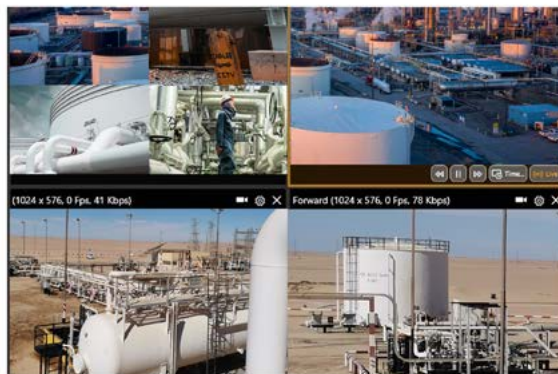
2. WIRELESS HIGH-SPEED CONNECTIVITY

Designed to support the transition to green energy and renowned for its low-latency features, digital technologies supported by 5G networks are helping to boost onshore decarbonisation targets by actively reducing energy consumption. Taking just 15% of the energy of a 4G cell site needed to transmit the same data, by 2030, 5G could potentially save 0.5 billion tonnes of CO2 worldwide.

With dropouts and lost connections steadily increasing, it's clear that traditional manned and cabled operations are not designed to serve today's remote surveillance monitoring needs. But, as cellular capabilities advance, the adoption of fully remote and wireless systems at distant onshore oil and gas sites is rising.

Available over multiple network bearers such as cellular, satellite and mesh, our adaptive video compression software enables onshore oil and gas operations to seamlessly switch between a range of networks to stay ahead of evolving circumstances. Helping customers make more informed decisions in real-time, our point-to-point connectivity and dynamic channel switching features streamline the digital documentation process like no other.

It's also important to remember that ultra-low bandwidth video monitoring uses significantly less data. Using market-leading video compression techniques, Videosoft pushes more data through to deliver the best quality imagery at a fraction of the cost, reducing data transmission costs by 30% upwards. Additional figures based on training source data reveal that the **Videosoft Firelight™ VMS can be up to 60% more cost-effective** than traditional VMS monitoring systems, reducing time spent on site.



60%



videosoft

MORE COST-EFFECTIVE THAN
TRADITIONAL VMS MONITORING SYSTEMS.

3. DIGITISING REGULATORY COMPLIANCE

Considered one of the most dangerous industries to work in, the oil and gas industry is subject to a number of strict regulatory requirements designed to enhance worker safety, environmental sustainability and infrastructure security. Ensuring accuracy and quality at every turn, digitising oil and gas workflows simplifies regulatory compliance and minimises the risk of costly fines and penalties further down the line. Texas RRC levying over \$2 million in penalties for oil and gas violations is a recent example of the consequences of failing to comply with strict legislation in place.

Reducing workers and travel expenses, our users report savings of up to 80% being made on mandatory industry training expenses for employees.

With this in mind, real-time surveillance plays an integral role in ensuring the safety, security and regulatory compliance of remote oil and gas operations. Integrated with emerging technologies such as AI and IOT, detecting temperature fluctuations, triggering warning alarms and activating video footage automatically is just one prime example of automated, real-time onshore video monitoring in action.

Often a prime target for cybercriminals, due to the nature and scale of activities, strengthening critical energy infrastructure and safeguarding intellectual property are two key points oil and gas operations must also consider.

Designed with robust security features, the **FireBox™ Ultra - Advanced NVR Video Surveillance System** from Videosoft combines industrial-grade firewalling and cybersecurity, a Built-In Network Equipment Management System (NEMO) and a powerful processor with high-capacity storage. This unique combination of features ensures regulatory compliance and facilitates 24/7 device management, no matter what.

\$2
MILLION+

IN AUGUST 2024, TEXAS RRC LEVIED \$2 MILLION+ IN PENALTIES FOR OIL AND GAS VIOLATIONS.

80%

SAVED ON MANDATORY INDUSTRY TRAINING EXPENSES FOR EMPLOYEES.



NOT ALL REAL-TIME VMS SYSTEMS ARE CREATED EQUAL

AN ADVANCED NVR VIDEO SURVEILLANCE SYSTEM

FireBox Ultra™

ALL-IN-ONE SOLUTION



Enabling remote monitoring applications with edge processing & AI-ready solutions, our military-grade technology unites permanent CCTV systems with leading wireless technologies where previously this wasn't possible.

Suitable for Advanced Video Surveillance Operations, Videosoft's New Ultra Gateway allows remote onshore operations to monitor and control up to 16 camera sources from a single interface - ensuring instant and easy visual access regardless of the bandwidth or environmental conditions.

Stand out features include:

- Ultra-low bandwidth video encoding from 1kbps up to full HD
- Total Recall – Hi-res snapshot and video retrieval
- Automatic self-healing and recovery protocols
- PTZ, Events and AI integration
- Integrated managed POE
- Firewall
- Powerful processor
- High capacity storage

Benefits

▶ Modular, Flexible, and Customizable Architecture

Designed to accommodate a range of microATX/miniITX motherboards, power supplies, and HDD access form factors, offering flexibility to support a wide range of CPUs, memory, OS, I/O expansion, and PoE features. Additionally, customisation of NVR hardware and switch API firmware will optimise benefits and enhance competitive differentiation for our customers.

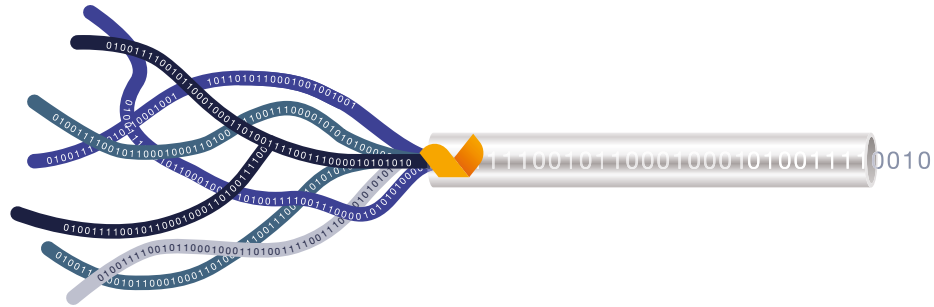
▶ Easy to Install, Configure and Troubleshoot by Device Management System

The NEMO simplifies device management with built-in features that allow control anytime, anywhere. Its intuitive, user-friendly interface makes managing devices easy and efficient. With IP-camera support, it enhances manageability and helps users save time and costs during installation and maintenance.

LOW BANDWIDTH & VIDEO COMPRESSION STREAM FROM 1KBPS UPWARDS

WHAT IS ULTRA-LOW BANDWIDTH STREAMING?

Bandwidth over satellite or cellular networks is often very limited, but even when it's available it can be very expensive. This is where Videosoft solutions can help.



The Basics

Bandwidth is the data transfer capacity of a network in megabits per second (Mbps). Video data is transmitted over networks using bandwidth, but to keep costs down, the video must be compressed first.

Video is a series of image frames made up of pixels. The more pixels in a frame, the greater the level of detail. The more frames there are per second, the smoother the video transmission is.

For example, standard UK TV is 25 frames per second (fps). This means that 25 frames are shown in a single second and the transmission is seamless.

At 16fps, the eye still perceives the video as smooth. Whereas at 8-15fps, the video may be described as jerky.



Video Compression

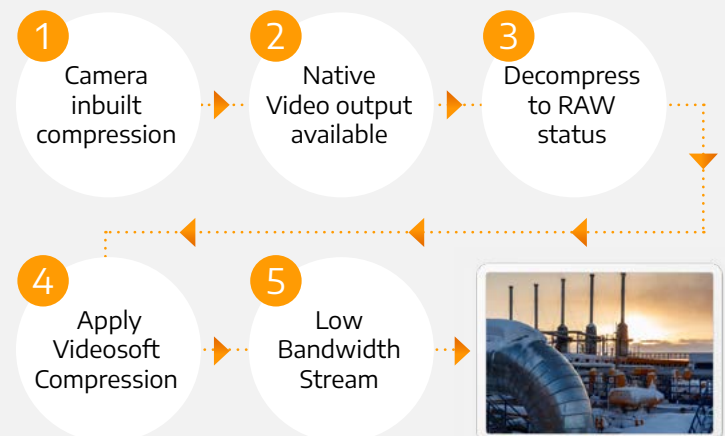
Video compression is all about making the data output smaller to save transmission costs, whilst retaining an acceptable image quality.

Most video cameras output raw data with an element of compression – this is referred to as native video. Native video can be streamed where circumstances dictate, but all video must be further compressed before streaming over low bandwidth, congested/unreliable cellular or costly satellite networks to make it commercially viable.

Video Compression: how low can you go?

Efficiency of compression is measured by how small the file of video images can be compressed – or is it?... There is much more to video compression than meets the eye.

- ✓ The first thing we do is decompress the data compressed by the camera back into RAW, so we have a full set of information to work with.
- ✓ The RAW data is then compressed using the unique Videosoft algorithm which produces the smallest file possible whilst maintaining fitting image quality.
- ✓ So, the Camera's raw capture is funnelled into the smallest stream via this process:



WHAT DO OUR CUSTOMERS SAY?



Ground Control Partner with Videosoft to Solve Connectivity Issues

Serving key industries including Oil and Gas, satellite and IoT connectivity experts, Ground Control, has successfully integrated our cutting-edge technology to carry out complex onshore surveillance activities around the globe using live video streaming.

“The requirement for robust, secure, and uninterrupted video streaming across diverse remote environments has grown in recent years as companies look to monitor assets in hard-to-reach areas that are poorly, or not at all, served by terrestrial networks.”

“Cost, however, has often been the blocker when streaming via satellite. By integrating Videosoft into our solutions, we are now able to offer the most cost-effective, real-time solution available, with enhanced additional capability to access simultaneous streams with best-in-class compression at the edge, keeping costs minimised. We’re also able to develop a range of interfaces on the cloud side, so data can be sent directly to a preferred platform without additional coding required.”

“From energy and renewables through to construction and conservation, we are opening up new horizons for remote monitoring to keep assets safe, secure and productive.”

Alastair MacLeod, CEO at Ground Control





A VMS SOLUTION THAT SUPPORTS YOUR DECARBONISATION GOALS

Key applications we serve:



Terrestrial Pipeline Monitoring



Onshore Threat Detection



Hydraulic Fracturing



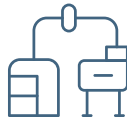
Onshore Drilling



Well Pad Construction



Flaring Operations



Processing Plants



Decommissioning Processes

By implementing an ultra-low bandwidth approach, oil and gas leaders can:

- Track and relay asset health in real-time
- Enhance worker safety and minimise downtime
- Ensure continuity of operations
- Extend complex BVLOS mission times
- Access industrial grade security features
- Reduce data transmission costs
- Improve troubleshooting and collaboration
- Lower insurance premiums and long term liabilities





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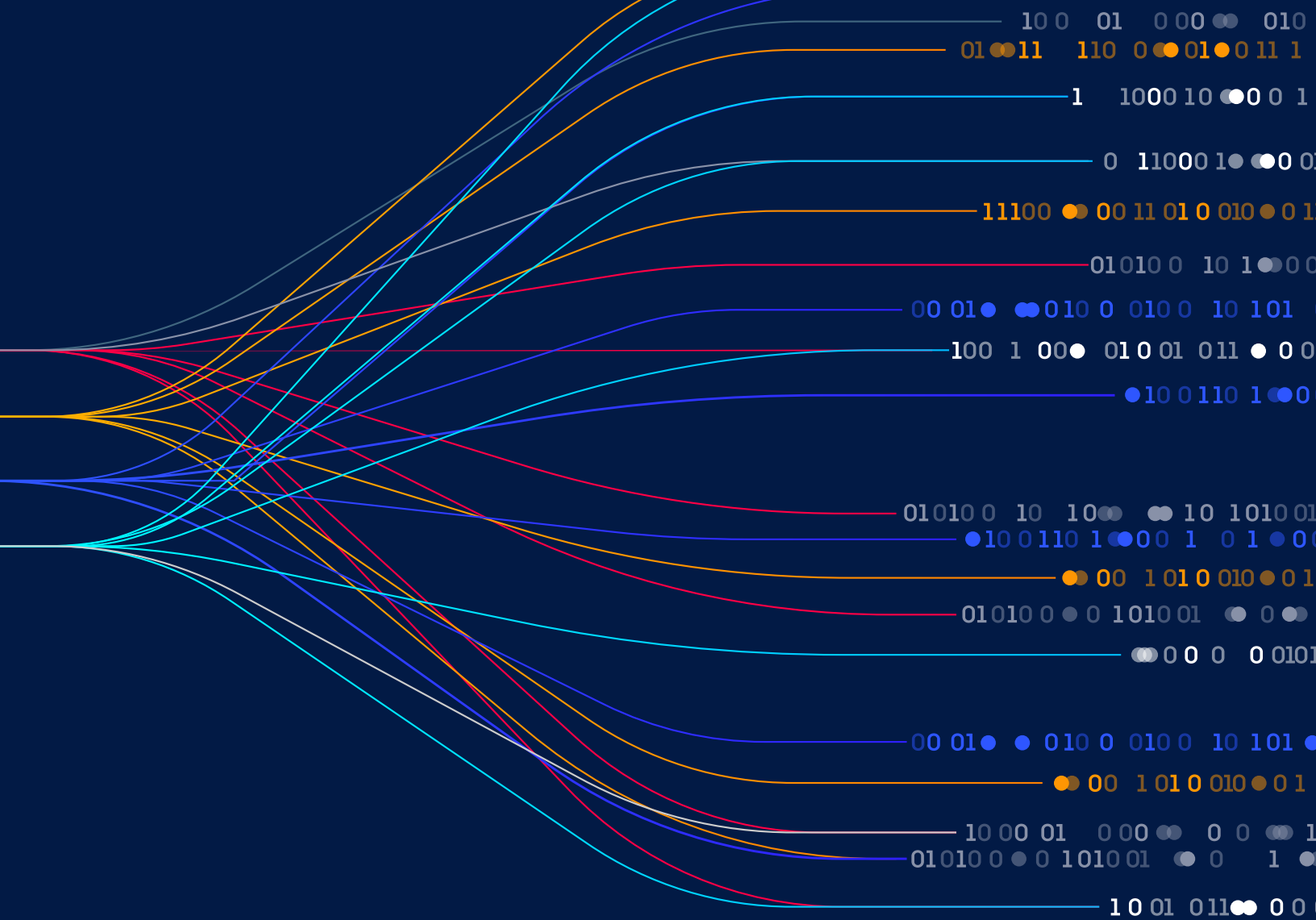
1. [Emissions from Oil and Gas Operations in Net Zero Transitions Report](#)
2. [Slowing demand growth and surging supply put global oil markets on course for major surplus this decade Article](#)
3. [Drones for Oil and Gas Market Research Report](#)
4. [Curtailing Carbon Emissions - Can 5G Help? STL Partners / Huawei Research Report](#)
5. [Texas RRC Levies Over \\$2 Million in Penalties for Oil and Gas Violations Article](#)
6. [Ground Control Partner with Videosoft to Solve Connectivity Issues Article](#)

About Videosoft Global

Videosoft Global provides reliable, industrial-grade video streaming solutions for environments where network speed is limited. Employing highly-adaptive video compression and transmission technology with the lowest possible latency, remote surveillance and operations can access high-quality, real-time video streams anytime, anywhere from as little as 1kbps with ease. With a comprehensive suite of features, including full, high-quality local recording and market-leading image enhancement tools, a seamless blend of video, audio, GPS, and data is guaranteed.

For more information on Videosoft Global, [join our mailing list](#) or follow us on [LinkedIn](#) and [Twitter](#).

Videosoft Global...Making the impossible possible.



Ready to refine your remote monitoring strategy?
Seeing is believing!

Book a free demo today: www.videosoftglobal.com

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