

How Carlsberg developed a unique approach to OT security with support from TXOne Networks

The Situation

Carlsberg Group, a global brewing company originating in Denmark, operates more than 80 facilities worldwide, producing more than 140 brands. As a responsible manufacturer, Carlsberg recognizes the critical importance of security in modern operational technology (OT) environments. This challenge marked the entry point for TXOne Networks into Carlsberg's mission to "secure the brew".

At Carlsberg Group, OT security is treated as a distinct discipline. "We understand that managing our manufacturing facilities requires a different approach than managing our enterprise facilities," says Chris Thompson, Director of Brewery OT Security at Carlsberg Group. "In the past, we did not consider IT to even exist in OT. But now, as our infrastructure ages and we rapidly evolve into a data-driven organization, security risks in OT are growing. While the infrastructure itself isn't the issue, the shift toward real-time data has fundamentally transformed our business operations."

"Traditionally, each brewery was like a castle with its own protective walls. If something went wrong, the threat came from within. But now, we aim to extract data from our breweries and achieve real-time visibility, which necessitates exposing our brewing facilities to external systems. This is a challenge faced by all manufacturers, as we now have to manage technologies that didn't exist in the past", Chris explains.



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Director of Brewery
OT Security at
Carlsberg Group

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Customer Story

What's the worst-case scenario if a brewery is attacked? According to Chris, the primary concern is safety, given that production involves boiling water, chemicals, high pressure, and other potentially hazardous elements. Of course, there is also a business impact if a brewery shuts down, though Carlsberg's operations are resilient in many respects. The company assesses its facilities in every market by evaluating factors such as the brands produced at each location, the stock available, the ability to continue supply to customers, and whether production of a brand can be shifted to another facility. "For instance, a local brand beer produced only in one country is difficult to produce elsewhere. In contrast, Carlsberg beer can be brewed in multiple locations."

Trust plays a key role in fostering collaboration between IT and OT teams at Carlsberg. "Before deploying any technology – especially security controls – we must ensure it operates safely and reliably in our brewery environments", Chris explains. "If an enterprise-grade product is implemented in OT and it fails, trust in that product is immediately lost. In an office setting, we are more tolerant of outages, often having the option to relocate or use alternate IT services. But in OT, disruptions are unacceptable, as they can result in loss of control over critical processes and potentially lead to safety issues. That's why we invest significant time in building trust across people, processes, and security."

The Switch

With trust as a guiding principle, Chris tested various solutions, including one offered by TXOne Networks. "Having a specialized vendor and a product specifically designed for OT was critical for me", he explains. "Too often, I hear discussions about excellent enterprise tools being promoted as potential solutions for OT environments when they simply don't fit. TXOne Networks gives me confidence that it won't disrupt my operations."

TXOne Networks also met Carlsberg's expectations for another reason. "Take, for example, a Windows XP HMI running on a packaging line", Chris says. "The typical (and correct) IT response would be to upgrade it.

However, upgrading might require replacing the entire packaging line, which involves an investment that could cost millions of euros. Replicating this across all our facilities would be financially unfeasible."

This realization led Chris to adopt a different strategy: "We needed to learn to live with our vulnerabilities. This doesn't mean ignoring them; we are fully aware they exist. But addressing these vulnerabilities in the OT landscape is often impractical since we have a lot of legacy endpoints. The situation is completely different in office environments. For example, IT security professionals protecting 1,000 assets in an office will feel accomplished if all are secured. In OT, where only 500 out of 1,000 assets may be protected, they might view this as a failure. From my perspective, I see 500 assets that were not protected yesterday. We sometimes operate with different perspectives and that is ok."

To support this strategy, Chris required a robust technology stack, including products that provide endpoint protection. "TXOne Networks helps us safeguard our legacy endpoints where our enterprise endpoint protection solutions fall short. We implemented this tool three years ago, and it has since become a key component of our group's technology stack."

The implementation process also involved a third-party service provider, as Carlsberg outsources much of its operational work. "Our partner manages our daily operations, such as technical deployments", Chris notes. "When you have limited resources, it's invaluable to entrust these responsibilities to a reliable partner who reports directly to you. Once again, trust is paramount. We have a strong relationship with both TXOne Networks and our service provider, and it's essential that these two partners collaborate effectively to maintain that trust."

"We recently conducted a penetration test at one of our breweries to evaluate the technologies we've implemented. TXOne Networks reacted as we anticipated. So, the test was an undeniable success."

Customer Story

The Result

"Thanks to OT security solution Stellar, TXOne Networks helps us mitigate risks that we couldn't address yesterday without making significant financial investments", explains Chris. "To put this into perspective: if a brewery has, let's say, 5,000 assets and we use Stellar to protect just 50 of them, those 50 assets alone could have cost the company millions to replace."

Chris elaborates on the technology's use: "We don't actively use TXOne Networks to scan our assets. Instead, it allows us to analyze the processes running on specific assets and then lock those processes in place. This approach works well in a manufacturing facility where the environment is static – unlike an enterprise asset, which can potentially connect to a network from anywhere in the world. By ringfencing processes and letting them run, we create a more secure environment. If an attacker attempts to exploit a vulnerability we haven't fixed yet, TXOne Networks prevents the malicious script from executing."

Today the Carlsberg group continues to focus on a tailored OT Security Programme, covering all our manufacturing facilities in each global region. It's important to factor in that you rarely can mass deploy the same solution in the same way. While the beer brewing process is consistent across our facilities, each brewery is technologically unique. You can't always replicate in Brewery B what you did at Brewery A.

You have to adapt to each facility, which takes time. However, this process also allows you to learn and improve. Before you know it, progress accelerates faster than you'd expect."

To determine the strategic rollout, Chris evaluated all breweries within the group and collaborated with the business to identify the top priority facilities in each region. This focused approach helped narrow down the facilities requiring immediate attention. Carlsberg Group aims to secure its infrastructure with a tiered approach, ensuring compliance with frameworks such as NIS2. This phased strategy also plays a crucial role in building trust. "If a brewery has concerns that TXOne Networks might disrupt their HMI, I can point them to other facilities that are already successfully using it", Chris explains. "Good communication is essential to help people understand the reasons behind these changes and to ensure they feel confident in the process."

In summary, Chris is pleased with the performance of TXOne Networks. "The solution delivers on its promises. We recently conducted a penetration test at one of our breweries to evaluate the technologies we've implemented. TXOne Networks reacted as we anticipated. This gives us reassurance in TXOne Networks real world capability."

About TXOne Networks

TXOne Networks offers cybersecurity solutions that ensure the reliability and safety of industrial control systems and operational technology environments. TXOne Networks works together with both leading manufacturers and critical infrastructure operators to develop practical, operations-friendly approaches to cyber defense. TXOne Networks offers both network-based and endpoint-based products to secure the OT network.

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