Case Study

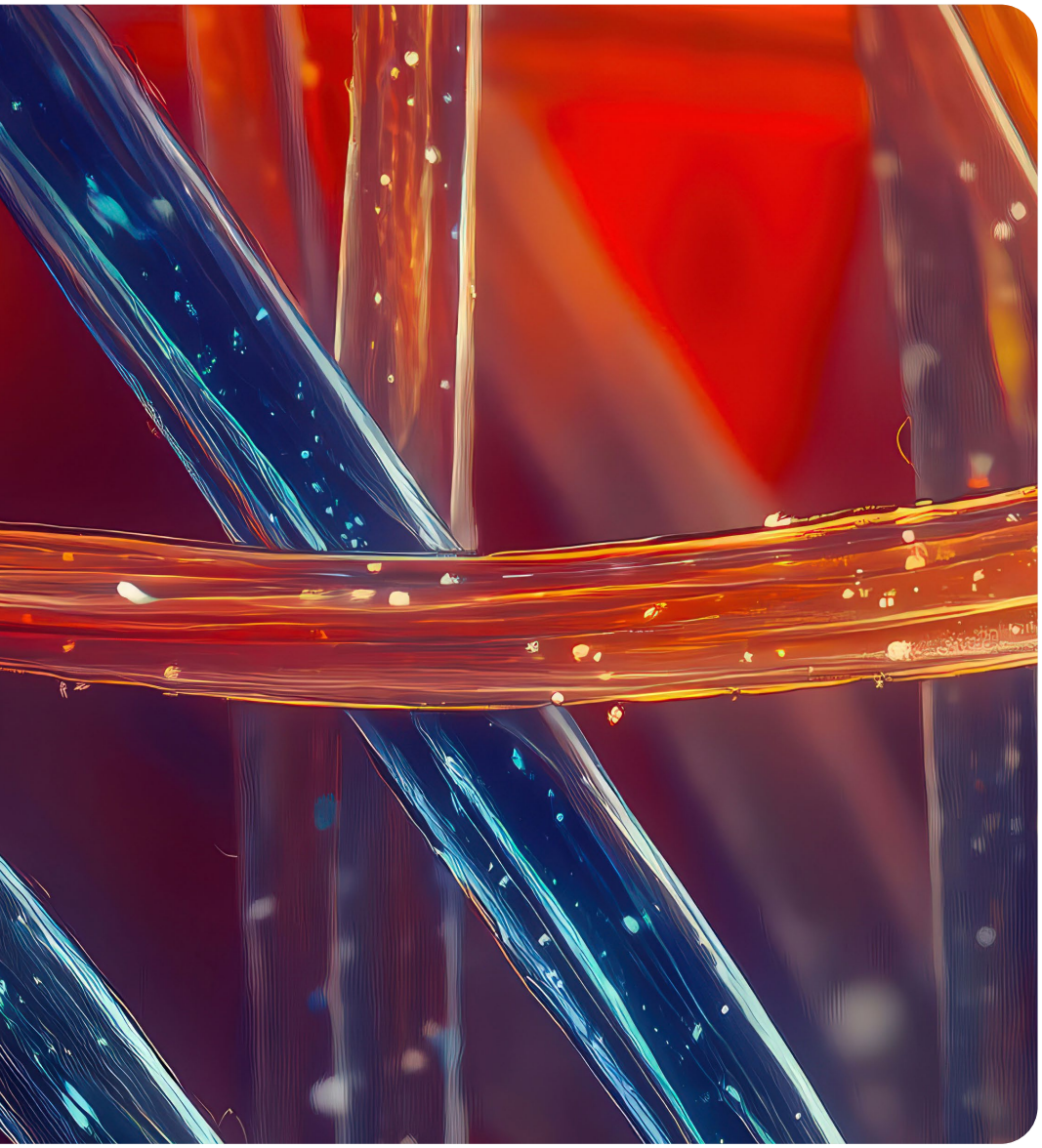
Fast. Agile. Secure.

How Freudenberg Performance Materials 'Amazonified' its enterprise network with SASE SD-WAN

Copywriter: Xiao Yang

IP knowledge

FREUDENBERG
INNOVATING TOGETHER



Customer

Freudenberg Performance Materials (FPM)

Industry

Manufacturing

Summary

Freudenberg Performance Materials (FPM), a leading global manufacturer of technical textiles within the Freudenberg Group, wanted to modernize its enterprise network to support its business growth and Industry 4.0 strategy. With operations in 21 countries and 36 production sites, a cloud-first approach was the obvious way to go.

Driven by the ‘Amazonification’ concept – fast delivery, clear guidance, cost transparency and elasticity, and customer-centric service – FPM partnered with IPknowledge to transform its legacy network infrastructure into a cloud-delivered service that is simple, agile, and easy to consume.

Together, IPknowledge and FPM deployed SASE SD-WAN to build a new cloud-native global network connecting the 100+ FPM factories, sales offices and warehouses. Migration was near-seamless and the company now benefits from faster and more secure connectivity, centralized management, compliance with standards and regulations, and lower maintenance costs with minimal human resources required.

FPM now enjoys:

- Efficient global transition of three networks into a new, single network
- Improved user experience & application prioritization (QoS)
- Smarter detection, stronger security
- Regulatory compliance
- Excellent delivery of internet lines
- Cost transparency, elasticity, and predictability
- Business agility through a buy-and-build strategy that supports mergers and acquisitions

Check page 14 for the extended overview the project deliverables.

This case study describes how IPknowledge helped FPM transition to its secure Network-as-a-Service (sNaaS), based on the SASE SD-WAN platform of Cato Networks. At FPM's headquarters in Weinheim, Germany, we spoke with Peter Jüllich, Senior Vice President IT, and Wolfgang Spuck, Team Lead Network & Infrastructure, to capture their journey: the challenges, the decision-making, the implementation, and how IPknowledge became their trusted long-term partner.

Business context

Preparing for possible turbulence

Freudenberg Performance Materials (FPM) operates in a competitive industry in which geopolitical uncertainty and rapidly changing market dynamics demand maximum flexibility. Traditionally, the company has succeeded in benefiting from these dynamic market conditions. Now though, it was becoming increasingly concerned about what might lie ahead and whether its business systems were capable of keeping pace.

Peter Jüllich, Senior Vice President IT at Freudenberg Performance Materials (FPM).

FPM operates data centers in Germany, the USA, Japan, and Hong Kong (China). “China is a key market to us. To prepare our business for potential geopolitical influences and a possible decoupling from China, we plan to relocate the Hong Kong data center to mainland China and have already set up a separate Microsoft tenant there,” says Peter Jüllich, Senior Vice President IT. “In this way, we can work independently.”

The company has experienced strong growth in recent years and continues to expand. It has grown €800 million in sales, adding roughly 10% new users per year. “We have also introduced new complexities, such as just-in-time delivery,” says Mr. Jüllich. To keep pace, IT must be as agile, adaptive and as innovative as the business itself.

To ensure this, FPM drew inspiration from consumer marketing to accelerate and improve its own B2B processes. Today’s customers expect the seamless experience that Amazon provides. Likewise, FPM sought the same seamless experience from its managed service provider: new sites should be ready through a simple ‘order – deploy – connect’ process, free of complexity or delays.

Meeting these expectations would require FPM to build a modern, cloud-based IT infrastructure and a global network that was both agile and resilient.

IT challenge

Balancing connectivity and security

FPM's business is tracked in SAP, their core ERP system that integrates finance, HR, manufacturing, and supply chain into a unified platform. However, it had become a major challenge for the IT team to ensure SAP ran smoothly across three networks, including two MPLS (Multiprotocol Label Switching) and a self-managed DMVPN (Dynamic Multipoint VPN). In addition, there were each network's own limitations to factor in.

Historically, FPM relied on two MPLS providers, Verizon and British Telecom, interconnected at its central data center in Weinheim, Germany. An additional connection in Hong Kong provided redundancy but also created several issues that remained unresolved.

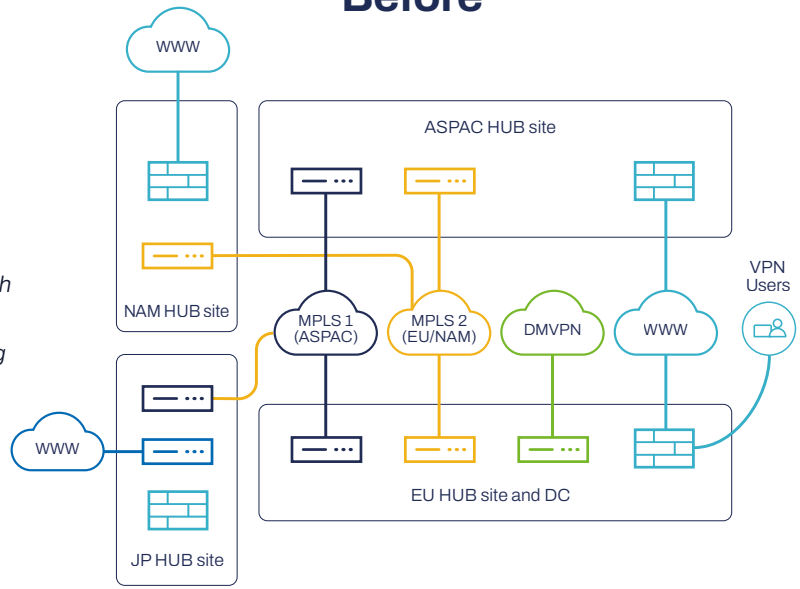
One was that the setup created a competitive relationship between the two providers. Another was that if one provider went down, the failover took about three minutes, causing high latency. MPLS coverage was also prohibitively expensive in some regions.

As MPLS was unable to reach all sites, FPM also maintained a global Cisco DMVPN network, an internet-based encrypted overlay used for remote sites or locations that were expensive or hard to reach with MPLS. Finally, to improve application performance over the MPLS network, the business began using Riverbed SteelHead WAN Optimizers, adding complexity and management effort. The implementation of a cloud-based workplace via MPLS lines did improve the user experience, but then bandwidth became a problem as it was no longer sufficient and guaranteed, and security management grew in cost and complexity.

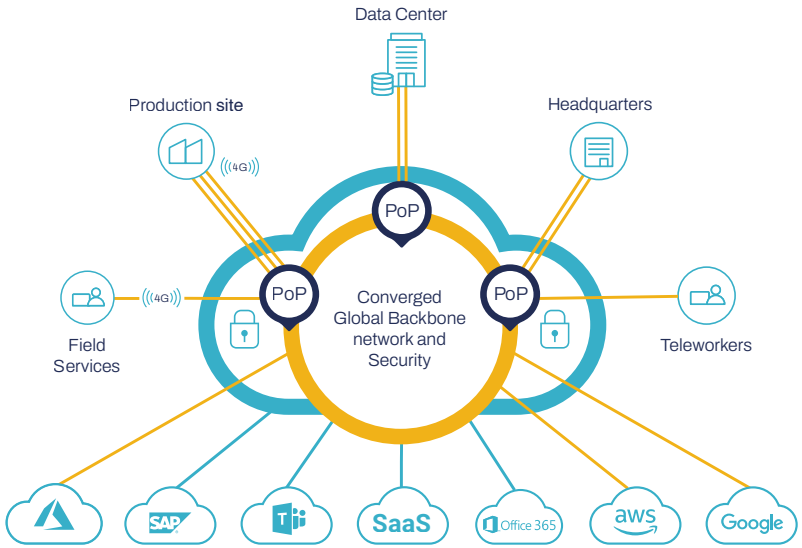
> "We came from a situation in which everything was sealed off, like a castle with a moat and only four gates, because we had only four firewalls to the outside world."
>
> **Peter Jüllich**, Senior Vice President IT
> Freudenberg Performance Materials

Before adopting SASE SD-WAN, Freudenberg Performance Materials maintained a complex international network. It was difficult to ensure both connectivity and security across separate networking technologies, hub sites, and the data center.

Before



After



Cybersecurity, a critical issue for FPM given its global network and remote workforce, was another consideration. The company was operating separate Check Point firewalls in Germany, USA, Japan, and Hong Kong (China). Remote workers were therefore forced to either route traffic through the central network, causing delays, or to use insecure local internet access, which exposed data to cyber threats. Maintaining these firewalls also required constant updates as cloud providers changed systems and IP addresses. Add it all up and FPM was facing significant operational overhead necessitating additional highly skilled engineers to manage the firewalls and firefight potential security risks.

FPM looked at the operational complexity, limited visibility and security vulnerability of its legacy MPLS and firewall setup and thought 'there must be a better way.' And in the global IT trend toward centralized management and zero trust security model, they realized there was. An SASE SD-WAN solution integrating network connectivity and security would be ideal for a modern, enterprise IT organization.

FREUDENBERG'S DRIVERS FOR SASE SD-WAN

1 Acceleration
Cloud-first & Industry 4.0 initiatives; fast connectivity for manufacturing sites.

2 Resilience
High-performance global network with redundant internet edges.

3 Compliance
Seamless China integration and smooth, regulation-compliant hardware delivery.

4 Transparency
Centralized management with clear visibility on costs, network, and security.

5 Agility
Dynamic bandwidth, rapid site onboarding, and Workplace as a Service.

6 Security
Unified global protection with Next-Gen Anti-Malware, IDS/IPS, and Managed Threat Detection.

IT solution

CATO Networks + IPknowledge

The decision to go for Cato's SASE SD-WAN solution was very clear. While Mr. Jüllich and his team were doing their research on the future-state network architecture, FPM acquired Low & Bonar, a manufacturer of technical textiles that had already implemented Cato Networks. "Overnight, we had access to the Cato Network across 25 locations, which gave us immediate access to insights and a clear view on a possible future-state network architecture," explains Mr. Jüllich.

As Low & Bonar's SASE SD-WAN managed service provider (MSP), IPknowledge was quick to bring in a technical team to explain and demonstrate the SASE platform to FPM. Moreover, IPknowledge's existing work for Low & Bonar meant that once FPM had switched to Cato's SASE SD-WAN, integrating the two companies' systems would be a smooth operation. IPknowledge could create an overarching partner tenant to connect the two Cato environments of FPM and Low & Bonar, enabling not just secure resource sharing, but also smooth site and license migration into one single tenant. This would be a further significant benefit in support of Freudenberg's buy-and-build strategy, as connecting new IT environments is typically a major headache for the FPM IT department.

Proof of value

Tailored, tested, and trusted

IPknowledge's first step was to run a Proof of Value (PoV) to demonstrate that SASE SD-WAN could replace FPM's existing infrastructure. And do so while avoiding operational disruptions, minimizing risk, and ensuring a smooth transition to the new network.

The process followed a set sequence IPknowledge always uses:

- define customer requirements, including required functionality and success criteria
- agree on PoV scope and test plans
- design the PoV, and
- implement and execute the PoV.

To explore every aspect of the migration, Wolfgang Spuck, FPM's Team Lead Network & Infrastructure, and his team started a six-week PoV phase. Key questions included: How does everything work together? Is replacing MPLS feasible? Could MPLS continue as a backup until the migration was complete? And as FPM operates centralized systems such as SAP ERP in Weinheim, Germany, should they all talk to a different location or is everything cloud-based? "We conducted an extensive design workshop that completely turned things upside down," Mr. Spuck recalls. "Our future data center architecture was integrated into daily operations to make sure it works in real conditions."

Engineers from FPM and IPknowledge also discussed how best to size the network to account for low-bandwidth geographies, and analyzed local, regional, and global traffic requirements, especially in places like mainland China, where global connectivity is significantly more expensive than regional connectivity.

With a successful PoV behind them, and guided by their security requirements, Mr. Jüllich and Mr. Spuck decided to phase out MPLS WAN, Riverbed SteelHead WAN Optimizers, Check Point firewalls, and Cisco DMVPN, and move forward with the SASE SD-WAN platform, with IPknowledge as their implementation partner and managed service provider (MSP).

Wolfgang Spuck, Team Lead Network & Infrastructure at Freudenberg Performance Materials (FPM).

The migration project

Structured, guided and predictable

One absolute must in every migration is to take a structured approach to what you do. Therefore, IPknowledge comprehensively planned and documented every step, from the global design to each individual site's migration. Weekly online meetings between IPknowledge, FPM and Cato safeguarded progress tracking, ensured quick adjustments when needed, and maintained clear priorities. "All parties collaborated effectively, both online and on-site," says Robert Jan van der Horst, Project Manager of the migration at IPknowledge.

Thanks to the customized *Deployment and Migration Guides* that IPknowledge prepared, even sites without network specialists could install equipment and complete the migration with confidence. "They could simply follow the instructions on their phone and, if needed, call the support team for help remotely," says Mr. Spuck. "The network engineers played a pivotal role in guiding our IT department toward this solution. They worked closely with us to design the migration project down to the finest detail, ensuring a seamless transition to the SASE SD-WAN solution."

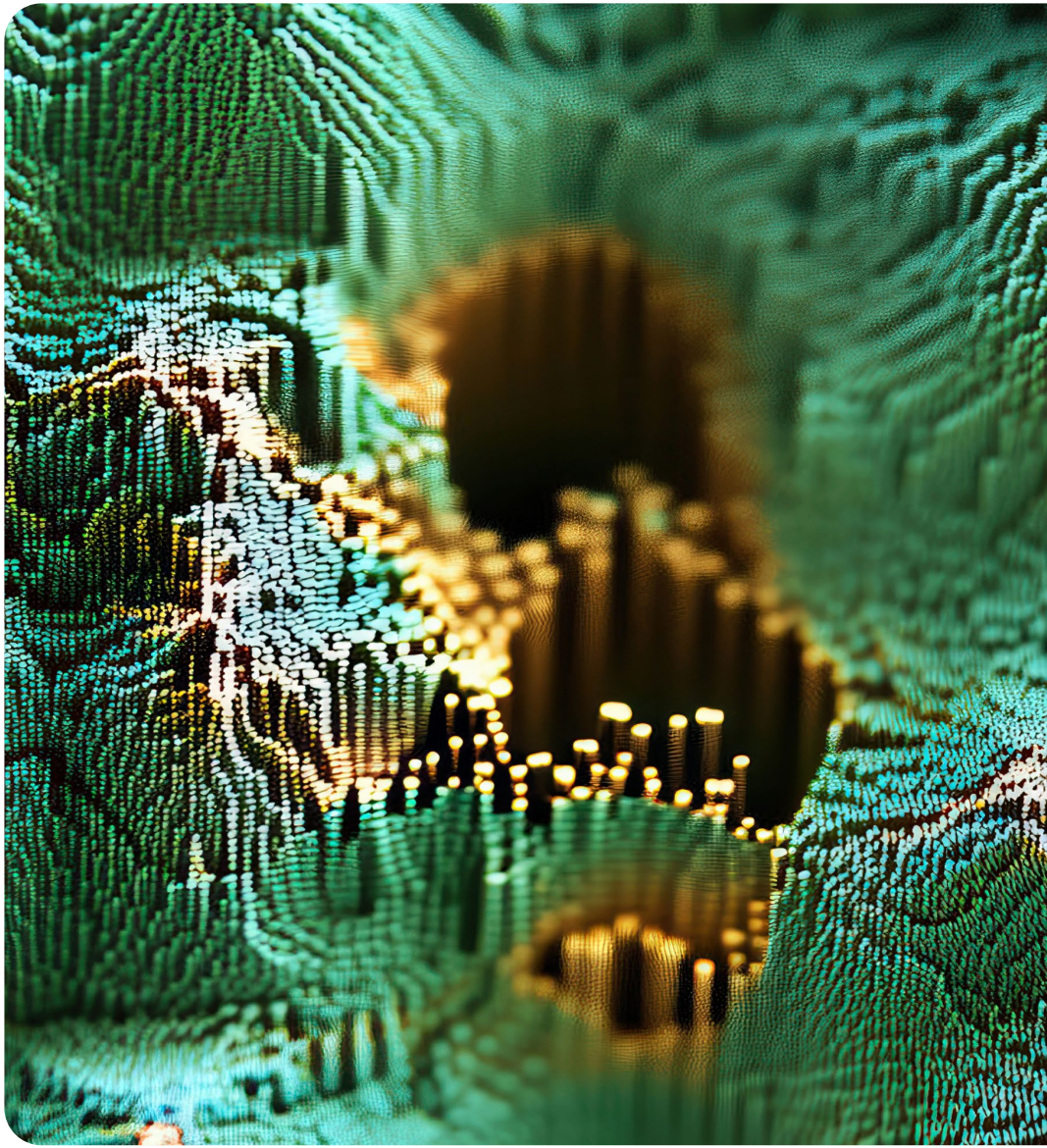
Bert-Jan Kamp, Chief Technology Officer at IPknowledge, notes that right at the outset, the FPM IT team and IPknowledge team piloted a few sites, refined the process, and then scaled it across all locations. “This created a ‘flywheel effect’ and resulted in seamless migrations with near-zero downtime,” he says.

The deployment was executed in waves, starting with the five larger production locations, then 10, then 15, and culminating in more than 20 sites completed in just a month. The contract for MPLS services was then cancelled once each phase in the implementation program was complete.

Following FPM’s preferred pace, the whole project to migrate the 100+ sites was completed in two years, from kick-off to the formal handover. “We negotiated notice periods beforehand to avoid paying for both the old network and the new one for very long,” says Mr. Spuck.

“IPknowledge has the right people in place to support us, not just during the migration, but in ongoing, day-to-day network management.”

Wolfgang Spuck, Team Lead Network & Infrastructure
Freudenberg Performance Materials



Results

Delivering on the promise

Replacing the inflexible and obsolete MPLS WAN, self-managed DMVPN, Riverbed SteelHead WAN Optimizers and Check Point firewalls with a flexible, secure and modern global SASE SD-WAN solution has enabled FPM's cloud-first and Industry 4.0 strategy while also significantly enhancing global network security.

"The transformation has been profound. It empowers us to identify and address vulnerabilities more effectively, which drives continuous improvement across our organization," comments Mr. Spuck.

Key outcomes include:

- **Efficient global transition to a new network:** 100+ global sites were migrated in alignment with FPM's timeline, with minimum disruption and maximum efficiency.

- **Improved user experience and application prioritization (QoS):** Users at manufacturing sites and remote locations benefit from less downtime, faster remediation and optimized applications performance. It's also now much easier to adjust local settings for different user groups.

- **Smarter detection, stronger security:** “In the previous situation we had very limited reporting which was always delivered afterward,” says Mr. Jüllich. The FPM IT team now has full visibility and analytics with a single pane of glass – from global analytics to deep diagnostics – along with 24/7 proactive monitoring by IPknowledge. Advanced features such as Next-Generation Anti-Malware (NGAM), Intrusion Detection and Prevention System (IPS), Cloud Access Security Broker (CASB), and Managed Threat Detection and Response (MDR/XOps) ensure complete control over network security. “With the online real-time monitoring of the network behavior and security, I can tell you at any time how my SAP is behaving and where problems may occur,” Mr. Jüllich concludes.

- **Regulatory compliance and fast shipping:** The FPM solution is compliant with local regulations and security standards like ISO 27001, CIS, and NIS2. SASE SD-WAN hardware is shipped directly to local sites, even in countries with complex logistics like China, Brazil, and Vietnam. Hardware and access can be delivered within a week.

- **Cost transparency, elasticity, and predictability:** IPknowledge bucked the trend of pitching low initial quotes and then adding extra management charges for firewall and security patches, and service and change requests. The pricing provided by IPknowldge was consistent from the start, with everything required included in the monthly service fee, giving FPM consistency and clear visibility into expenses.

- **Business agility through a buy-and-build strategy that supports mergers and acquisitions:** SASE SD-WAN means newly acquired sites can go operational immediately. This reduces deployment time from months to days, or even hours. FPM now only has six network engineers worldwide for the entire company. In addition, the networks of newly acquired companies can also be integrated quickly and seamlessly, enabling IT to keep pace with business growth and expansion.

> “We now have the visibility, the security, and 24/7 remote management that we never had before. If we don’t know what’s happening on the network, we cannot protect it.”
>
> **Wolfgang Spuck**, Team Lead Network & Infrastructure
> Freudenberg Performance Materials

Reflection

From service provider to trusted partner

"IPknowledge has been instrumental in our journey to elevate our cybersecurity posture," says Mr. Jüllich. "Choosing the right solution is only half the battle; selecting a reliable partner is equally crucial. When making decisions, you're planning for the long term."

When IPknowledge first met FPM, there was some healthy skepticism in the room, for example: "Who are IPknowledge? Can we rely on their expertise? Do they truly understand the complexity of our network?" These were valid questions posed by FPM's IT experts with decades of experience and who are responsible for a complex, global, and business-critical IT infrastructure. Unlike vendors who simply follow instructions, IPknowledge isn't afraid to challenge assumptions and recommend smarter alternatives. Over time, conversations shifted from "please implement this" to "what do you think about this?" What started as a client-vendor relationship has grown into a true partnership built on trust, transparency, and measurable outcomes.

"Partnering with IPknowledge was a pivotal step in achieving and supporting our business goals. With things under control, I can now have a good night's sleep."

Peter Jüllich, Senior Vice President IT
Freudenberg Performance Materials

About Freudenberg

Together with its partners, customers and research institutions, the 10 Freudenberg Business Groups develop leading-edge technologies and sophisticated services for some 40 markets and thousands of applications: seals, batteries, fuel cells, vibration control components, technical textiles, filters, cleaning technologies and products, specialty chemicals and medical products. Life is full of Freudenberg. The Group's products are often invisible, but always essential.

The commitment to excellence, reliability, and proactive responsible action have been part of the company's core values for 175 years.

The Business Area Technical Textiles and Filtration comprises three groups:

- Freudenberg Performance Materials, the leader in technical textiles with over €1.4 billion in sales in 2023, operating 36 production sites in 14 countries and employing some 5,500 people.
- Freudenberg Filtration Technologies, specializing in advanced air and liquid filtration systems, generating €638 million in 2023, with around 15 production sites worldwide and 3,200 employees.
- Japan Vilene Company, the foremost nonwoven manufacturer in Japan since 1960, which runs 15 global production sites (including two key sites in Japan), generating €522 million in 2023 and employing over 2,300 people.

Together, these three groups span approximately 66 production sites and have a combined workforce of roughly 11,000 employees, generating more than €2.6 billion.

All relevant images in this case study are courtesy of Freudenberg.

Faces behind IPknowledge

"Our journey with Freudenberg began in 2018, when Low & Bonar selected our fully managed SASE SD-WAN solution. After the merger with FPM in 2020, we worked closely with Peter Juellich and his team, carefully testing every scenario for more than a year before moving any live traffic, which laid the foundation for trust and making Freudenberg our first customer in Germany. Today we support their global network with secure, resilient connectivity and protection against downtime, including cyber threats. Our goal is simple: connectivity that works like water from the tap: always there, always reliable, so the IT leaders and their team have one concern less to worry about."

Steven de Graaf

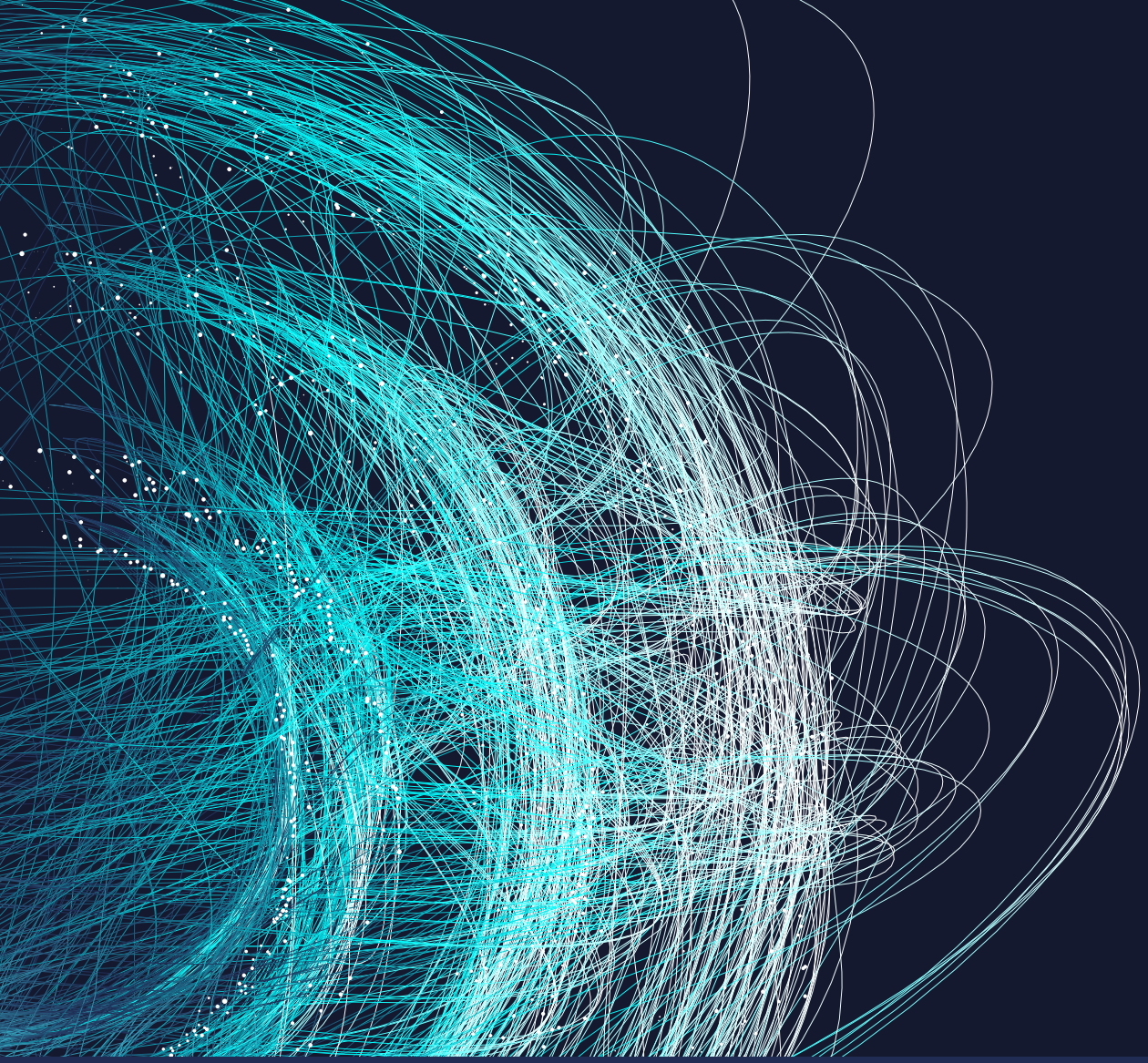
Chief Executive Officer

“Our partnership with Freudenberg is built on trust, transparency, and continuous alignment. Through regular meetings and structured service reviews at both operational and management levels, we stay connected to the customer’s needs and keep optimizing our service to deliver measurable, long-term wins.”

Rob de Vuijst
Head of Operations

“I joined the SASE SD-WAN project for Freudenberg when around 15 sites had already been migrated, but I immediately saw the strength of a well-structured project and the clear expectations from the customer. Through close collaboration between Freudenberg, IPknowledge, and Cato, we successfully scaled the deployment and migration to more than 120 sites. Along the way we learned how flexibility, teamwork, and a solution focused mindset allow us to overcome any challenge and deliver the best possible outcome for our customer.”

Tatyana Bilotserkovska
Customer Success Manager



IPknowledge B.V. (HQ)
H.J.E. Wenckebachweg 123
1096 AM Amsterdam
The Netherlands
T +31 88 08 82 600

IPknowledge Alps AG
Brown Boveri Platz 3b
5400 Baden
Switzerland
T +41 56 511 27 90

IPknowledge.net

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