

CORNING



CASE STUDY



Walhalla – Unique Eco Data Centre for Cloud Services

Tissat's Walhalla data centre in Valencia, Spain represents a major investment and advance in technological and energy excellence to deliver eco-efficient cloud services. Walhalla is the first Tier IV midsize data centre certified by Uptime Institute in Southern Europe, and represents a worldwide first in meeting the Leadership in Energy and Environmental Design (LEED) rating system for a high-efficiency sustainable data centre.



Background

Tissat is a leading Spanish company that manages technology assets for customers, providing cloud computing, hosting, contact centre and business development services. Founded 20 years ago, the company has evolved into a provider of advanced technologies for complex IT environments to its customers.

Recent industry trends have resulted in IT users increasingly requesting services to be delivered immediately in any part of the world, for any activity. This means data centres need more and more energy, the highest levels of security, as well as the fastest possible speed for the increased volume of information. All this meant that Tissat needed a new modern data centre that would address the market need for cloud services and provide the latest eco-efficient technologies in order to cut energy consumption.

After evaluating data centre designs, the growing needs for cloud services and the requirement to tackle energy supply and carbon emission goals, Tissat decided to invest in a new data centre model leveraging the latest advancements in energy management with lower energy expenditure. The Walhalla data centre is eco-efficient and guarantees operations without relying on any external power, with the aim of ensuring cost efficiency for all of the cloud services.

The new green data centre is divided into two halls sized 125 and 375 square metres respectively and is designed for Tier IV operation with its own energy sources functioning in a trigeneration mode. This generates electricity for the data centre, produces chilled water for air conditioning and reuses waste energy through absorption technology.

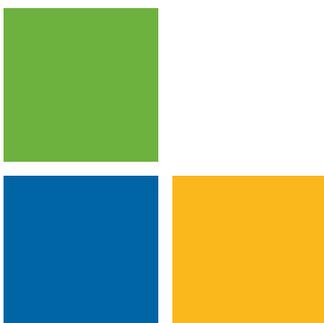
To support the operational excellence and cost-efficiency approach, Tissat needed to implement a data centre infrastructure management (DCIM) solution, which enabled **holistic management** of its energy, climate, security and IT infrastructure. This makes it possible to **optimise the energy efficiency** of the infrastructures and support the **fast and flexible provisioning** of services as well as **scalable capacity**.

The Cabling Solution

Corning was invited to provide a fibre-rich structured cabling solution, which required installation over the summer of 2011 with the aim of quickly inaugurating the data centre for operational use during September 2011. The initial project involved the cabling of 456 optical fibre ports for 38 racks, with cable runs of up to 50m maximum distance supporting speeds of 1Gb/s and 10Gb/s with a future requirement for 100Gb/s operation.

From an infrastructure perspective, the design needed to meet a number of objectives in line with its pioneering approach:

- **Energy Efficiency:** Support the need to provide a highly efficient data centre with a low PUE by contributing to the reduction of overall power consumption.
- **Flexibility:** Accommodate fast and flexible provisioning to meet the demand for cloud services in support of operational excellence.
- **Scalability:** Support growing data centre capacity needs over time including increasing data rates.
- **Reliability:** Provide high-quality cabling infrastructure to support high-availability cloud services and Tier IV operation.



- **Rapid Delivery:** Meet a stringent installation time frame to support inauguration of the data centre in September 2011.

Corning proposed the Pretium EDGE® structured cabling solution using pre-terminated MTP® connections and Corning® Clearcurve® OM4 optical fibre cables. This innovative solution provides high density for space savings and cost reduction, supports potential energy savings of up to 25 percent, enables faster installation, moves, adds and changes (MACs), and facilitates easy migration to higher speeds.

“The Corning solutions are fully adapted to Walhalla’s pioneering needs. They facilitated implementation in record time and enabled the data centre to evolve in accordance with the rapidly changing demands of the market.”

Carmen Garcia, Commercial Director, Tissat

Energy Efficiency

Improving the energy efficiency was integral to the design of the data centre. Heat produced by IT equipment is held within the hot aisle containment systems (HACS) and removed from the hot aisle via cooling units. In addition, the deployment of virtualisation solutions enabled more efficient use of servers and storage devices.

The optical cable infrastructure design also contributed to the increased energy efficiency. The high fibre counts and low profile of Corning optical cable provide as much as 30 percent reduction in physical cable space, keeping void space clear of congestion with no cooling energy losses in the raised floors. In addition, the optical interfaces on switches and servers require less power to operate than copper equivalents – typically 0.5W per port versus 15W per port for 10Gb/s connectivity. As a result the optical fibre cabling solution was perfectly adapted to the energy efficiency needs of the data centre.

Flexibility and Scalability

Scalability of the Walhalla data centre cabling infrastructure is essential for adding capacity to meet the increasing demand for cloud services without any major disruption of operations. The data centre needed to be designed to accommodate rapid and efficient scalability as requirements change, as well as supporting future migration to higher data rates.

The use of Corning high-density, MTP connector-terminated cabling enabled the consolidation of hundreds of jumpers to just a few low-profile, high-fibre-count trunk cables routed to switch locations. The modularity of the overall design supports flexible provisioning to respond quickly to customer needs; cabling trunks can be quickly added and easily routed to the new IT equipment racks without any disruption to operations.

Rapid Time to Operation and High Availability

For speed of installation the Pretium EDGE solution used multi-fibre MTP connections. This high-density, factory-terminated and modular solution enabled the installers to connect cabling components up to 85 percent faster, thereby ensuring the stringent time frames were met for completion ahead of September 2011.

With 24/7 operation of cloud services at stake, and in the knowledge that mere seconds of downtime can result in lost

revenue, Tissat was keen to ensure the cabling infrastructure would provide consistent uptime. The 100 percent factory-tested pre-terminated cable solutions help to provide consistent quality to ensure ongoing high system performance, while the use of Corning ClearCurve bend-insensitive optical fibre cable helps to mitigate the risks of bend-induced loss that can impact the performance and reliability of systems over time. Such bending of cables becomes commonplace as MACs are made during the lifetime of a data centre.

All these capabilities, together with easy access to housing for MACs and managed link polarity, fully supported the operational excellence and cost-efficiency approach to the Walhalla data centre design.

Migration to 100G

The Corning solution provides Tissat with an easy migration path to higher speeds such as 100Gb/s to support future applications, higher-density servers and higher-speed switches.

The installed OM4 optical fibre cable is designed for enhanced performance at higher speeds, supporting 100Gb/s on cable distances in excess of 100m protecting the investment for service longevity. At the same time the Pretium EDGE solution offers a simple and cost-effective approach to upgrade to 40Gb/s and 100Gb/s operation. Just swapping out existing modules with new Pretium EDGE AO conversion modules leaves the existing hardware and trunk cables in place maintaining 100 percent fibre utilisation to support IT equipment with parallel optics technology.

This migration approach satisfies the ongoing need for operational excellence and cost efficiency as the data centre evolves, providing rapid implementation and minimal disruption.

Conclusion

With the continuing requirement to evolve the data centre, the cabling infrastructure must provide reliability, manageability and flexibility, as well as enabling a migration pathway pushing these boundaries further, extending the longevity of the solution.

Corning’s innovation and industry-leading performance in optical cabling systems provides the next level of evolution of data centre design and is the perfect complement to Tissat’s pioneering approach of providing a unique eco-efficient data centre for a new generation of cloud services.

Corning’s Pretium EDGE solution embodies state-of-the-art modularity and ease-of-use simplicity, ensuring that the cabling solution can cost-effectively adapt to growing demand from Tissat’s customers. The use of high-density, low-profile fibre cable minimises congestion to benefit cooling and energy efficiency. Most importantly, the pre-terminated cables accomplished very rapid installation to meet Tissat’s ready-for-service deadlines and support fast provisioning for future service demand.

Tissat enjoys an excellent position in the provision of services and the development of applications for the end client, under an energy-efficiency model that is unique in Europe. The relationship and installation of Corning solutions is still ongoing, driven by client demand.



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