

CELESTE: DISRUPTIVE FIBER OPTIC SOLUTIONS FOR SUSTAINABLE B2B IN FRANCE

Fast, Secure, Comprehensive Fiber Optics for Enterprises... with a Personal Touch and Commitment to a Better World.

SEPTEMBER 2020

CELESTE's nationwide fiber optic network across France spans 2,500 kilometers, providing high-bandwidth services to enterprises from Paris to major cities throughout the country. Their scope is B2B.

Already serving over 4000 small to medium-sized private and public enterprises, CELESTE has emerged as the preferred broadband Internet Service provider for businesses. Via their green high-density Marilyn datacenter, they offer 5-play services: Internet, VPN, fixed and mobile telephony and rack housing. Characterized by openness to innovation and willingness to invent, CELESTE's ISP solutions are ongoing, including their fiber optic Internet connection, secure, flexible cloud services and secure user access to Marilyn.

CELESTE StarQos 4 routers link the private CELESTE fiber optic network at a bit rate below 200 Mbit/s. StarQos 10 offers up to 1Gbit/s.

Nicolas Aubé, founder and President of CELESTE has played an important role in the industrial revolution of broadband. Back in 2001, CELESTE did something entirely new. They launched a broadband Internet Service Provider (ISP) for public and private businesses. Delivering fiber optics, including network, telephony and cloud services, they stood alone.

According to Aubé, "We focused on what enterprises needed—5-play services; Internet, VPN, fixed and/or mobile telephony and rack housing. High-bandwidth solutions, unique on the market, such as fiber optic Internet connections, caught on and have become the new standard."

"Our emergence as a nationwide competitor was a revolution for the French broadband market. Medium size enterprises across France now access competitively priced, high-bandwidth services quickly and easily."

CELESTE's fiber optic offer is available to 92% of enterprises using ISP services throughout France. Holding only 1% of the overall digital market share today, they are poised to grow in double digits, year on year.

Emerging as the B2B provider of choice, CELESTE leads with a vision of innovation and sustainability; they are speeding ahead with confidence. Now preferred by museums, wineries, firefighting units, hospitals, small businesses and more, a bright future for this fiber optic leader is assured. With a network of over 2500 kilometers of fiber optic cables in the ground, their crown jewel is the Marilyn Datacenter.

High Energy Team with Low Energy Commitment

According to Sylvain Thueux, Datacenter manager at CELESTE "Lower energy consumption is a core deliverable from the Marilyn Datacenter. We invented a new approach, which is a vertical structure, allowing for nature to climate control the facility. You could say that 'open architecture' is literally the CELESTE way, as the building draws air from the outside. Our ecological high-density data center consumes less energy, based upon a worldwide patent for vertical air-cooling."

"Like the iconic 'Some Like It Hot' dress upsweep movie moment with Marilyn Monroe, airflow from the ground up makes us the most energy efficient datacenter in the world—as far as we know."

"Energy savings equal the annual consumption of a classic office building of 150,000 m²."

The cooling system maximizes the use of ambient air, so that no air conditioning is needed 80% of the time. Energy consumption is reduced by 35%. CELESTE's adjacent headquarters heats and cools more efficiently, too."

Marilyn Datacenter: Secure and Fast

Marilyn offerings span Internet access, MPLS interconnection and fiber optics, IP telephony or hosting from this "green" datacenter. In terms of functionality the Marilyn Datacenter is all about secure data movement at the speed of light at considerably reduced power costs. In addition to energy savings, the vertical layout improves datacenter organization and limits floor space

requirements. Ideal for urban areas, the unit cost per bay kVA installed in this type of installation is substantially reduced.

The gain in total electricity consumption is estimated at nearly 35%, saving around 6 GWh per year compared to a traditional data center.

Partners with OFS, Micro Cables over Micro Modules

Seeking an alternative approach for fiber optic cable, CELESTE sought a supplier willing to meet its own criteria.

CELESTE had specific targets for smoothness, roundness and diameter of fiber optic cable. Tensile strength and crush resistance were important for reliability in the field and long cable life.

CELESTE's partnership with OFS for fiber optic solutions fits their strategy to support a growing number of enterprises throughout France, seeking high speed, secure and robust broadband.

OFS was brought in for discussions, which resulted in months of trials. This included visits to OFS factories in Augsburg, Germany, and Tangier, Morocco. The team observed technological capabilities and discussed modifications to meet their needs. Three trial cables were developed as proof of concept.

The cooperation produced a contract for OFS to supply 72-fiber cable for 2019, including customized MiDia® Micro GX Cable. Delivered ahead of schedule and meeting all expectations. More orders followed for 6F, 144F and 288F. Discussion now include OCS/FBS solutions for last mile connectivity.

Says Christophe Raffegau, Procurement Manager with CELESTE, "We wanted to source from a leader in fiber optic technology with a like-minded strategy, including social responsibility. Dialogue, interaction and mutual motivation made this effort a win-win. Expertise and technical capability from both of us also mattered a lot."

Adds Morad Fatih, OFS Regional Sales Manager, "CELESTE sought a resilient microcable that can withstand pulling during installation. Together we achieved an excellent result for fiber optic solutions in France to the benefit of all their customers."

Notes, Raffegau "OFS is truly a partner to co-develop solutions around B2B customers to help us deliver superior products and services to private and public enterprises and

institutions."

OFS Micro Loose Tube Cables Value Proposition

The OFS portfolio of MiDia micro cables are specifically designed for exceptional air-blown installation performance. These micro cables can help lower deployment costs while increasing capacity and fiber density in limited spaces. Moreover, OFS MiDia micro cables allow providers to deploy fiber only as needed. This helps to defer initial investment costs while also providing the flexibility needed for future technology upgrades.

The MiDia Micro GX loose tube cable used by CELESTE was customized according to their own specific needs. This cable provides a compact and lightweight design that helps to ensure capex and time savings while retaining ease of installation.

What's Next for CELESTE?

CELESTE will continue to be a one-stop shop for private and public enterprises, seeking reliable, secure and flexible ISP services.

"Our vision is straightforward. We focus on meeting the expansive digital needs of enterprises in France. Our business model is around fiber optics, controlling quality and performance from point-to-point and every step in-between. Because of Marilyn Datacenter's immense processing and storage capability, we can link thousands of enterprises in France with the world. Satellite mini-hubs throughout the country, and software to connect with other Internet providers add even more depth and functionality."

- Point to point Gigabit fixed broadband connectivity
- Cloud computing
- Plug and Play Mobile datacenter (StarDC)
- Mission to be preferred ISP for French companies
- Safety, ethical, social and environmental responsibility

"Winning in the marketplace as the preferred choice for business and governmental networks, telephony and cloud service, requires focus and attention to detail," says Aubé.

"Our B2B customers in the public and private sectors in France value our strengths in technology, service and sustainability. Point-to-point gigabit fixed broadband connectivity, combined with cloud computing, provide a quality and service advantage. In contrast with the two huge telecom companies dominating in France, our focus on B2B is all about unique challenges and opportunities.

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We are all about partnerships with customers and our suppliers. A strategic relationship with OFS for optical fiber solutions, for example, is critical to our performance and commitment to customers.”

Cedric Hunziker, PMO Director has a method to expand CELESTE’s market share. “Openness of our technical and service teams contributes to customer satisfaction. Listening to customers is essential to optimizing results and determining our own next steps.”

The Celeste Operational Zone

CELESTE’s very high speed of 10 Mbit/s at 1, 2, 5 or 10 Gbit/s assures:

- 100% guaranteed flow rate
- Symmetrical flow
- 4-hour business recovery time, 24/7 option
- Default stream prioritization and custom Qos (option) up to 1Gbit/s
- Fiber equipment and StarQos router
- High speed datacenter storage
- Connectivity and cloud computing
- Secure client areas at the Marilyn Datacenter with proactive supervision options
- National support from headquarters
- Low carbon emissions; most energy efficient in the marketplace



Nicolas Aubé, founder and CEO of CELESTE’s with Morad Fatih, Regional Sales Manager with OFS, optical fiber provider stand in front of CELESTE’s Marilyn Datacenter, which sets a new standard for energy efficiency and functionality.

CELESTE’s partnership with OFS for fiber optic solutions fits their strategy to support a growing number of enterprises throughout France, seeking high speed, secure and robust broadband services.



New Exhibit as the Musée d’Orsay—the Visitors!

CELESTE’s fiber optic infrastructure allows museum curators to transform the museum experience for visitors. Every day, the high-speed internet system at the famous Musée d’Orsay in Paris processes thousand of images, messages and video around the world in real time—every visitor with a smart phone can interact with works of art, exhibitions and other visitors in the museum. The interactive museum guide APP allows for education on the spot, and a roadmap for efficient, experiences. Your own personalized Musée d’Orsay is the result in the moment and back at home.

Fiber Optic Network for the Paris Firefighters Brigade

Asks Aubé, “How could CELESTE help the Paris Firefighter Brigade compress more data and speed up response time and information to make decisions? Why not put fiber optics in all buildings at once, ranging from 2 Mbit/s to 100 Mbit/s? This capability is now in place because of mutual trust and commitment.”

“When an enterprise exists to protect life itself, the high performance of fiber optics takes on an even more critical role. For this reason alone, we take pride in our relationship with the Paris Fire Brigade (BSPP), providing rapid response to any concerns or outages,” says Aube.

Networking 82 facilities, the Paris Firefighters Brigade fiber optic network replaced a system based on antiquated copper lines.

According to Chief Warrant Officer Yann Pascal, IT architecture developer with BSPP, “CELESTE brings us speed, reliability and new capabilities throughout our fiber optic network. Converting 82 facilities from copper cables to fiber optic in a timely manner required smart planning and implementation skills. Now, Paris Firefighters Brigade meet a wide range of emergency needs even more efficiently.”

“Adds Commanding Officer Fabien Bossus, Chief Technical Officer, “CELESTE is an extension of our support team, which centers around emergency response in the Paris region. We are measured by response time and supporting quality of life for citizens. CELESTE is there for us around the clock, even for small concerns. They also help our administration interact internally and externally with the finesse of a five-star hotel.”

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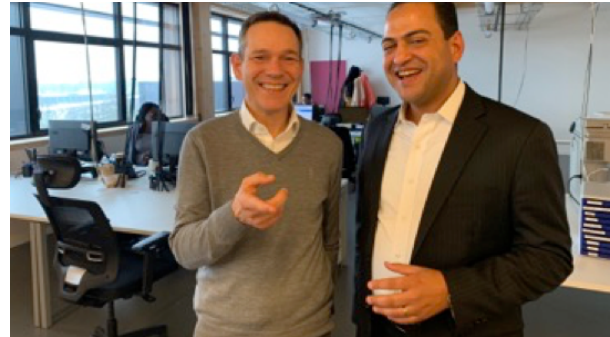
Sylvain Thueux runs the Marilyn Datacenter facility. He believes in a “walk around” management style, up and down the stairs many times each day. He is the guardian of CELESTE customers’ crown jewels.



“Owners Servers” The Marilyn Datacenter is as much a member’s club as it is a comprehensive broadband hub for enterprises in France. Many customers have their own private servers within safe-deposit like repository.



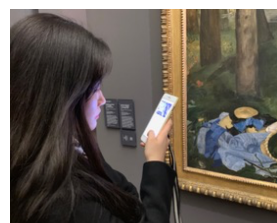
Each floor of the five-story Marilyn Datacenter is partitioned, structured in hot and cold aisles. The cooling mode in free cooling involves circulation of outside air, made possible by separations between floors by gratings and thus the absence of false floors, which are often source of problems in traditional data centers.



Christophe Raffegau and Morad Fatih led efforts to develop proprietary fiber optic cable solutions for CELESTE. Says Raffegau, “We wanted a partner to co-develop solutions around B2B customers. OFS has the technology, the commitment to innovation and team interactions to help us deliver superior products and services to a private and public enterprises and institutions. We also wanted to source from a leader in fiber optic technology with a like-minded strategy, including social responsibility. That’s why we chose OFS.”



Cedric Hunziker, PMO Director has a mission to expand CELESTE offerings. “Openness of our technical and service teams contributes to customer satisfaction. Listening to customers is essential to optimizing results and determining our own next steps.”



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Paris firefighters now have a CELESTE network of fiber optics, networking 82 buildings.