# MINKELS MAGAZINE

2017
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CUSTOMER EDITION

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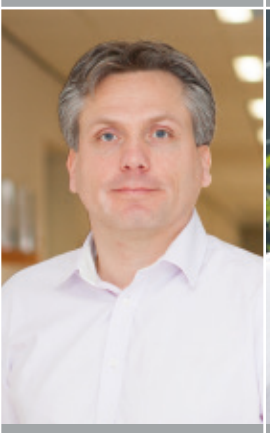

INTEROUTE

WAGENINGEN UNIVER-

23MEDIA

UNIVERSITY HOSPITAL IN BRUSSELS

CEGEKA

MAINONE

EQUINIX FRANCE

EVOSWITCH

7½ YEARS MINKELS MAGAZINE

MINKELS
A brand of legrand

# Special Customer Edition

*Christiaan van Terheijden,*
*CEO Minkels*

7½ YEARS MINKELS MAGAZINE

The role of data centres is quickly changing, driven by the cloud, Internet of Things (IoT), Big data and IT cost reduction. Setting up a future-proof data centre is a challenge that requires a clear vision of the data centre market.

This special Customer Edition of Minkels Magazine – to celebrate 7.5 years Minkels Magazine – not only shows which data centre challenges companies are facing. It also shows how 25 of our customers have been handling these challenges with Legrand and Minkels data centre solutions.

In this edition, you can read the stories of Equinix, Hitachi Data Systems, Swisscom, MainOne, EvoSwitch, GB Muri and many more. These companies were confronted with different challenges: from upgrading an existing data centre to building the largest Tier III + data centre in West Africa.

Do you want to read about the challenges in the data centre market and our vision on these developments? Check out page 4. On pages 6 and 7 we will introduce different possibilities to achieve a future-proof data centre. The customer cases start on page 8.

Enjoy reading!

Christiaan van Terheijden
CEO Minkels

**Visit our new website www.minkels.com and let us know your thoughts!**

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# COLOFON

Minkels is a knowledge-driven producer and worldwide supplier of high-quality solutions for data centre infrastructure. Minkels is part of the brand portfolio of Legrand, a publicly traded company (NYSE Euronext Paris: LR) with worldwide sales in the low voltage installation, data network and data centre markets. Legrand operates in more than 180 countries and achieved worldwide revenues of 4.8 billion euros.

Minkels' products stand out for their innovativeness and flexibility. Customers can always be assured of getting the very latest data centre technology, modular solutions that respond to evolving, customer-specific business requirements.


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minkels.com

# Challenges in the data

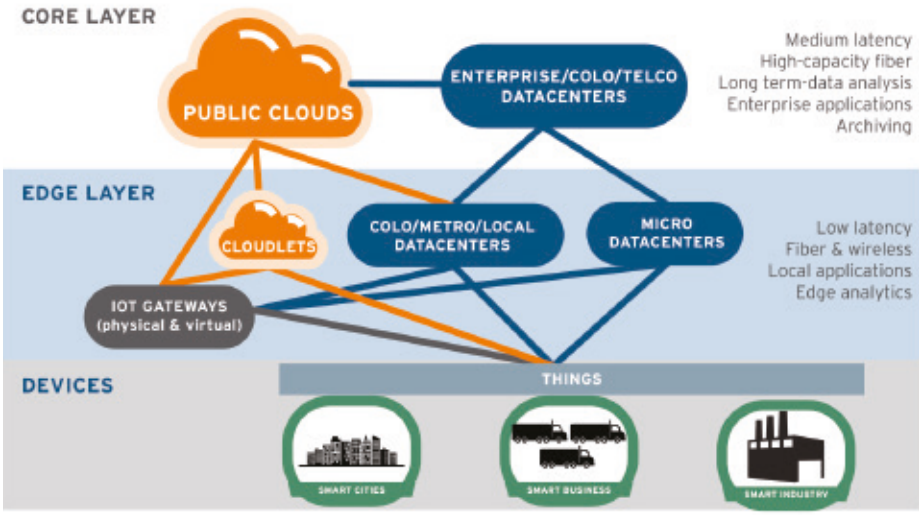
## THE IOT IS CHANGING THE DATA LANDSCAPE

The IoT is changing the data landscape completely. In 2014, there were about 14 billion devices connected worldwide. By 2020 there will be 50 billion (source: Cisco). Internet of Things also affects the design and implementation of data centres – and its availability and scalability. At the moment, we are seeing two levels of 'compute' arising: an edge layer near to 'things' and a core layer of remote data centres.

Centralised data processing is not sufficient for the IoT because of availability and low latency requirements (edge analytics). The IoT therefore requires this data to be handled locally in the edge layer, for example using micro data centres. This will also mean a boost for the micro data centre market, globally: from 1.7 billion dollars in 2015 to 6.3 billion dollars by 2020.

## FROM CO-LOCATION TO CLOUD

Another trend that has affect on the data centre market, is the adoption of the cloud. Cloud providers will move up in the supply chain and be empowered to implement data centre infrastructure that best suits their very own needs. Current EU level data privacy issues and political discussion (Brexit) will enhance this trend, with a spike in European data centre build by cloud companies as a result. An ever-increasing move to hybrid deployment models, will strongly empower end-customers when taking data centre infrastructure decisions. The strong increase in the demand for co-location comes from the desire of companies to reduce IT costs. With co-location, companies choose the high quality technology, scalability and availability of a data centre, while managing the IT environment themselves. This will reduce investments for keeping the IT infrastructure up-to-date. In addition, the data centre is responsible for the physical security of the equipment.




*Source: 451 Research Datacenter Technologies, 2016*

# centre market

### THE CLOUD AND DATA CENTRE SECURITY AND SAFETY

Under the influence of the cloud, there is a growing focus on data centre security and safety solutions. The '2015 CIO Survey' from Gartner indicates that 83% of CIOs worldwide see Cloud Infrastructure-as-a-Service (IaaS) as an option for accommodating their IT infrastructure. According to Gartner, a growing number of organisations now even tend to entrust their business-critical applications to the cloud. This trend is impacting global data centre security investments, which is confirmed by Forrester's market report, 'Sizing the cloud security market.' Forrester forecasts that global cloud security investments will increase from $282 million in 2014 to as much as 2 billion by 2020.

### NEW EUROPEAN GUIDELINES

Demand for data centre security and safety solutions is amplified by an increased focus on security topics within the European EN 50600 data centre standard. The renewed security approach combines optimum security with an accessible working environment.

The EN 50600 will also give a further boost to the pursuit of energy-efficiency. Up until now, the EU Code of Conduct for Data Centres provided a non-committal guiding with best practices for energy-efficient data centre deployments. Embedding the Code of Conduct as a 'Technical Report' within the 50600 framework will make it a more binding agreement. The EU Code of Conduct best practices are practically very useful for lowering the energy consumption in data centres and maximising energy savings. This is increasingly important, as the data centre industry and the accompanied energy consumption have the public eye on it – reinforced by Greenpeace publications among others.

### FUTURE-PROOF DATA CENTRE

In summary, the greatest challenges in the data centre market lie in the areas of:
- (Energy) Efficiency
- Availability
- Scalability
- Safety and security

**Modularity** and full **integration** are key to meeting these challenges in the **worldwide** data centre market. Only then can the right level of **flexibility** and **efficiency** be offered. These are not just buzzwords for Minkels – it's something we really stand for.

These are our core values:

- Innovation and flexibility
- From standard to customer-specific
- Energy-efficiency
- Modularity and integration
- Global presence, local excellence

Every customer case in this edition of Minkels Magazine discusses one or more of the above topics. We have marked each case in the magazine – with the colours and icons in the legenda below – to show which topics played an important role during the project.

## Core values

### A short introduction of our core values:

**INNOVATION AND FLEXIBILITY**

Minkels handles its development, production and sales in-house. Combined with the requisite knowledge and expertise, this ensures customers are always receiving the latest data centre technology.

**FROM STANDARD TO CUSTOMER-SPECIFIC**

With Minkels, you are always provided with a data centre solution that will suit you, whether it's a standard solution or a customer-specific product.

**ENERGY-EFFICIENCY**

Legrand and Minkels value Corporate Social Responsibility (CSR) very highly. Minkels therefore aims to retain its leading position in energy-efficient solutions, allowing both the customer and the environment to benefit.

**MODULARITY AND INTEGRATION**

Modularity and complete integration are the foundations for a flexible, efficient and future-proof data centre.

**GLOBAL PRESENCE, LOCAL EXCELLENCE**

Minkels aims for consistent quality and availability of its products worldwide, complemented by local service.

**Do you want to know what solutions could future-proof your data centre? Continue reading on page 6.**

# From standard to customer-specific

**It is Minkels goal to provide you with a solution that future-proofs your data centre, whether it's a standard product, a customer-specific or a mass customised solution. Standard and customer-specific solutions probably don't need more explanation (check out the table on the next page). But what is mass customisation exactly?**

## MASS CUSTOMISATION = INFINITE COMBINATIONS

Mass customisation is the combination of the best aspects of 'mass production' and 'customisation'. We are not talking about full customisation, but rather about an enormous choice of components which can be combined in an almost infinite number of ways in order to achieve a solution (server racks, aisle containment, PDU's etc.) that suits your needs. Minkels is one of the few data centre suppliers that can truly offer mass customisation. After all, such a strategy involves quite a few things...

## MODULARITY, EVEN IN THE DETAILS

Minkels has very thoroughly implemented its core value of 'modularity' in its product portfolio. Thanks to this modularity – in even the finest details – our data centre solutions are very scalable and easily adaptable. The solutions can be viewed as 'building stones' which can be combined and integrated into a fitting solution for your data centre. The beauty of this is that you are provided with a solution that fully suits your wishes and needs, without having to pay top price for customisation. In addition, you profit from a fast delivery and consistent quality and logistics, no matter where in the world you are.

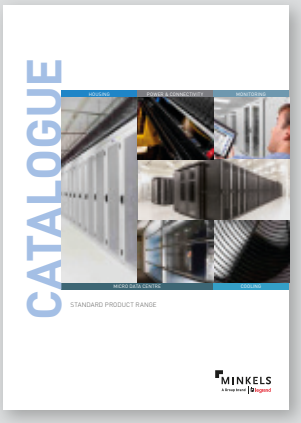
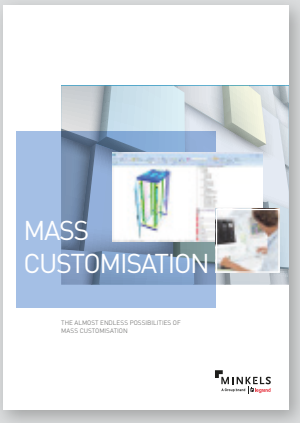
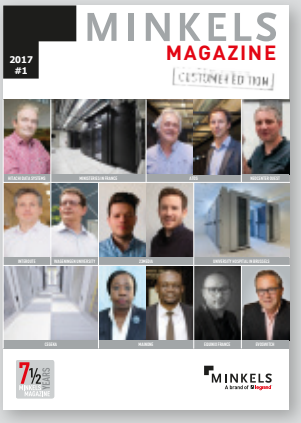
## SECURING AND IMPLEMENTING KNOWLEDGE

Mass customisation starts with the securing of knowledge, as a large amount of expertise is needed in order to offer a data centre solution. Minkels' experienced employees have stored their knowledge in a smart configuration tool. Minkels employees and partners use this tool to provide you with a mass customised solution that is manufacturable and well-integrated.

## SMART PRODUCT CONFIGURATOR

The configurator works using a question and answer-setup. In this setup, all possibilities and impossibilities of the Minkels portfolio (Housing, Cooling, Power & Connectivity, Monitoring and Micro data centres) have been entered, which eliminates any mistakes. Based on the choices made, a quotation is automatically generated, which includes an overview of all price and delivery terms and the configuration itself: types of products, amounts and specifications, from height and width to capacity. The tool even calculates the total production, assembly and packaging time. When the quotation is approved, the bill of materials – created during configuration – is sent to production.

# solutions

| | Standard | Mass customised | Customer-specific |
|---|---|---|---|
| |  |  |  |
| **Product-type** | Predefined products | Standard 'building blocks' can be put together in a extremely large number of combinations | Entirely customised: co-development between you and our engineers |
| **Logistics** | Most products can be delivered straight from stock | Optimum logistical process | Depending on your requirements (Based on business case) |

**OUR GUARANTEE**

Mass customisation is a guarantee for quick and reliable delivery of a data centre solution that suits your wishes. This guarantee is made possible because of the strong integration of the configuration tool with the ERP and production systems. In addition, order processing, production and assembly are continuously in contact with each other, which ensures you always feel that you are in direct collaboration with Minkels' production facilities.

**Do you want to know what products our customers are using to future-proof their data centre? Check out the customer cases on the following pages or download the above brochures and catalogs on our website www.minkels.com for more product info!** ■

# German company 23media expands into Europe with dedicated

**Impressed by the innovativeness and energy-efficiency of the Minkels Next Generation Corridors, German hosting company 23media chose to standardise their data centre infrastructure on the Minkels brand. With currently 130 racks deployed in two Tier 3+ data centres in Frankfurt, 23media is planning to expand its presence with Minkels.**

"It's pretty amazing that Minkels was the first data centre supplier in Europe to commercially launch the aisle containment solution," says Tobias Rehn, CEO and owner of 23media. "Energy-efficiency and the use of green energy are very important to us. It not only helps us address environmental issues for our customers but also provides us with the ability to establish a high quality proposition at relatively low cost. The Minkels corridors are of significant help in creating enterprise grade stability and availability while also providing efficiency when it comes to the payments for our electricity bills."

For customers in need of establishing cloud infrastructure, the company is able to deliver those solutions on a project basis as part of their managed IT services proposition. Although 23media's main proposition is focused on dedicated servers, colocation and connectivity, some customers ask them to install and manage private cloud on top of dedicated infrastructure. In that case, they're definitely able to meet customer demand.

## CLOUD VS. DEDICATED

"The delivery of cloud services is part of our managed IT services proposition, one of our major propositions actually," adds Mr. Rehn. "On the other hand, the main part of our client base is located in Germany and German people tend to have a great fear for bringing their data to the cloud. For efficiency purposes, a growing part of our customers are now utilising private cloud installed on hardware they own, but they almost never want to put their data into a public cloud environment."

"Partly this is caused by very strong data privacy protection rules in Germany but even more it has to do with fear of losing sensitive data," adds Mr. Rehn. "For that reason, German consumers are even afraid to use all kinds of web-based solutions from abroad. I also don't know any large German company deploying their infrastructure in a public cloud infrastructure."

As 23media is a fast growing company with impressive growth figures, one may well ask where the secret of their success lies. "While connectivity is an important part of our proposition, we have been reinvesting a lot of our

# hosting offering


revenues back into our network," adds Mr. Rehn. "This, and our ability to deliver enterprise-grade infrastructure with a flexible, pragmatic approach finally pays off. During the last couple of years we have seen a market change in Germany, with customers choosing high quality over low budget offerings. We have highly educated employees who are in close contact with customers and we are utilising premium brands only for routers, switches, racks, and so on. Due to our close partnerships with a selective amount of vendors, we're still able to offer good value for money."

## Data centre solutions in use

- Server & network racks
- Aisle containment: Next Generation Corridor
- Cable management system

*Florian Beny*

**BRAND IMAGE**

Mr. Rehn says that the use of Minkels data centre solutions is adding to the enterprise level brand image 23media pursues. “When we compare ourselves to competitors, still not so many companies in Germany are utilising aisle containment. The Dutch market is quite ahead of Germany for that matter. Customers are always impressed when we take them on-site in our data centres. The moment we show them the Minkels racks and aisle containment, they really love it. It actually works. Minkels racks and aisle containment have the high quality look-and-feel that meets enterprise requirements.”

As 23media delivers high-density infrastructure to its customers, the company has chosen to deploy 46U racks from Minkels. The modularity and thus flexibility of the rack components enabled 23media to have an easy install of extra wide and extra deep formatted racks while facilitating the implementation of high-density solutions.

"The 46U rack format makes engineering work much easier when taking care of server and networking cabling, and installation of power distribution units," says Florian Beny, CTO of 23media. "The flexibility of the Minkels racks is pretty impressive. It also provides us with an easy solution for the cooling of our networking equipment. Minkels is one of the few in the market offering something like this, with networking equipment adjusted airflow optimisation from the side."

"We have had some negative experiences with one of the other leading data centre vendors in the market," adds Mr. Beny. "Minkels is different, they are really awesome from the first contact to the final delivery of racks, aisle containment and cable trays on top of the racks. Their people put a lot of time into us while listening to our unique requirements, which ultimately resulted in a good package deal with good prices."

*Tobias Rehn*

# Multinational Atos chooses Minkels Free Standing Corridor

**Atos, an international supplier of IT services with revenues of 12 billion euros, supplies its managed services from different data centres worldwide. In the Netherlands, the Minkels solution has been the standard for Atos since 2009 when it comes to racks and aisle containment. In 2014, Atos implemented the Minkels Free Standing Corridor. Due to its success, Atos would now like to expand its use of the solution.**

## MARKET POSITION

Atos has 100,000 employees in 72 countries to supply its IT services – including managed services – to different types of customers, such as multinationals, (health) insurance companies, telecom companies, banks, government agencies, hospitals and industrial companies. In the Netherlands Atos manages four data centres that, since 2009, have been equipped with Minkels solutions – including racks, (Next Generation) Corridors, intelligent Power Distribution Units (PDUs), cable management systems and data centre accessories.

## DATA CENTRE IN BEST, THE NETHERLANDS

One of the most prominent Atos data centres in the Netherlands is located in Best. This data centre houses the Atos Canopy Cloud, the Dutch HUB of the cloud platform that is available worldwide. The data centre has 2,500 square metres of floor space, is located in a highly secured complex and has an average scalable capacity of 6 KW per rack. The low energy Power Usage Effectiveness (PUE) of the data centre, with an annual average value of 1.3 at current usage levels, illustrates the tremendous importance that Atos attaches to sustainability and energy savings. Atos is currently working on implementing more optimisations.

In 2014 Atos noticed that it was becoming more difficult to house racks with built-in storage appliances in an energy-efficient manner. The racks from Bull, IBM, Oracle and EMC, each one with different measurements, no longer fit properly in the Minkels corridors the company had been using at the time. "Just at the right moment Minkels came out with the Free Standing Corridor, which enabled us to create fully sealed corridors that we could fill over time, no matter the size of the racks," says Kees de Klein, data centre specialist at Atos. "As soon as we saw the demo model, we knew that was what we needed and we purchased the solution right away."

"Storage appliances cost a lot of money," emphasises De Klein. "This type of appliance can cost anywhere from 500,000 to 1.5 million euros. You want to be able to deploy this type of equipment


## Data centre solutions in use

- Server & network racks
- Aisle containment: Next Generation Corridor
- Aisle containment: Free Standing Corridor
- Intelligent Power Distribution Units (PDUs)
- Cable management system

quickly, preferably in an energy-efficient and sustainable environment that will benefit the performance and lifetime of the equipment. The Free Standing Corridor significantly reduces the deployment time for these storage appliances, while the corridor provides the right, constant cooling environment and saves energy right from the very first day. The first Free Standing Corridor is almost full and we are very pleased with it. We now want to expand the solution even further."

### PARTNERSHIP

The partnership with Minkels is important for Atos when it comes to a robust layout of its data centres. Atos is not only active in the Netherlands, but also in France and the United Kingdom. "A lot of data centre management activities take place remotely these days, often from different countries," says Marc Sanders, Manager Data Centres Benelux and Nordics at Atos. "Standardisation is crucial in this case. It reduces the worktime in the data centre and you don't have to maintain stock of as many spare parts. The Minkels solutions are high quality and modular, which means that they are always a good fit and we would like to see them as the standard solution. Even in interim tenders over the past few years, Minkels always had the best submission."

The fact that the Minkels engineers are proactively working with Atos to come up with solutions is an important part of the partnership according to Sanders. Sanders: "It is denitely important to me. We appreciate being able to benefit from the knowledge shared by Minkels. For instance, they help us think through the process of determining air volumes in a corridor, for example in the Atos cloud environment. They also help us with air optimisation creating business cases and calculating a ROI. It is a huge benefit that we can work so well with Minkels." ■

# Cegeka deploys modular data centre

## for its European 'trusted cloud' with Minkels

**Cegeka, a European ICT Group, has deployed its new Tier 3+ data centre facility in Geleen, The Netherlands. This 640 square metre data centre features a variety of Minkels solutions including Next Generation Corridors, and has a highly flexible, secure and energy-efficient design.**

As a growing proportion of organisations in Europe tend to outsource IT infrastructure to the cloud, a company like Cegeka flourishes by providing hybrid cloud services from their highly secured private data centres. The recently established flagship data centre in Geleen, The Netherlands, adds to the existing data centre in Hasselt where Cegeka has its headquarters located. The new data centre has a calculated Power Usage Effectiveness (PUE) of 1.14 – an extremely energy-efficient figure. From these data centres in Hasselt and Geleen, Cegeka's 'trusted cloud' solutions are delivered throughout Europe.

"When our customers choose to outsource their IT infrastructure to the cloud, safety and the ability to stay in control are extremely important," says André Knaepen, Chief Executive Officer (CEO) of Cegeka Group. "Cegeka has been responding to customer demand by establishing privately owned and highly secure data centres. Our new data centre in Geleen is another example of this

## Data centre solutions in use

- Server & network racks
- Aisle containment: Next Generation Corridor
- Intelligent Power Distribution Units (PDUs)

effort, providing organisations in a wide variety of European countries with optimal conditions for safeguarding the availability of their applications."

### TASKFORCE

ICTroom, a pan-European data centre integrator with it's headquarters in The Netherlands, was responsible for implementing this new facility for Cegeka, while Minkels was selected to deliver its aisle containment (Next Generation Corridors), Varicon racks and PDUs.

"ICTroom works with all kinds of data centre brands," says Johan Claes, sales director BeLux, ICTroom. "In this case, a taskforce with people from Cegeka was set up for market comparison and evaluation of all solutions available. This taskforce also visited several data centres for benchmarking purposes. In the end they concluded that Minkels is the best data centre vendor to meet the high set requirements of Cegeka."

### SECURITY LEVEL

The new data centre had to be located near the other flagship data centre in Hasselt, Belgium, for reasons of low-latency interconnection. The establishment of this new facility results in phasing out two remaining data centres in Veenendaal (NL) and Leuven (BE) respectively.

As Cegeka put high requirements on the security level of its hybrid cloud proposition, the company chose to deploy an advanced biometric fingerprint solution for the locking systems of Minkels Varicon racks. Engineers from ICTroom and Minkels sat together on-site to provide an integrated design for a total security solution. This team of engineers managed to adapt it to the central card access control system and data centre management system, the BMS.

### ENERGY-EFFICIENCY

To provide ultimate flexibility in standardised data centre design, ICTroom implemented its scalable IMD platform with a modular 750kW power capacity and initial room for 160 racks. While Cegeka is able to start with a capacity of 200 kW, the platform provides a pay-as-you-grow solution with the ability to flexibly adopt new technologies on the go. The modularity of Minkels' Next Generation Corridor adds to the enormous flexibility of the overall solution.

The low PUE figure is being established through the use of indirect adiabatic cooling and energy-efficient components for power supply. "The end result is a state-of-the-art and very energy-efficient solution," adds Mr. Claes. "Although the greater part of energy savings come from the cooling system, the airtightness of Minkels corridors and high air permeability of their racks significantly add to the energy-efficiency of the cooling system in place."

The data centre in Geleen is provided As-a-service by ICTroom, with an ICTroom employee on-site and remote monitoring from ICTroom's NOC in Amsterdam, The Netherlands. This way, Cegeka is able to lower its CAPEX investments. ■

# Crédit Agricole Bank chooses Free Standing and Next Generation Corridors

**Crédit Agricole, the largest bank in France and one of the largest banks in Europe has selected the Minkels Free Standing Corridors and Next Generation Corridors for its data centres. The 60 corridors have been designed specifically for Crédit Agricole and they yield significant energy savings in the two data centres.**

## TIER IV DATA CENTRES

Two new data centres were built in 2015 to house the bank's IT infrastructure. These Tier IV data centres with a floor space of 2,500 square metres each had to meet the most stringent security requirements and they had to be energy-efficient as well – in line with the bank's corporate guidelines. It is Crédit Agricole Real Estate, the real estate expert of the Crédit Agricole Group, which operates it today.

The aisle containment system that Crédit Agricole Real Estate was looking for, had to be a transparent solution from an administrative point of view and it already had to have a proven track record in the market. The system had to be able to house racks with different height measurements. The aisle containment system also had to be easy to integrate with Crédit Agricole's user-specific fire extinguishing system. After an extensive selection process, Crédit Agricole Real Estate finally decided, in consultation with the Cap Ingelec engineering firm, to implement the Minkels Free Standing Corridors and Next Generation Corridors. "We were looking for an aisle containment solution that would not only provide us with energy-efficiency, but would also give us the flexibility we need for the daily operations within our data centres," said Christophe Calange, the data centre operation manager at Crédit Agricole Real Estate. "The Minkels Next Generation Corridors and Free Standing Corridors have a fully modular design. This makes it very easy to adapt them to our existing infrastructure, as well as to changes in the future. An implementation with minimal impact on our data centre activities was also a key factor for us. The data centre environment is of course a vulnerable part of our organisation."

## IT NEEDS

The Minkels engineers modified the design of the two different aisle containment systems to the specific circumstances of Crédit Agricole. It turns out that the systems fully meet the bank's needs. "The Minkels standard product version is an effective aisle containment system that is simple to use," says Christophe Calange. "It fits perfectly with the racks and is an extension of the rack design, which not only yields great technical results, it looks superb as well. The Free Standing version is a wonderful system that supplies the needed energy-efficiency, regardless of the future IT equipment in the data centre, such as the different brands of storage equipment. The aisle containment system is flexible and can grow with our IT needs, while yielding the necessary energy-efficiency from the very first day."

The fire detection module in the Next Generation Corridor system gave Crédit Agricole the option to install an aisle containment system with a 'pivoting roof'. A system that fits seamlessly with the specific fire extinguishing system that Crédit Agricole has implemented in its data centres. That means that the corridor roof panel automatically opens if a fire is detected. The sprinkler system is then activated immediately and can do its job without obstruction.

## Data centre solutions in use

- Server & network racks
- Aisle containment: Free Standing Corridor
- Aisle containment: Next Generation Corridor

### A LEGRAND BRAND

Crédit Agricole Real Estate not only conducted a comprehensive quality assessment of the Minkels solutions, the Minkels organisation also had to meet certain requirements to be allowed to supply goods and services to this global banking institution.

Christophe Calange: "The data centre supplier had to have a branch in France. We were also looking for a supplier with multiple good customer references in France. The financial health of Minkels and its attention to energy- efficiency and the environment also played a role in the selection procedure. The fact that Minkels was a prominent brand name within the global company Legrand, was a decisive factor for us."

"The two aisle containment systems that Minkels has implemented fully meet our expectations," says Christophe Calange. "Minkels also managed the installation of the 40 Next Generation Corridors and 20 Free Standing Corridors to perfection. Despite the vulnerability of the data centre environment, there have been no major incidents and we have nothing to complain about. We are definitely planning to expand these Minkels solutions in the near future." ■

# UK-based Datum Datacentres

## selects Minkels' VED system for its cutting-edge, London area facility

**Datum Datacentres, a UK provider of cloud-optimised co-location and managed services – part of the Attenda IT services group, has chosen Minkels UK to deliver its VariCondition Vertical Exhaust Duct solution. This solution is also called "passive chimney containment" – as a means to provide optimised separation of hot and cold air in Datum's energy-efficient and highly resilient data centre in Farnborough.**

Datum's Farnborough data centre (Datum FRN1) is a 2N, high-resilience facility featuring advanced security measures and an available capacity of more than 1,000 co-location racks. Adiabatic cooling is just one of many unique features in this mission-critical facility, ensuring operational excellence and maximum energy-efficiency with a calculated PUE of 1.25. Minkels delivered an integrated solution, with not only the Vertical Exhaust Duct but also airflow optimised 19-inch racks, vertical power bars, Power Distribution Units (PDUs) and a variety of additional data centre accessories included.

### MINKELS UK

The adiabatic flooded airflow design implemented in Datum's facility in Farnborough uses ambient air to provide free cooling. Large fans located in a separate room along the length of the data hall combined with a separate ceiling return air path enable extremely energy-efficient, predictable cooling for high and low densities, whilst removing the cooling plant and associated water service risks completely from the IT space. Instead of using raised floors for cold air supply in the room, the fans supply cold air to the entire room – at very low speeds.

To create maximum energy-efficiency, Datum needed the Vertical Exhaust Duct to feed the air back to high ceiling voids, meeting their building specific requirements. The modular characteristics present in Minkels' entire product portfolio ensure a seamless integration of VariCondition Vertical Exhaust Duct with the adjacent data centre infrastructure.

"At an early stage, Minkels invited us to their facility in High Wycombe, to have a look at all the Minkels data centre solutions available," said Paul Garner, Data Centre Manager at Datum Datacentres. "There we became incredibly impressed with Minkels and their products. Each of these products is beautiful in its simplicity. It's solid and very well manufactured and designed."

Datum decided to select the Minkels' VariCondition Vertical Exhaust Duct

## Data centre solutions in use

- Server & network racks
- VariCondition Vertical Exhaust Duct
- Busbars
- Power Distribution Units (PDUs)

solution, as well as a range of their other data centre products. "The flexibility of this solution and the superb integration with all the other data centre components is really impressive," said Garner. "We just got a flat pack of modular components delivered, after which Minkels' team of engineers built them together into an outstanding, custom made product."

### CUSTOM QUOTE ENGINE

"We're absolutely delighted with the implementation," added Garner. "Our clients are impressed by the look and feel of Minkels' products and the innovative containment design. The technical results are also very good, with no hotspots and a very low PUE figure. Minkels' products have been a contributor to the extreme resilience of our facility and its cost-effectiveness."

Garner also noted that Minkels' ordering process is very straightforward, with a sales configuration tool (Sofon) and predictable pricing. "I've never seen this before in the market. To place any orders, you don't have to make a phone-call or to wait on a reaction. You just enter the product specifications into the system, after which your custom-made product gets manufactured and delivered. It's very reliable, with a quick turnaround time at very competitive prices and a predictable invoice." ■

*Paul Garner*

# Minkels provides an identical look-and-feel worldwide, also

**Equinix opened its first data centre in the Middle East – in Dubai – in January 2013. Just like all other Equinix data centres worldwide, Minkels was responsible for setting up the infrastructure. Jeroen Schlosser, Managing Director of Equinix Middle East, explains how the data centre market is developing in this region and what Minkels can do for the local proposition.**

### WHY DID EQUINIX BUILD ITS FIRST DATA CENTRE IN THE MIDDLE EAST IN DUBAI?

"That was a process of careful consideration. Equinix chose Dubai because internationally there was high demand for a data centre at this specific location. It is an extremely safe area and globally it is a very well-accepted place to do business and to maintain infrastructure."

### HOW IS THE DATA CENTRE MARKET IN THE MIDDLE EAST DIFFERENT FROM THE MARKET IN EUROPE?

"The business data centre market here is a relatively young market, especially in comparison with Europe and the United States. You see it in meetings with prospects. Many organisations still have to take that step to outsource their data centre infrastructure for the first time. That means you must build their trust in outsourcing. Only then can you begin to talk to them about the specific benefits of your service."

### DOES THE PROPOSITION OF EQUINIX MIDDLE EAST DIFFER FROM THAT OF THE OTHER EQUINIX LOCATIONS WORLDWIDE?

"In London, Amsterdam, Sydney, New York and Dubai, or anywhere else for that matter, the Equinix data centre solutions are identical all over the world. The Minkels racks, the Minkels corridors and the Minkels data centre accessories play a key role. It gives customers everywhere the same look-and-feel and the same high quality. Besides, it is great to have a standardised infrastructure in a new region like the Middle East and to include certain fixed elements in your proposition from the beginning so that our team can focus all its efforts on the customer."

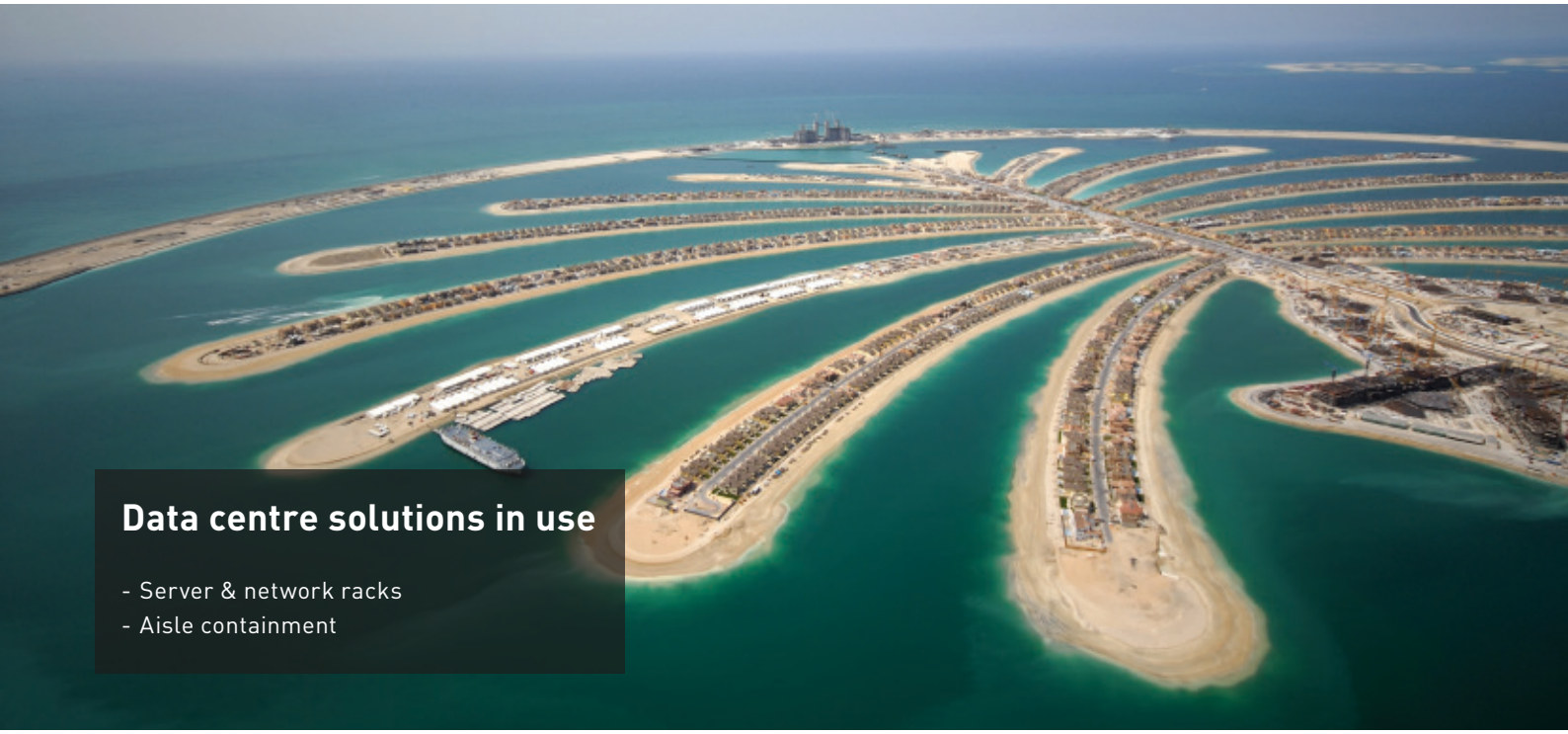
### WHO ARE THE CUSTOMERS OF EQUINIX MIDDLE EAST?

"Content providers, telecom companies, but primarily financial companies. We are quite proud of the fact that we have been able to establish a comprehensive financial eco system with customer organisations that share all sorts of front-end processes and infrastructure with each other. Examples include payment platforms, credit card processing and transaction systems. The development of this financial eco-system has progressed more quickly than we expected."

### WHAT ARE THE SPECIFIC BENEFITS YOU HAVE EXPERIENCED WITH THE MINKELS INFRASTRUCTURE?

"We had already taken significant steps with engineers from Minkels to ensure that the Equinix infrastructure would seamlessly meet the needs of our customers worldwide. They are proven concepts – data centre solutions that we have developed in partnership with Minkels. The modularity of the Minkels products is particularly important. It

# Equinix in Dubai



**Data centre solutions in use**

- Server & network racks
- Aisle containment

gives our customers the flexibility they often demand. Furthermore, the Minkels corridors in Dubai give us the assurance that we can operate in an energy-efficient manner in Dubai and that there will be no hotspots, thus avoiding the risk of problems. Many people think that the price of energy in an oil rich city like Dubai is low; on the contrary, the price of energy is practically just as high as it is in Europe. Therefore, it is nice to be able to rely on the energy-efficiency gained from Minkels products."

**YOU HAVE BEEN LIVING IN DUBAI FOR A WHILE NOW. WHAT IS YOUR EXPERIENCE?**

"As a family, we love it here. Approximately 85 percent of the people in Dubai are expats; therefore it is very international here. My two daughters attend an international school with children of 70 different nationalities. There are about 500 houses in our expat neighbourhood and the children can play outside a lot. There are large malls and a lot of restaurants, you can go skiing and ice skating, and a lot more. I think that we will live here happily as a family for the next few years."

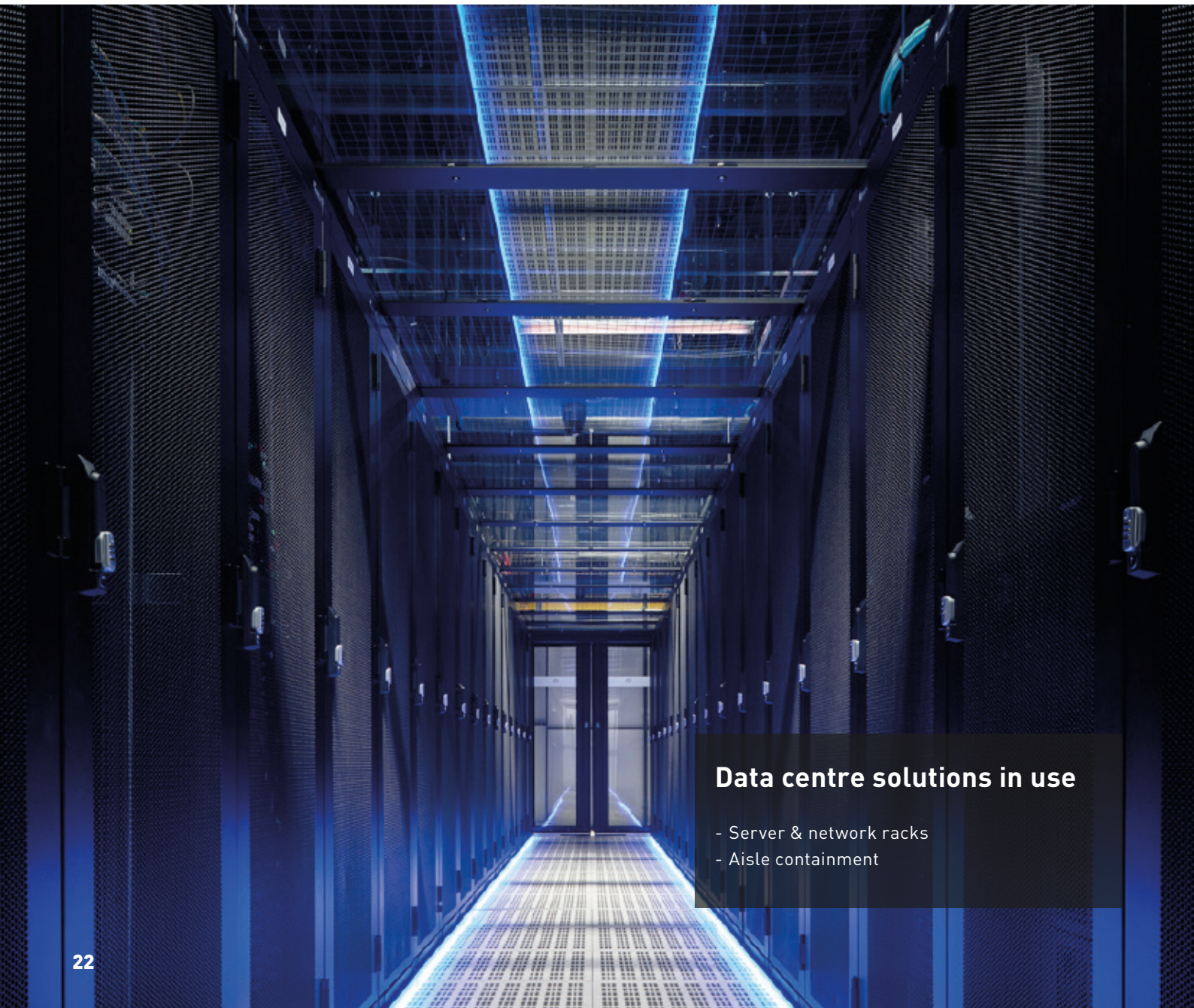
**HOW ABOUT WORK?**

"I have noticed that people do business here in a very positive and pleasant manner, which can be seen in the economic growth of Dubai, with an annual growth of 4 to 6 percent. I would have never thought of this region as a place to emigrate to, but the people here are so friendly and open, which is very inspiring and is a great reason to stay here for a long time to come." ■

*Jeroen Schlosser*

# Equinix expands its into new data centre

**With the Telecity Group acquisition, Equinix has expanded its reach into new data centre markets including Dublin, Stockholm and Warsaw. These data centre locations were high on the wish list of Equinix clients for a reasonable amount of time, says Eric Schwartz. Minkels Magazine sat down with Mr. Schwartz to talk about the acquisition, other developments and his vision on the market.**



## Data centre solutions in use

- Server & network racks
- Aisle containment

# reach markets

"Our clients have, for sometime, been asking us to expand the Equinix proposition into Dublin, Stockholm and Warsaw. We have established strong positions in competitive data centre markets such a London, Frankfurt and Amsterdam, but these important locations were still missing from our list – as was frequently highlighted in Equinix client survey results. Now, with the Telecity acquisition finalised we can finally say to these customers: we can help you, with high-class facilities and also new services. It fits our strategy of providing more choice and more capacity."

**HOW IMPORTANT IS THE TELECITY ACQUISITION FOR EQUINIX?**

"About nine years ago, Equinix expanded into EMEA with data centres in four countries. A year later we added our data centre proposition in The Netherlands, while in 2013 we started a Greenfield data centre operation in Dubai. Although size-wise not as big as our other premises, Dubai is a hotspot for financial and commercial industries worldwide - a fast growing market and a hub for the Middle East thus extremely important for us."

"The Telecity acquisition is the largest acquisition ever done by Equinix. It means we'll be able to substantially expand our business in existing EMEA markets while heading into new markets. The acquisition increases the total number of data centre locations available in EMEA to thirteen. It provides us with tremendous future opportunities in helping enterprise customers adopt cloud technology and experience the benefits of innovative networking technology."

**TALKING ABOUT INNOVATIVE NETWORKING TECHNOLOGY, WHAT IS YOUR VIEW ON SHIFTING PATTERNS IN DATA CENTRE INFRASTRUCTURE INCLUDING SDN?**

"When it comes to software defined networking, it's a question of 'how' not 'if.' The market volume and capability of SDN is clear enough. Enterprises are using it in their networks and it's very central to the Equinix interconnection platform too. We ourselves invested a lot in SDN for the Equinix Cloud Exchange, which now features an API platform providing an easy and secure way for enterprises to connect their infrastructures."

"Today, people, enterprises and data are all distributed. This market trend asks for SDN, while SDN is also necessary to support the Internet of Things developments and broader commercial opportunities including Collaboration. Today's enterprises, even the ones at a relatively small scale are operating around the world in global markets. What they are looking for ultimately is the performance and functionality of their applications to an extent that they can be more efficient in their operations. Those are core elements of what SDN is able to deliver."

**HOW IMPORTANT IS 'INTERCONNECTION' FOR THE INTERNATIONAL COLOCATION MARKET, NOW AND IN THE NEAR FUTURE?**

"Confirmed by market research analysts from Gartner and Forrester, the volume of interconnection in colocation will

continue to rise. The colocation market is reasonably global today, but it is going to be even more global in the future. We expect our cars to be connected, our planes and our smartphones, to name a few. That 's why interconnection is core to Equinix's strategy and we are being presented in the market as the interconnection specialist for our customers."

**ARE THERE ANY DIFFERENCES IN EQUINIX'S MARKET APPROACH IN EMEA, APAC AND THE US?**

"We are largely consistent in our proposition across the world, although not completely. European countries are more focused on ISO certifications while in the US they are less ISO minded. And European customers tend to have quite a cautious attitude towards data privacy, more than companies elsewhere in the world."

**WHAT DOES IT TAKE FOR EQUINIX TO DELIVER ON THAT?**

"We continuously have to find the right balance in global execution whilst meeting local requirements. For that,

*Eric Schwartz*

we're dependent on our key supplier partners who enable us to perform. Lots of our customers are in the technology business - fast moving organisations including those in finance, oil and gas industries, being sophisticated users of technology thus very demanding. It helps when our suppliers can meet those high demands, when they're able to work with our enterprise customers helping them implement innovative networking technologies and adopt cloud – whether deploying a private, public or hybrid cloud solution."

**MEDIA ARTICLES ABOUT DATA SECURITY AND BREACHES ARE PILING UP LATELY. HOW DOES EQUINIX GUARANTEE ITS CUSTOMERS OPTIMUM SECURITY?**

"Our physical security is extremely effective, with biometric scanning, badge access control and security measures on several layers. The Equinix facilities undergo periodic third party security and compliance audits while feedback is being processed continuously. Besides that, we're also facilitating customers in need of managed security services through our interconnection platform. Both physically and socially we're able to connect them to data security providers willing to offer their services."

**WHAT DOES THE GLOBAL PARTNERSHIP WITH MINKELS MEAN TO EQUINIX EMEA?**

"I spend a lot of time in our data centres across EMEA and every time I walk through a data centre I see Minkels solutions. It's everywhere and it significantly adds to the energy-efficiency of our data centres. Actually, it's the result of a very prolific partnership. A lot of energy and effort is being put into the relationship by Minkels. This is recognised and very much appreciated, it makes our relationship a special one that goes beyond just orders

and invoices."

"It's very important for us to have a relationship instead of transactions with Minkels, being one of our key global suppliers. This makes it easier for us to establish agility, reliability and flexibility in our data centres and adapt to demanding customer needs. The global partnership with Minkels also helps us to create consistency across a variety of countries. Consistency on a global basis naturally drives efficiency and stability while ultimately providing the business value customers are looking for."

**WITHIN THREE YEARS, DO YOU EXPECT THE INTERNATIONAL RETAIL AND WHOLESALE COLOCATION MARKET TO BE THE SAME OR NOT?**

"We are seeing already a greater number of wholesale colocation providers doing more retail as well. The acquisition of Telx by Digital Realty is just one example. Maybe it's because the US wholesale market is very competitive and companies try to expand the scope of their business. Besides that, in the US, large cloud players such as Google, Apple and Facebook tend to build their own facilities while in Europe they're more willing to rely on wholesale colocation."

**AS DIGITAL REALTY IS STEPPING INTO RETAIL COLOCATION NOW, DOES EQUINIX HAVE ANY PLANS WHEN IT COMES TO WHOLESALE?**

"We're not planning to be in new lines of business beyond our core. Of course, you should never say never as the world can change. The acquisition of professional services company, Nimbo still fits our core strategy, for example. Nimbo works with large companies who want to implement cloud infrastructures. Although it goes a bit beyond colocation sec, we don't actually operate these cloud environments and it's not a prelude to enter the managed services business."

**TO CONCLUDE, WHAT DO YOU EXPECT THE TELECITY ACQUISITION MIGHT BRING IN TERMS OF SYNERGIES?**

"I hope it will help to grow our enterprise customer base substantially. They have some very impressive customer names in their portfolio. We think that the Equinix multi-cloud platform and interconnection options might suit those customers too. A couple of years ago, we launched a Channel Partner Program to expand our global channel and enhance distribution of our colocation and interconnection services to the enterprise market. The Telecity acquisition forms an integral part of those enhanced enterprise market ambitions." ■

# Minkels develops integrated high-density fibre & rack solution for Equinix France

**Innovation and flexibility are important for Equinix France. This puts the data centre provider in a better position to adapt its services to its customers' needs and requirements, which have become more dynamic over time with the advent of cloud computing, virtualisation and big data. According to Equinix France, the successful integrated high-density fibre, housing & monitoring solution from Minkels is the latest proof that the global partnership with Minkels forms an inextricable component of the Equinix proposition.**

## 50U AND 52U RACKS FOR BLADE SERVERS

In 2008, the first Minkels corridor was deployed in one of the Equinix France data centres to create energy-efficiency that meets the global Equinix organisation's savings needs. Over the years, Minkels has worked very closely with Equinix France to provide fully tailored aisle containment systems and hundreds of Minkels racks, which are fully adaptable to the individual and dynamic needs of Equinix customers.

Meanwhile, cloud computing and virtualisation, as well as big data and the increasing interaction between (cloud and digital media) networks, have significantly increased the energy density in the data centres. This forced Equinix France to come up with a new high-density colocation & connectivity solution in 2015, a solution that could support these blade servers in a very energy-efficient manner. The international team at Minkels, including Minkels France and experts from the corporate office in the Netherlands, then designed extra-reinforced 50U and 52U racks that hold 4 blade servers with a capacity of up to 15 kW.

## MONITORING, SECURITY AND R&D

"Our customers' IT challenges demand very flexible data centre solutions," says Mokrane Lamari, Head of Sales Engineering – Equinix France. "Luckily, Minkels has a very strong R&D team. The Minkels team has worked with us very closely to develop this innovative rack and high-density fibre solution, adapted to customers' most demanding needs. This R&D department is closely tied to the Minkels production team and delivers the agile solutions that are necessary to

## Data centre solutions in use

- Server & network racks
- Aisle containment: Next Generation Corridor
- Integrated high-density fibre

meet the evolving requirements of Equinix customers. Their expertise in power, cooling, fibre and housing, along with their involvement, is exceedingly high. Our own engineers, solutions architects and project managers appreciate being able to turn to them. The partnership between Minkels and Equinix is a true strategic partnership in my view."

Minkels R&D developed the extra tall and reinforced racks for blade servers including the cable management solution specifically for high-density network applications. They supplied integrated carrier network core nodes for a total of 800 high density racks in France. Minkels also implemented a monitoring solution specifically made for high-density monitoring, including the placement of

sensors in the racks to measure power, temperature and humidity. What's more, the racks meet the enhanced security requirements that Equinix France demands of its housing equipment for high density applications.

## MINKELS/LEGRAND PRODUCT PORTFOLIO

Equinix France makes use of Minkels Next Generation Corridors to house the high-density racks in an energy-efficient aisle containment environment. The highly modular design in the construction details of this corridor creates the flexibility to provide a seamlessly perfect fit for the extra tall racks. "The IT infrastructures of our customers demand energy-efficiency and flexibility," says Lamari. "That is why we use the Minkels Next Generation Corridors. This solution has a modular design, which makes it easy to customise when it comes to housing storage, robotics and SAN equipment. The tight integration with sensors for monitoring environmental conditions is also particularly important for our activities."

Moreover, the Operations Manager of Equinix France is pleased that the Minkels brand is part of the global Legrand organisation. "We benefit immensely from the combined Minkels and Legrand data centre portfolio. Since Legrand acquired Minkels, we have been able to substantially expand the product catalogue we use. The fact that Legrand is also an Equinix customer naturally makes the relationship extra special." ■

*Mokrane Lamari*

# ESI Group deploys HPC Center in Paris

## with Minkels and Legrand

**ESI Group, world-leading provider of Virtual Prototyping software and services for manufacturing industries, opened a brand new High Performance Computing (HPC) Center in Paris to support its European HPC projects. Minkels and Legrand were jointly responsible for delivering an end-to-end, integrated data centre infrastructure to meet demanding HPC requirements.**

### 50U AND 52U RACKS FOR BLADE SERVERS

The new European HPC Center for ESI Group is located at the Teratec Campus, an ideal data centre location for launching collaborative HPC projects because of its vicinity to Europe's largest HPC Center, the CEA's 'Très Grand Centre de Calcul.' The new HPC Center will act as the company's cloud-based software development and engineering platform serving all ESI offices across Europe.

"The ability to build an intelligent HPC data centre infrastructure able to easily adapt to ESI's evolving needs and computational loads was of decisive importance for selecting Minkels and Legrand," says Vincent Chaillou, COO of ESI Group. "The implementation was successfully completed on time and within budget. It now delivers a scalable, adaptable and reliable infrastructure, ready to anticipate the next big technological challenges, including Big Data evolutions and the Internet of Things."

### MINKELS LED LIGHTING

Minkels France and Legrand, in joint cooperation with Minkels' implementation partner for the French market, Cap Ingelec, provided ESI Group with an integrated and fully customised HPC-ready data centre solution. Modularity at construction detail level makes it a highly scalable and easy-to-customise solution. The small-scale data centre, housed in a re-used building has a high-density power capacity of 20kW


## Data centre solutions in use

- Server & network racks
- Minkels VariCondition H2O cooling
- Legrand UPS
- Legrand switch gear
- Power Distribution Units (PDUs)
- Cable management system
- Minkels LED lighting

per rack, while reinforced metal floor slabs under the racks are installed to fit high-density equipment floor loads.

This new data centre benefits from the energy saving technologies delivered by Minkels and Legrand, reducing the ecological footprint of ESI's activities. This suits ESI's corporate vision of developing sustainable and environment friendly products and services. The Minkels aisle containment solution deployed has an air flow optimisation package included to make sure it's air tight and designed to offer maximum energy-efficiency. The Legrand S2S UPS and Minkels VariCondition H2O water-cooling implemented also make an important contribution to this data centre's energy-efficient characteristics.

A nice add-on delivered to ESI, in line with the company's energy-efficiency objectives, is the new Minkels LED Lighting solution. The LED tube is attached to the top of the racks and uses only 20 watts of energy while able to illuminate the room inside the corridors clearly. Each LED tube has a length of 1.20 metres. It's an easy-to-install solution through the use of magnetic systems and a central connection point for electricity supply.

"ESI is now equipped with a European cloud computing Point of Delivery (PoD) to run state-of-the-art calculations," adds Mr. Chaillou. "We're very happy with the results. It will largely contribute to our successes and engineering studies in the field of Virtual Prototyping." ■

*Vincent Chaillou*

# “The flexibility and customisation options Minkels offers greatly appeal to us”

**EvoSwitch offers co-location services and IT infrastructure solutions for organisations in a secure, scalable IT environment. Since its data centres are located near the largest internet nodes in the world, they are a cost-effective solution for Europe and North America. EvoSwitch places particular emphasis on energy-efficiency. Thus, the financial investment required for hosting business critical IT equipment can be kept to a minimum. With 12,000 $m^2$ or 120,000 $ft^2$ of existing co-location space and options for expansion up to 40,000 $m^2$ or 400,000 $ft^2$, EvoSwitch has been able to rely on Minkels to fit out its data centres for many years.**

## IMPRESSIVE GROWTH

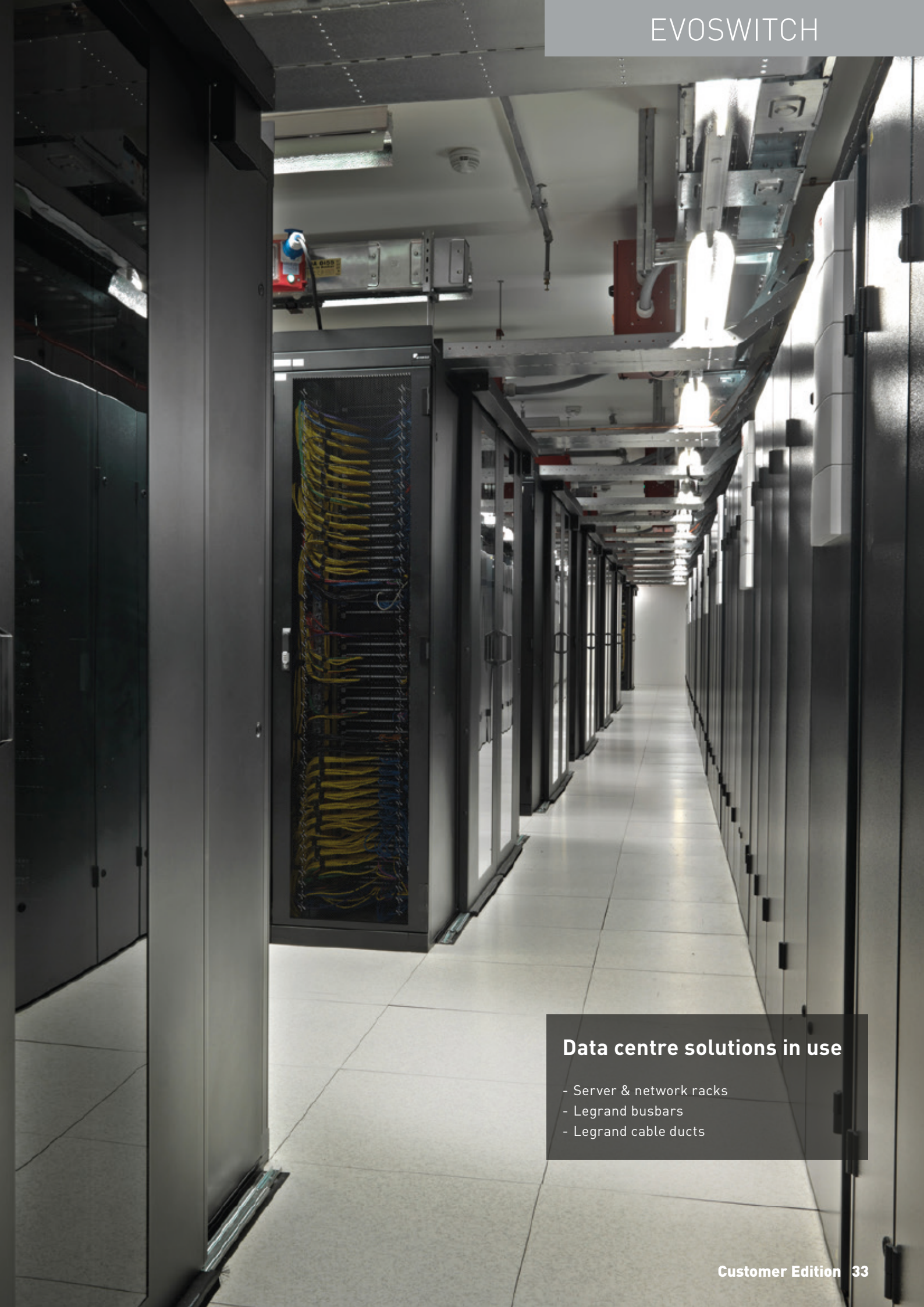
EvoSwitch was established in 2007 and has experienced impressive growth ever since. Eric Lisica, Operations Director EvoSwitch: “We operate a large data centre campus in Haarlem (the Netherlands) with six data halls. We have 25 megawatts worth of equipment here. We also have a presence in the US, in Manassas (VA). Meanwhile, we are studying where the next expansion will take place.”

## AMBITION

EvoSwitch has a varied customer portfolio with a strong focus on the corporate and cloud market. “We work for a large number of hosts, system integrators and cloud providers from all over the world. The market is currently undergoing significant consolidation. One acquisition after another is taking place and that trend will continue for a while. We do not have the ambition to become the biggest, but we do want to be and remain the alternative to the American giants for companies that are looking for capacity in the Netherlands. Our personal approach and focus on service are incredibly important.”

## THE APPEAL OF THE DUTCH DATA CENTRE MARKET

The Dutch data centre market has a high level of appeal to the rest of the world. Eric Lisica also notices this in day-to-day operations. “Traditionally we have the four main internet nodes: Amsterdam, London, Frankfurt and Paris. None of those nodes has experienced the same



## Data centre solutions in use

- Server & network racks
- Legrand busbars
- Legrand cable ducts

growth as Amsterdam. The growth in Paris has stagnated somewhat over the past one and a half to two years. Frankfurt is dealing with high energy costs. Real-estate is particularly expensive in London, and how will the Brexit affect London? That's a whole different story. Therefore, Amsterdam is a great alternative for companies that are looking for a location to establish operations in Europe."

## MODULAR GROWTH

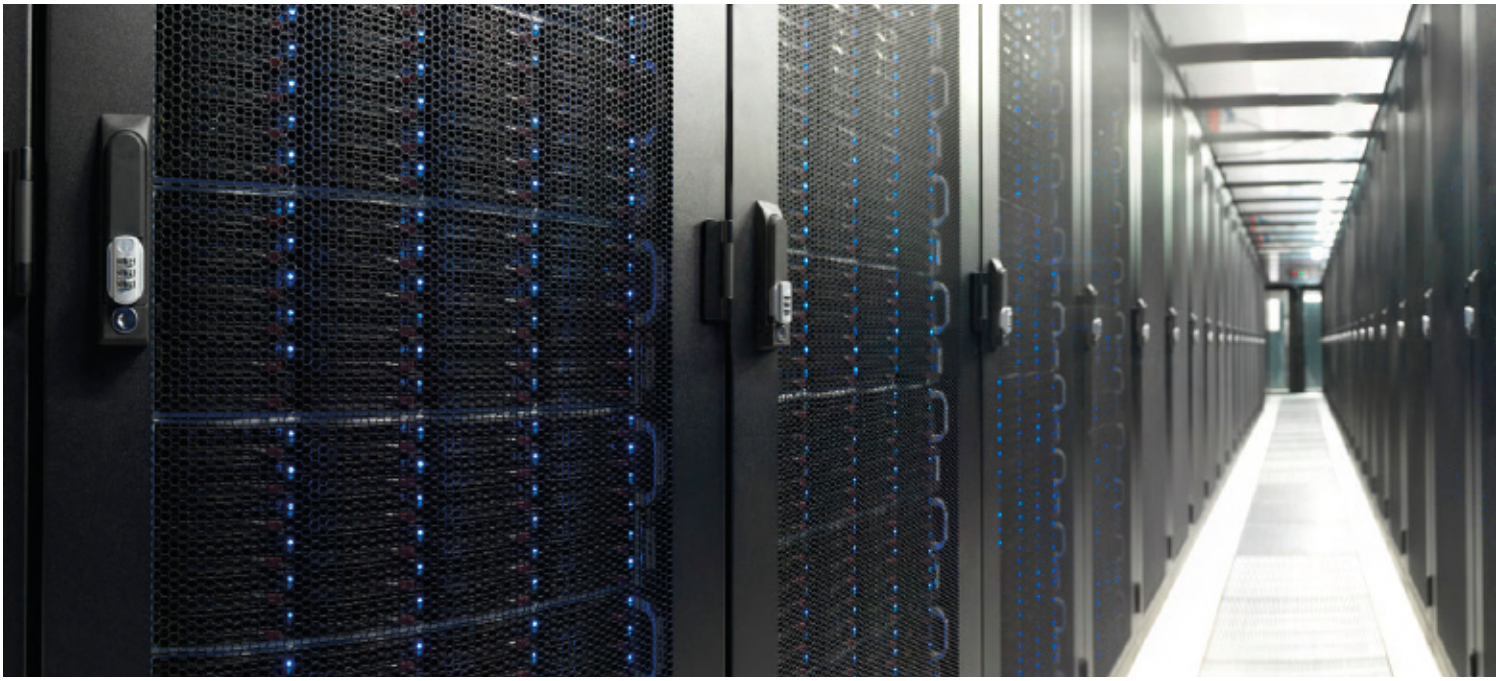
EvoSwitch is well prepared for future growth. "We now have a building in Amsterdam. We also have enough property in Haarlem and access to funds to continue development. The sixth hall that we built in Haarlem was built based on our own modular concept and it is highly energy-efficient. A key benefit of this modular concept is how quickly we can add capacity. We can deploy a new module whenever the need arises; a layer for IT and an integrated layer for the complete data infrastructure including UPS, fire extinguishing equipment and cooling units. The Minkels racks fit perfectly within this modular concept. Racks are normally installed based on certain width and depth measurements. We can easily deviate from those standard dimensions to meet a customer's specific needs. Therefore, the flexibility and customisation options Minkels offers greatly appeal to us."

## FLEXIBILITY AND SPEED THANKS TO BUSBARS

EvoSwitch also works with Legrand busbars, tap-off boxes and cable ducts. "The busbars give us flexibility in terms of power supply and they provide an excellent price-quality ratio. We do not need to install a whole new set of cables for every new customer. Everything can be set up within the same structure. This is the flexibility that works for us and we can help our customers right away. We recently migrated a customer from one data hall to another, while also increasing the capacity. The customer was online in no time."

## DEVELOPMENT IN FULL SWING

EvoSwitch continues to focus on development. Eric Lisica: "We recently launched the EvoSwitch OpenCloud. With this service we can offer customers an open cloud infrastructure. Customers can build their private cloud with EvoSwitch and simply connect to the large public cloud providers. We have high expectations of this service. We will also keep focusing



on our USPs, which is important in this day and age. For instance, we have trained technical personnel on site 24/7. A customer who calls after hours from any location is not connected to a regular helpdesk employee. The customer is connected to a qualified engineer who is available to discuss solutions with the customer and to walk directly to the rack if necessary. Customers like being able to rely on local people with knowledge and expertise who can physically walk over to the systems and help them. Talking about customers, we are a happy Minkels customer. And that will not change as long as Minkels continues to deliver the flexibility we experience today."

*Eric Lisica*

# Freightliner

## chooses Comms Room Services to implement Minkels' server room solution

**Freightliner, a leading global rail freight company providing logistic services, has chosen UK-based Comms Room Services to implement a fully integrated server room infrastructure based on Minkels products. Minkels was chosen for its high reliability data centre products and its capability of providing a fully customised and integrated solution.**

Freightliner experienced a fire in the building directly underneath the room that housed their server room. This resulted in the renewal of the server room and therefore provided them the opportunity to implement a data centre infrastructure of the highest quality using standard products available in the data centre market. Comms Room Services, a UK based provider of server room and data centre design and build projects, recommended to Freightliner's IT Management an integrated and flexible data centre infrastructure utilising Minkels' modular, row-based cooling solution.

"Having experienced fire in their server room, Freightliner's IT Management could see the advantages of solely selecting high quality data centre products for the new build," said Mark Allingham, CTO and co-owner of Comms Room Services. "Freightliner was dedicated to achieve a 100 per cent uptime for their new facilities, to ensure resilience and continuity in their IT environment. Minkels' products ideally suited these high expectations."

### LOW FLOOR-CEILING HEIGHT

The new server room, a prefabricated building with only 35 square metres of total space available, provided Comms Room Services and Minkels with some restrictive conditions. "Given the space constraints of the room, the modularity of Minkels' self-contained hot aisle enclosure with built in air-conditioning and UPS systems proved to be a valuable contribution to the project," said Mark Allingham. "The low floor-ceiling height made it a challenge to set up the right airflow pattern. To get around that issue, the Minkels products were ideal for it without intensive engineering."

Minkels delivered a customised hot aisle containment solution, an enclosed aisle


## Data centre solutions in use

- Aisle containment
- Minkels Archimod UPS
- Minkels VariCondition DX row-based coolers

with airflow optimised 19-inch cabinets. Minkels VariCondition DX row-based coolers – inverter-driven units – were used for energy-efficient, targeted and space saving cooling of Freightliner's equipment. Another space saving feature included the implementation of a Minkels Archimod UPS which has modularly structured power capacities from 20 to 120 kVA. The Minkels UPS is located inside the aisle containment solution, which provides not only simplified connectivity but also blends seamlessly in with cabinet housings and provides a unique setup in the market with comprehensive server room advantages.

### MINKELS MODULAR UPS

"This all-in-one modular Minkels UPS system, a fully populated and generator backed UPS, provides Freightliner with great synergy between their power supply and the aisle containment system," said Allingham. "Together with our implementation of an Argonite fire suppression system, electrical installation and an environmental monitoring system, this provides Freightliner with a fully customised and integrated server room solution."

Comms Room Services is a long-term partner of Minkels in the UK. Mark Allingham: "Minkels is a good quality solution provider within the global data centre market. Minkels products are best of breed, and their installation team is also fantastic. Again, this data centre project was done hand in hand with Minkels engineers and Freightliner is very pleased with the results." ■

*Mark Allingham*

# GB Muri modernises existing data centre and lowers fixed costs

**GemeindeBetriebe Muri (GB Muri) is a Swiss regional multi-utility company supplying gas, water, sewerage and telecommunication services. In the field of telecommunications, GB Muri supplies both corporate and private customers with internet, television, land lines and mobile services. GB Muri's existing data centre is housed in a dated building. This made upgrading the existing data centre quite a challenge. GB Muri now profits from an efficient data centre with a high availability and lower fixed costs. Minkels Magazine spoke to Fabian Künzi, Head Telecom GB Muri, about the developments in the telecommunications market and the necessity of modernising the existing data centre.**

## MARKET POSITION

GB Muri is able, through its professional services and customer focus, to position itself as an attractive supplier of internet, television, land lines and mobile services in a regional telecommunications market. Fabian Künzi, Head Telecom: "As a supplier of infrastructure and telecommunications services, we understand the needs of our customers and ensure a high quality of service. We primarily offer products from Quick Line AG – a leading full-service provider of entertainment and communications. Thanks to a complete portfolio, we have been able for years to expand our market share with both private and corporate customers."

## SYNERGY

The competition within the telecommunications market is tangible. "Companies must strengthen their USP's in order to survive in these competitive times. This also influences the costs and thus GB Muri is always looking for potential synergies. We have reached synergy through the product portfolio of Quickline AG, amongst other things. On the other hand the declining margins in the market are forcing companies to consider better or newer services."

## OWN DATA CENTRE

As a distribution network operator, GB Muri has owned a data centre for years now. "Because of the changing customer demands in the field of availability of telecommunication services and an updated risk analysis, our board of directors came to the conclusion that the infrastructure in the data centre should be modernised. We want to make the infrastructure that is not in use available to customers. By also offering our customers co-location services, the fixed costs in the data centre can be reduced."

## MODULARITY, QUALITY AND PRICE DECISIVE FACTORS

After talking to partners, the name Minkels continued to come up. "We then contacted Minkels, but also talked to a number of other suppliers. We wanted a data centre with a focus on availability. In addition, we also wanted a data centre in which investments would be scalable and the fixed costs could be lowered. In the end, the combination of modularity, quality and price were decisive. This way we have the best of both worlds; we have our own data centre and we can lower the fixed costs by offering co-location services."

## Data centre solutions in use

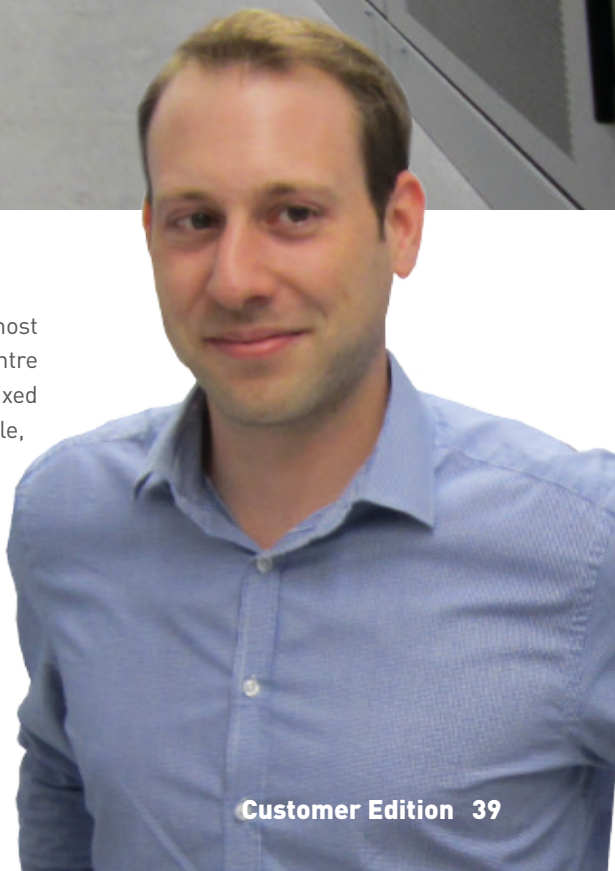
- Server & network racks
- Aisle containment
- Minkels VariCondition H2O cooling
- Cable management system
- Power Distribution Units (PDUs)

### OLD COMPANY BUILDING

The existing data centre is located in an old building. "This makes the installation of, among others, enclosed cold aisles more complex. The enclosed cold aisles separate cold and hot airflows in an energy-efficient manner. In addition we have H20-coolers, racks, cable trays and PDU's in the facility, among others. But by far the biggest challenge of the project was remodelling while the existing data centre was still in operation. Continuity was constantly a top priority during the remodelling."

### RESULTS

In the meantime the project has almost been finished, with an efficient data centre with a high availability and lower fixed costs as a result through, for example, the offering of co-location services. "We expect savings of around 20% to 25% on our fixed costs. Now that we are fully operating, the focus lies on the training of employees. We expect nothing but good things of the future." ■



*Fabian Künzi*

# Sustainable data for the Krimpenerwaard

**Since December 2015, The Krimpenerwaard municipality has a new data centre in Lekkerkerk (the Netherlands), from which virtual work places are offered and in which the data of the municipality is kept. The data centre was built by Minkels Solution Partner All IT Rooms, who placed an aisle containment. This results in a sustainable data centre, with which Krimpenerwaard is ready for the future.**

## PRIMARY DATA CENTRE

The municipality Krimpenerwaard's primary data centre is located in Bergambacht (the Netherlands). "At this moment we offer 500 work places from this data centre. In practice, we use about 350 to 400 of those work places on an average day", says Marco Lingen, senior system and application manager for the Krimpenerwaard municipality. "We also host all of the municipality's data in this data centre. We have deliberately chosen to host all of the data in-house this is due to privacy considerations. After the opening of the new data centre in Lekkerkerk, the data centre in Bergambacht will serve as a fall-back location." The new Lekkerkerk data centre is provided with modern equipment and the newest techniques. "Because of this the location will take over the function of primary data centre. As the data centre is based in the same building as our ICT department we are able to reach the centre faster, which simplifies management."

## ALL IT ROOMS

In the preliminary stages of planning it already became clear that there is an enormous amount of choice in the area of appliances, suppliers, cooling techniques and combinations thereof. Henk Verveer, advisor automation for the Krimpenerwaard municipality: "For us, it was not doable to make a well-substantiated choice between these products, as we simply do not know the market well enough. It is not our daily work, after all. In the end we granted the project to All IT Rooms after a 'Best Performance Purchase tender'. With a 'Best Performance Purchase' you ask suppliers to propose the best solution within the set functional demands and the available budget. For this, we set demands in the field of availability, safety and redundancy. We mainly looked at the approach taken, the results, the functionality and the completeness of the solution."

## THE BEST SOLUTION WITHIN THE AVAILABLE BUDGET

Thus, when using a Best Performance Purchase the selection does not depend solely on price, but on what is the best solution within the available budget. "We give suppliers room to think with us. For example, does a supplier feel that we may profit from a solution which we did not ask for? Then they can include this solution as part of their tender, as long as they do

# centre municipality

not exceed the budget because of this", Verveer says. "This has led to us actually receiving more than we had initially asked for and had expected during this project. For example we now possess a closed hot aisle, which we did not see as an option beforehand, considering our budget."

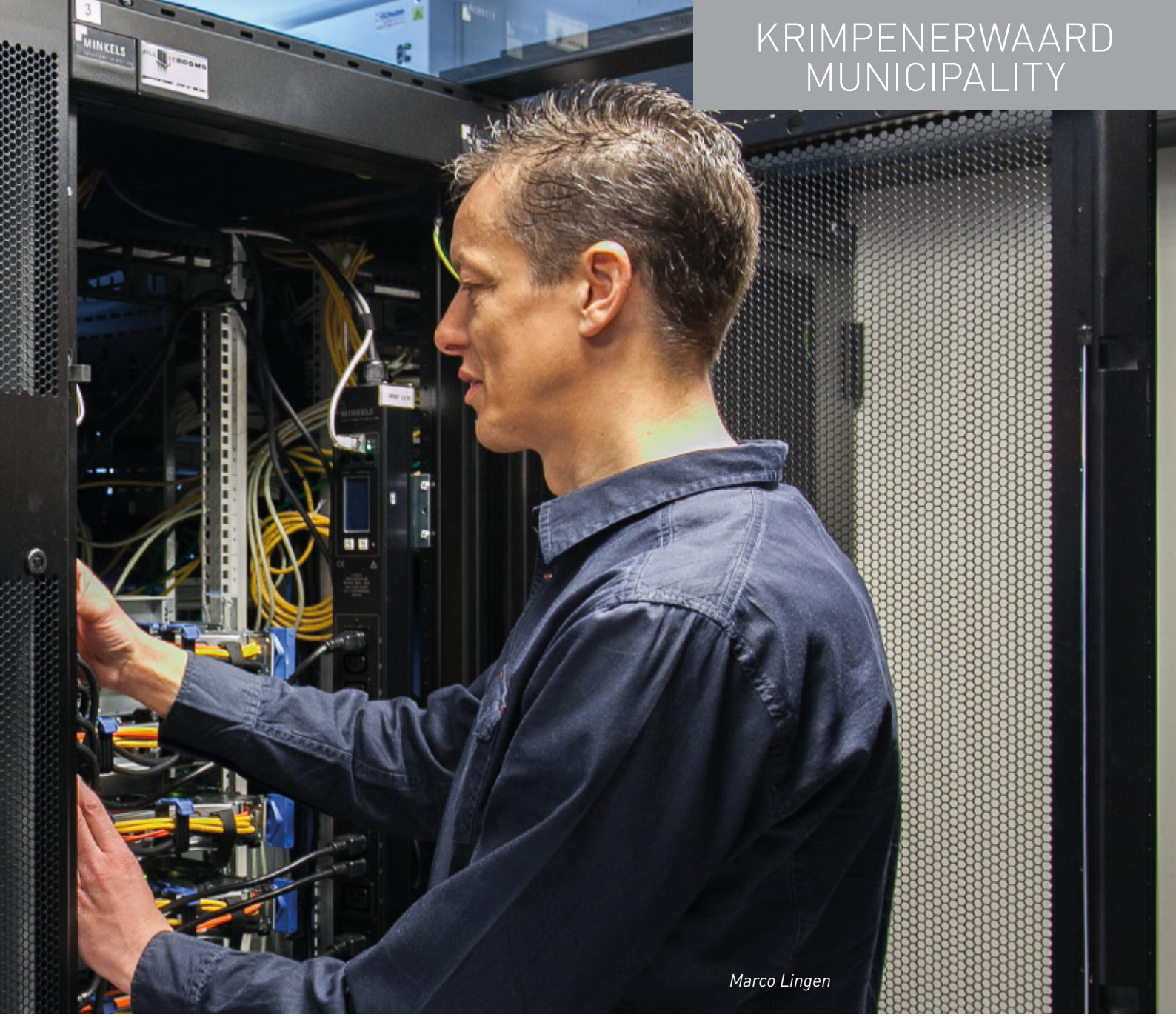
## ROW-BASED COOLING

The data centre in Lekkerkerk is provided with two rows of Minkels server cabinets, in which row-based cooling is applied. Together these rows form a hot aisle, which is closed off by a glass roof and a sliding door. "This ensures a good air circulation in the data centre. Hot air is suctioned from the hot corridor, after which the cool air is blown back into the data centre", says Lingen. "The choice of a hot corridor arises from the municipality's demand for a sustainable solution. With a solution like the hot corridor, sustainable and energy-efficient cooling is possible", Ronald Kok, director of All IT Rooms, explains. "Many other parties choose to supply cooling with overcapacity. However, this stands in the way of energy-efficiency. If the cooling is working at, for example, 10 percent of its maximum capacity, it can never perform in an energy-efficient manner, and the same goes for the UPS. In addition, overcapacity asks for a large initial investment, which can be avoided by accurately assessing the needed capacity."

## Data centre solutions in use

- Hot aisle containment
- Server & network racks
- Row-based cooling


*From left to right: Marco Lingen, Henk Verveer and Ronald Kok*




*Marco Lingen*

## ACCURATELY CALCULATING THE NECESSARY CAPACITY

All IT Rooms has collected much data from other data centres which they monitor real-time. Kok: "Because of this we could trace how much cooling capacity comparable data centres of other municipalities need and how the capacity demand has developed over the years. This data shows that in many cases the necessary cooling ability decreases through the years, instead of increasing like one might expect. After all, IT Equipment is becoming more and more energy-efficient. Therefore we have chosen for an initial cooling capacity of 10kW which can be expanded modularly. We can monitor the data centre continuously and in real time. When, for example, unexpected temperature increases or problems with the power supply occur, we are immediately warned. We can also proactively advise customers with regard to preventive maintenance and measures to prevent failures."

## NOW OPERATIONAL

The Krimpenerwaard municipality data centre has been operational since April 2016. "The coming period we will focus on transferring the functions of our current primary data centre in Bergambacht to the new data centre in Lekkerkerk. We are doing this under our own management", says Marco Lingen. "We deliberately chose to leave space in the data centre. If we want to expand its capacity, we can easily add extra cooling technology, servers and other equipment." ■

# Minkels global rack supplier Hitachi

Hitachi Data Systems was looking for a supplier at the end of 2009, who could supply high quality data centre racks. Hitachi wanted the racks to house and transport its own data storage systems. Meanwhile, Minkels has been the sole rack supplier for Hitachi in a number of regions throughout the world.

*Paul Veldkamp*

**Data centre solutions in use**

- Customised racks

## QUALITY

"The Hitachi brand name stands for quality, Minkels' product and service quality are a perfect fit," says Paul Veldkamp, Director Global CTO of Hitachi Data Systems. "The workmanship of their data centre racks is superb and it matches well with the highly valued Hitachi product. The modular design of their racks also offers many configuration adjustment options."

## CUSTOM WORK

Hitachi asked the engineers from Minkels to design a completely new rack for its high-end data storage systems. Veldkamp: "Minkels designed the necessary custom details, specifically for our high-end solution systems. Their engineers came up with a click system in order to easily match the sizes in the data centre rack specifically to our equipment. I am happy that they help us to come up with ideas and to quickly turn those ideas into actions. Since we started using the Minkels racks, we now have a lot less damage due to transport. The racks provide a lot of stability and our customers are very satisfied."

## MODULAR AND FLEXIBLE DESIGN

Minkels has been supplying Hitachi Data Systems with different types of racks for years now, including racks for high-end solutions. These are racks that are easy to transport. They are designed to handle high dynamic loads. The racks have a modular design and can be easily modified to meet the needs and requirements of Hitachi. Minkels' engineers are at the disposal of Hitachi on a daily basis, ready to respond to any questions and/or issues.

# ‘From the Ground to the Cloud’ with Interoute

**Under the motto ‘From the Ground to the Cloud’, Interoute offers Connectivity, Communications and Computing services from their reliable and secure cloud platform. This platform consist of 15 data centres, 17 virtual data centres and one of Europe’s largest fibre optic networks and connects to all major business hubs across the globe. Interoute chose Minkels as supplier for their data centre in Amsterdam. An interview with Alex Loobeek (Manager Field Operations Interoute).**

## UP AND RUNNING

At Interoute, Alex Loobeek (Manager Field Operations) is responsible for among others the fibre optic network in the Benelux. “This means that I constantly work on the management and expansion of the fibre network, but I’m also responsible for the data centres and the technical locations. Me and a team of engineers make sure that all facilities are always up and running – from cooling to power. A must in this sector.”

## FROM HOSTING TO NETWORK SERVICES

Interoute provides its customers with Connectivity, Communications and Computing services. Loobeek explains: “We offer our customers hosting services. They can make use of our servers and decide whether we manage the environment or that they do so themselves. We also provide fibre services at transmission level. Thanks to fibre, we can offer a wide bandwidth and long transmission distances. For example, when a customer requires a connection between Amsterdam and Madrid, we can simply plug the customer into our local data centres. We also provide network services on the fibre network. We link our global network to local parties, for example KPN and Tele2 in the Netherlands and Telefónica in Spain.”

## DISTINCTION BY PRIVATE NETWORK

Interoute’s private network creates a striking difference from the competition, according to Loobeek. “If a customer buys hosting services from for example Microsoft or Amazon Web Services, they make use of the Internet. At Interoute we do not use an open network. We make use of our own closed MPLS network. That provides our customers with extra security.” The Interoute customer portfolio is enormously diversified: from global to local, from large to medium sized companies. “We mainly work for the profit sector, including some very well-known companies. One of the names that appeals to the imagination, probably is the UEFA.

## Interoute – Facts

70,000 kms lit fibre
15 hosting data centres
17 virtual data centres
33 colocation centres
126 cities
29 countries
10 subsea landing stations
15 languages supported

## Data centre solutions in use

- Server & network racks
- Row-based cooling
- Hot aisle containment

Almost all applications and systems for the management of the Champions League and the European Championship are hosted and managed in our cloud network. Including the website UEFA.com and the core application FAME (Football Administration and Management Environment)."

### 15 DATA CENTRES IN EUROPE

For the delivery of its services, Interoute's data centres play a major role, says Loobeek. "We have 15 data centres in Europe. The most important ones are located in the Netherlands, Germany, France, Switzerland, Spain and the UK. Since that's where most of the 'traffic' takes place. Despite the far-reaching standardisation, each

*Alex Loobeek*

country makes its own choices for the design of the data centre." For Loobeek, Minkels was a logical choice as supplier for the data centre in Amsterdam. "After submitting an RFP, Minkels was selected. Minkels offered value for money and the flexibility and reliability we were looking for. The solutions – from cooling to racks – are always delivered quickly. Therefore, I want Minkels to be our data centre supplier in Belgium too."

## FOCUS ON ENERGY-EFFICIENCY

Interoute has a data centre in Amsterdam of 2,000 square meters, of which currently 1,200 square meters is being used. Loobeek explains: "The data centre has a PUE of 1.45 and a capacity of 2 Megawatts. Energy-efficiency is becoming increasingly important for us. Everything that we build, we realise as efficient as possible. For example, in Amsterdam we are using a very efficient cooler. When it's 2 degrees Celsius outside, the cooler only uses 10 kW but cools 200 kW. The PUE is about 1.05. But that is only a snapshot. In the summer, cooling is less energy-efficient. Minkels has helped us to select the right cooler. Based on our data, application, and air and water conditions, various scenarios were developed with different coolers. Based on these calculations, we have selected the cooler that works most efficiently: maximum cooling power versus power consumption and investment."

## HOT AISLE CONTAINMENT

Besides row-based cooling, Interoute opted for hot aisle containment. "By separating hot and cold air flows we can further increase our energy-efficiency. In addition, we can work very scalable. We do not completely equip a room of e.g. 150 square meters immediately. We begin with about a quarter of the space and place 20 racks. From there, we expand if the demand is there. Because of the modular design of among others wall panels, roof panels and doors, equiping a room works the same every time – and that's very helpful." ■

# An interview with MainOne

## West Africa's premier connectivity and data centre solutions company

**MainOne, the premier connectivity and data centre solutions company in West Africa, blazed a trail in Africa with the construction of West Africa's largest Tier III+ Data centre, MDXi. MainOne's data centre is the premier carrier-neutral co-location facility in West Africa because it is the only data centre to have attained PCI DSS, ISO 27001 and ISO 9001, and recently the SAP certification for Infrastructure Services for SAP® solutions. MainOne has blue-chip financial institutions, oil and gas, and fast moving consumer goods companies operating out of their data centre. In addition, they are the data centre of choice for international operators and content providers who have chosen to establish a presence in Nigeria. Minkels Magazine spoke to Ms. Funke Opeke (CEO) and Mr. Egomaron Jegede (Technology Projects Manager) about the companies' impressive achievements.**

### HOW IS THE AFRICAN DATA CENTRE MARKET DEVELOPING?

The African data centre market is growing rapidly, largely driven by increased adoption of ICT, availability of fibre infrastructure to provide high speed connectivity, and an upsurge in mobile broadband. The African data centre market currently boasts over 42 data centres; South Africa is leading the continent with 19 data centres, and an estimated 100,000 sq.m. of floor space as of 2014, followed by Mauritius, Nigeria, Morocco and Kenya. With increased infrastructure development in the region, data centre growth on the continent over the next five to ten years will be a cumulative 100 percent, with South Africa


*Mr. Egomaron Jegede*

in the vanguard, and Nigeria coming closely behind. Our current focus is the largest and most mature market in the region, which is Nigeria, accounting for 47% of the regional population and with over 80 million internet users."

### CAN YOU TELL US MORE ABOUT MAINONE?

"MainOne currently operates the largest purpose built brick and mortar data centre facility in West Africa and the only data centre in Nigeria certified to PCI-DSS and ISO 27001 standards. Our facility is also certified as a SAP Infrastructure provider data centre. We partnered with other global companies too such as Microsoft, EMC and Cisco, to provide innovative value-added services. In addition, we are a carrier-neutral facility and the best connected data centre in the region with access to all major operators in 8 countries in West Africa, access to leading internet peering exchanges including London and Amsterdam and direct access to 4 submarine cable networks and numerous satellite gateways hosted at our facility. Our leading infrastructure investments enabled us to drive Internet use and the emergence of Internet enabled business models across the region."

### WHAT DOES YOUR DATA CENTRE LOOK LIKE?

"The data centre is a 3500 sq.m. building spread over two floors with the ground floor hosting work areas – a Global Network Operating Centre (NOC), Office spaces and dual power rooms. The first floor hosts dual network rooms, a staging room and two data halls with 1500 sq.m. whitespace to host 600 customer racks. Rack power density is designed to include a mix of 20% high density (Above 5kW) and 80% low density (3kW) per rack. It is designed to meet ANSI TIA 942 and Uptime Institute's Tier III certification standards ensuring redundancy for all critical Data Centre equipment with no single point of failure."

*Ms. Funke Opeke*

### WHY DID MAINONE CHOOSE TO UPGRADE THE EXISTING DATA CENTRE?

"MainOne observed a strong market demand for a world class, carrier-neutral co-location data centre when many of our connectivity clients insisted on hosting their equipment in our Lagos Cable Landing Station in 2012. The market demand rapidly outstripped our existing co-location space within our Cable Landing Station and necessitated the construction of a purpose built Tier III facility with 600 Rack Capacity. We developed the Lekki DC (MDXi) over 24 months and launched in January 2015 with rapid expansion of the existing infrastructure to keep up with customer demand."

### WHY DID YOU CHOOSE FOR AN AISLE CONTAINMENT SYSTEM?

"MainOne, in search of best of breed solutions, conducted a global search for a more flexible Cold Aisle Containment System (CAC) to accommodate the various needs of our global customers with racks of varying widths and heights. We considered manufacturing in China to meet our specifications and also direct purchase from various OEMS. A global evaluation followed: all top industry players, custom CAC vendors and local manufacturers were evaluated to provide racks, Cold Aisle Containment, PDUs and accessories for customers at our data centre."

### WHY WAS MINKELS CHOSEN?

"Minkels met our requirement to provide a cold aisle containment solution: flexible concerning rack width and height, able to accommodate a free standing 47U solution, and lend itself to caging. In addition, Minkels has the technical ability to understand our requirements and quickly make custom engineering modifications based on experience with many of our global customers. Minkels was very responsive and precise in communicating what they could provide and competitive in the pricing of their solution. The commitment to a quality product and providing advice clearly based on a wealth of experience in the data centre space further contributed to Minkels being chosen."

### WHAT HAS BEEN ACHIEVED?

"We have successfully deployed the cold aisle containment solution and custom support frames to meet the requirements of our international co-location customers who will be deploying their server racks shortly. This is a first in West Africa and a notable achievement continuing the trend of MainOne innovating and delivering world-class solutions. Minkels was quite helpful with the provision of videos towards installation, an easy to understand manual for our first time installers and regular follow up by their team to ensure the deployment was successful. We look forward to further business with Minkels. Several of our international clients that are already using Minkels racks, are very pleased because of the seamless integration between their standard and custom racks deployed within our Minkels CAC. Feedback from our customers is that they are impressed with the Minkels CAC and it makes the decision and process of co-locating with us easier."

### WHAT DOES THE FUTURE HOLD FOR MINKELS AND MAINONE?

"I believe there is great opportunity for future business between Minkels and MainOne as we drive the growth of the data centre market in West Africa. We are currently ordering racks from Minkels with cable management accessories for 2 global multinational customers and are in discussions to further explore Minkels products for other current and future needs. Given the success of this first-of-its-kind custom CAC deployment, we are in early discussions exploring the possibility to partner in the further deployment of Minkels solutions across MainOne's MDXi datacentres to ensure we remain very competitive in a dynamic and growing market." ■

## Data centre solutions in use

- Server & network racks
- Aisle containment
- Cable management system

*Photographer:*
*Ms. Oluwafemi Akintilo*

# French ministries move data centres to Paris skyscraper

**The French 'Ministry of Environment, Energy and the Sea' and the 'Ministry of Housing and Sustainable Living'[1] faced a radical data centre challenge... Moving their data centre and IT infrastructure from two sites to one location – a skyscraper right in the business district of La Défense in Paris. Maxime Goepp (subsidiary Head of Operations) explains how the ministry handled the project.**

## DATA CENTRES IN BORDEAUX AND PARIS

The French 'Ministry of Environment, Energy and the Sea' and the 'Ministry of Housing and Sustainable Living' operate from data centres in Bordeaux and Paris. "In these two data centres, we are hosting information concerning housing, urban planning, sustainable development and the management of road infrastructure", says Maxime Goepp. "In Paris we mainly manage the mailboxes – about 100,000 – of the ministries, human resources, accounting, different types of IaaS and SaaS offers, as well as the directories and other office automation."

## PARIS: FROM TWO DATA CENTRE LOCATIONS TO ONE

In Paris, until recently, the ministries had access to two computer rooms in the business district of La Défense: one of hundred square meters in the basement of the 'Grande Arche' and a similar one in the 'Tour Pascal' (Pascal Towers). "When the French state purchased the 'Tour Sequoia' – a skyscraper of 119 meters high in La Défense – it was decided to try to resettle our IT in this new building. This meant not only that we had to close our two existing sites in La Défense, but also that we had to move our data centre and IT infrastructure."

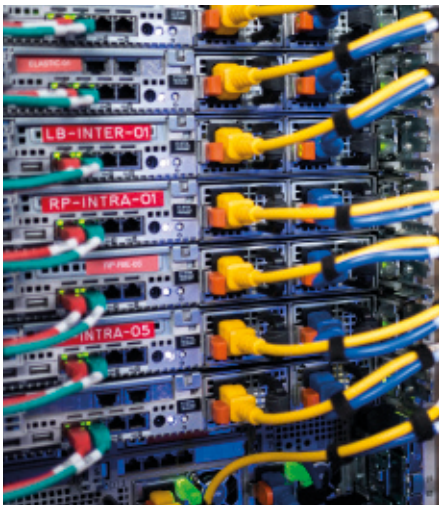
## FEASIBILITY AND TRUST

A feasibility study and an extensive selection process followed. "We talked to several manufacturers, but also conducted multiple sites visits of existing data centres previously supplied by those manufacturers. Eventually eight parties were involved in the selection process. These parties were partnerships between IT / data centre manufacturers (e.g. Legrand Minkels) and installers. The entire process – from the first appointment to the third selection round – took over a

(1) In French: 'Ministère de l'Environnement de l'Energie et de la Mer' and the 'Ministère du Logement et de l'Habitat Durable'


## Data centre solutions in use

- Server & network racks
- Hot aisle containment
- Power Distribution Units (PDUs)
- Drop Away Panels
- Cable Management system
- Legrand fibre


year to complete. Eventually, Minkels and Cap Ingelec were selected. They were providing the best integrated solution on a cost/efficiency ratio."

## FLEXIBILITY AND TURN-KEY SOLUTION

Minkels was chosen because of its flexibility and turn-key solution – from cable management to cabinets, from corridors to PDUs. "What we appreciated enormously about Minkels, was the fact that we had only one contact person during the entire process. Minkels was also very proactive, proposing solutions to the physical limitations of space – especially in height – or the specific expectation concerning the management of network cables within the racks. We particularly loved the solution of pre-connectorised fibre channel housing provided by Legrand. In November 2015, we started the data


centre project and six months later, it had already been finished. Thanks to Minkels, we now have a data centre that has been customised for us and fits our standard. The set-up of the computer rooms is very consistent, easy to work with and has a great look and feel. It's very important for us that we provide an easily understandable working environment, with clear infrastructure patterns."

## TWO COMPUTER ROOMS

The Ministry has set up two computer rooms in the 'Tour Séquoia'; one room of one hundred square meters and another room of two hundred square meters. "The small room is used for the synchronization of the most critical part of the large room. A large part of our architecture is redundantly designed and built with clustering and replication techniques. Minkels supplied all the hardware for the data centre, from hot corridor containers to the PDUs, as well as the Drop Away Panels. In case of fire, the plastic panels of the Drop Away Roof System automatically soften and drop down so that they won't be an obstacle for the water mist system."

## PHYSICAL SECURITY

The ministry has strict requirements in terms of security in the data centre area. "Both access to the confinements and the racks are controlled by an electromagnetic lock furnished by Minkels and coupled with our own badge system. The ministry also has strict specifications in terms of signage in the area. That also goes for the visual identification of the various equipment and the different energy sources. The various types of power supplies, power cables and PDUs come with different colours. Same principles apply to Ethernet and Fibre Channel cables. This increases the identification process of the Power & Data Line dramatically. So our data centre is well equipped – both in terms of security and safety. In the future, as we are discovering how extensive the product range of the Legrand Group actually is, we might make even more use of the Legrand portfolio. Having a single source supplier makes doing business even easier." ■

# NeoCenter Ouest places its trust in the Legrand Group for its data centre in Rochesur-sur-Yon

**The company NeoCenter Ouest (member of the NeoTelecoms group, shareholder of NCO) is specialised in hosting and in fibre optics telecom services for system houses, end customers and operators, and the first neutral host in the Vendée. The company opened a second data centre with 40 racks in Rochesur-Yon (Vendée), after the one it opened in Nantes (Loire-Atlantique). Purpose: respond to a significant increase in the demand from regional customers.**

*Matthieu Langlois*

## A SOLID BACKGROUND AND POSITIVE OPINIONS

"When we first began this project, we already had a long-term partnership with the company Minkels, who supplied us with the aisle containment", according to Matthieu Langlois, Associate Director at NeoCenter Ouest. "We started working with Legrand through them. We also worked with their subsidiary company, S2S Onduleurs, who installed the Archimod 240 kVA ondulator (modular rackable solution), making it easy to add UPSs and batteries as the data centre expands (pay-as-you-grow). Besides, several technicians had nothing but great things to say about the Legrand FDI solutions, therefore, I decided to have a look in that brand's showroom to see whether the products would meet our needs, particularly in terms of rules and operations."

## A POWERFUL STANDARD SOLUTION AND CUSTOM WORK

"In terms of our needs, Legrand introduced its solutions with optical fibre and copper cabling, and with panels that are equipped with powerful 6a connectors that easily exceed the requirements. Because of their rapid deployment and space optimisation, they recommended pre-installed LCS² solutions in LC and MTP for 40/100 Gb and fibre channel. In terms of capacity, these are the HD optical fibre products up to 288 2U fibre connectors. In addition to a solution for modular cabling, Legrand also supplied custom work by developing an optical fibre cassette so that the expansion would progress 4 to 5 times faster than with the old system, whereby installation time is cut in half", cites Langlois with pride. Another innovative solution that LCM (Legrand Cable Management) provided is the EZ-Path firewall module. Thanks to this unit, both high voltage and low voltage cables can be laid from one room to another without having to do without the firewall function.

## VALUABLE SOLUTIONS

"One of the things I really appreciated about this project with Legrand, is that they have worked very hard to understand our needs and to meet our requirements. In addition to their custom products that have been fully integrated in our systems, they provide excellent follow-up and are willing to supply finished products that meet our rules and operating requirements," emphasises Langlois. ■

## Data centre solutions in use

- EZ-Path firewall module
- Legrand fibre
- Legrand UPS
- Aisle containment

# NEP and Minkels

## design mobile data centre for German Reality TV show recording

**NEP (at the time 'Infostrada') received an enquiry from a German broadcasting station about whether the company could provide technical infrastructure and workflow for the live recording of a TV reality show. NEP then decided to partner with Minkels and develop a mobile data centre (MobileDatacentre) and special software (GrandCentral). With this new export product, NEP can now control the workflow of the largest reality show in Germany from its Dutch corporate office in Hilversum.**

Just before Christmas in 2014, the NEP MobileDatacentre was transported on a lorry to Berlin where the reality TV series was being filmed. A team of editors from the German station with more than 200 employees including editors and directors, can record, manage, analyse and edit all content within 48 hours via the mobile data centre, transforming it into a worthy television production. From the control room at the corporate office, NEP can manage the IP-based, digital workflow in the mobile data centre via its software monitoring system, Grand Central, which was developed in-house. The data centre is a closed system with a total of 13,000 management control points, which in the case of the German reality TV series, processes no less than 8 Terabytes of data per day.

### 2.5 MILLION EUROS IN EQUIPMENT

NEP has been a steady Minkels customer since 2011 for racks and aisle containment in the corporate data centre in Hilversum. For this innovative project, the development of the MobileDatacentre, NEP chose Minkels again. "I have built many technical spaces and have had many different data centre suppliers," says Peter Bruggink, CTO and co-owner of NEP. "Therefore, I know exactly what I have to watch out for and Minkels is still the best choice. Minkels is a highly valued and reliable company that delivers quality, just like we do, and that appeals to us."
Downtime was not an option for the new MobileDataCentre. Therefore, it had to be designed with a lot of redundancy. The equipment in the data centre also had to be protected against shocks and jolts because the data centre will be regularly transported by lorry and the ICT equipment is valued at 2.5 million Euros.
In order to provide superb housing for the 140 servers and all other equipment for


## Data centre solutions in use

- Server & network racks
- Aisle containment
- Row-based cooling
- Monitoring system
- Intelligent Power Distribution Units (PDUs)
- Cable management system

audiovisual productions, the engineers from Minkels and NEP shared the necessary CAD drawings with each other – because the design of the infrastructure and the integration of the different data centre components had to be fully accurate, right down to the millimetre.

### INTEGRATED SOLUTION

The final design has thirteen reinforced Minkels 19 inch racks in a Minkels corridor in order to separate hot and cold airflows in an energy-efficient manner. Each rack is redundantly equipped with two Minkels PDUs: intelligent Power Distribution Units for A and B power supply. Furthermore, four Minkels VariCondition DX, row-based cooling systems supply a total of 88 Kilowatts of efficient cooling power. In order to guarantee maximum uptime, NEP has also implemented the Minkels Environmental Monitoring system. Fully integrated with the racks and aisle containment, the Minkels Cable Ducts on top of the racks provide a tidy and efficient system for cable management.

"It is nice to work with Minkels; we have learnt a lot from the knowledge their engineers shared with us," says Bruggink. "In addition, the extreme modularity of their products and the built-to-order custom work from the Minkels factory also played a role in the fast time-to-market of this innovative project. It is wonderful to see the outcome of this partnership. The connection between the intelligent PDUs, the VariControl-S Environmental Monitoring system and GrandCentral, ensures that all 140 servers start up in sequence at the time certain applications are initiated."

"This is the birth of a new export product. This product is not only great for television shows but also for events like the Olympic Games. I expect that the MobileDatacentre will also be deployed internationally for corporate organisations that have temporary peaks in server load." ■

*Peter Bruggink*

# SenseLAN builds on Minkels Vertical Exhaust Duct

**Data centres consume a lot of energy. Up to 30 percent of this energy is used for cooling their infrastructure. Therefore, it is worthwhile to pay particular attention to the climate control solution. The latest addition to the Minkels VariCondition Portfolio is a Vertical Exhaust Duct VED placed on top of each rack. In Switzerland, senseLAN GmbH began implementing this Minkels VED cooling concept in 2015 and is realising a PUE value of 1.15. It was a good move from an environmental perspective and it has reduced the company's costs significantly.**

*Hans Lehmann*

## READY FOR THE FUTURE

SenseLAN GmbH is a service provider that offers 1000m$^2$ of floor space in two data centres in the Canton of Freiburg. While planning the expansion of the infrastructure, it became clear to Hans Lehmann, owner of senseLAN, that Minkels VariCondition VED had to be incorporated in the expansion: "Minkels is in a league of its own when it comes to quality. Their products are first class and their service, from offer to assembly, is outstanding."

SenseLAN decided against raised floors in its data centre because moisture is regulated over the concrete floor. The ceiling is 3.30 metres high and the energy-efficiency targets were very ambitious. This was a case for VariCondition VED! The extendable version bridges a height of 300 to 1600 millimetres between the rack and the suspended ceiling without any mechanical attachments. A rubber sealing mechanism provides an airtight connection, the vertical air duct on the back of the rack routes the warm air to the central cooling unit, and the precision climate control system that fully separates cold and warm air regulates

## Data centre solutions in use

- Server & network racks
- VariCondition VED

the temperature accurately to the degree. This ensures that every server in the rack receives air of the same temperature so that the sensitive technology can be operated economically, while providing high availability.

VariCondition VED can be implemented with racks of different widths and depths. However, in order to achieve a high level of efficiency, all the components must interlock seamlessly. Only the use of Minkels products guarantees maximum air optimisation and energy-efficiency. With up to 2250m$^3$ of hot air exhaust per hour, Minkels has racks with a heat output capacity of up to 25 kW. At this time, the average heat output required is up to eight kW; therefore, with the VariCondition VED, customers are well-prepared for the future.

### A WELL THOUGHT-OUT TOTAL CONCEPT THAT IS GOOD FOR THE ENVIRONMENT

SenseLAN attaches great importance to the environment. Therefore, the data centre has been designed accordingly. With an outdoor temperature beginning at 15 degrees, outdoor air is used for cooling and energy is generated from 100% renewable energy sources, such as the solar energy system with 65 kW of power. What's more, the heat generated by the server equipment is recycled and used for heating the entire industrial and commercial centre next door. This saves about 100,000 litres of heating oil and 195 tons of CO2 each year. Operating costs are reduced, which benefits the customers: the more efficient the data centre, the lower the energy bill.

For the heat recycling system to work correctly, the hot and cold airflows must be completely separated. Therefore, Hans Lehmann puts his trust in Minkels: "We are ISO 14064 certified, precision is our credo. Everything is sealed tight with Minkels, their advice is excellent, deliveries are on time and the installation is perfect. Our data centre is a real gem!" ■

# Swisscom

## relies on Minkels high-density (cooling) racks and monitoring services

**Swisscom, the largest telecommunications company in Switzerland, has its own data centres including Zurich Herdern and Olten. Together, they provide space for more than 1,000 racks that support telephony (mobile and landline), digital TV and internet services. Swisscom attaches great importance to modularity and energy-efficiency in its two data centres. The high-density (cooling) racks, monitoring, and also security are supplied by Minkels.**

The telecommunications market is undergoing rapid change. Telecom providers must be able to respond to new developments, even in the data centre environment. Due to the need for flexibility and capacity, Swisscom opted for high energy densities by implementing modularity within a compact data centre environment for its data centres in Zürich Herdern and Olten.

Swisscom supplies more than 150 services in wired and wireless communications from two fully redundant data centres. Both consumers and business clients are dependent upon the performance in the data centres for telecom and internet services, such Mobilfunk, Festnetz,

Internet and Digital TV. From its data centre in Zürich Herdern Swisscom provides its clients services such as Swisscom TV, as well as landline, mobile and VoIP telephony.

## MINKELS VARICONDITION HD

High energy densities and a strong modular concept are important for Swisscom so that they can maintain the data centre infrastructure for these uptime-sensitive services as dynamic and flexible as possible. The solutions provided by Minkels play an important role in achieving these goals. In Zürich Herdern the racks are stacked in eight groups. Each group has a capacity to connect up to 38,400 fibre cables. This means that up to 2,400 fibre cables can be connected to each rack. Swisscom uses Minkels VariCondition HD – modular racks with integrated high density cooling, monitoring and cable management for energy densities of up to 24 kW for housing its high-density equipment.

The cooling is managed by the Minkels VariCondition HD racks. Cold air is brought in under the floor. The airflows are then routed through the racks using airflow optimisation accessories. The warm air produced by the servers is then removed by exhaust fans in the roofing of the racks. The Minkels monitoring system, with temperature sensors installed in

## Data centre solutions in use

- Minkels VariCondition HD
- Monitoring system
- E-locking

the right places in the rack, ensure a constant climate in the racks and proper management of the cooling system. The temperature difference of 12.5 degrees Celsius between warm and cold airflows provides maximum energy-efficiency in the racks.

Thanks to actively managing the cooling via Minkels VariCondition HD, Swisscom can limit energy usage of high-density equipment and realise significant cost savings. By actively managing climate and energy, Swisscom has been able to double the capacity in its racks. This means that the Swisscom data centre infrastructure is operating at peak efficiency.

## RACK SECURITY

Not only system uptime, but also data security is important for Swisscom. For this reason, the telecommunications company has opted to add additional security to the racks. Minkels supplied electromechanical door handles with IP communication that can only be opened by authorised individuals. Alerts can be sent via SNMP or GSM if the rack doors are opened by an unauthorised user.

Swisscom always selects its partners and suppliers carefully. Expertise, on-time delivery and the provision of solutions are important requirements that Minkels must also fulfil. The professionals of Minkels AG, the Swiss branch of Minkels, ensured an on-time delivery of the requested solutions in close collaboration with other suppliers involved in the data centre project. The modular design of Minkels VariCondition HD provides Swisscom with the guarantee that the data centre environment will fulfil the organisation's needs – even if those needs change due to the dynamics in the telecom market. ■

# University Hospital in
# selects Minkels DX and H20

**The Information Systems department of the University Hospital (UZ – Universitair Ziekenhuis) in Brussels was looking for a solution to resolve the uptime issues in its data centre. The existing CRAC cooling system was the root cause of the problem. A tender was published and Minkels VariCondition H20 row-based cooling was selected. They also chose Minkels when they built a second data centre. That data centre is equipped with Minkels VariCondition DX row-based cooling.**

"The density in the UZ Brussels data centre had increased dramatically over time," says Professor Rudi van de Velde, former director of Information Systems at UZ Brussels – who also serves as a scientist with the Free University of Brussels. "The CRAC cooling with its single point of failure could no longer handle it. The aging cooling system had a negative impact on the data centre's uptime. Therefore, we decided to look for a high-quality, redundant cooling solution and finally encountered NextiraOne, an installation partner of the manufacturer Minkels."

## DATA CENTRE WATER COOLING VERSUS AIR COOLING

The existing data centre of UZ Brussels already had the infrastructure in place in the building for water cooling. "The Minkels VariCondition H20 water cooling solution was the most efficient solution for us in that situation, also in terms of costs," says Van de Velde. "The Minkels DX cooling solution turned out to be a more cost efficient option for the back-up data centre that we built a few kilometres down the road."

Van de Velde is very impressed with the row-based cooling solution that Minkels has delivered. "The CRAC solution required much more cooling power to achieve the same effect. These row-based cooling units are located between the racks – you can't get more direct cooling than that. It not only provides higher energy-efficiency, it has a positive influence on the performance of the equipment, which ensures a high level of uptime and performance. Thanks to the modular structure of the solutions, we can easily scale up and add additional row-based cooling systems to the mix."

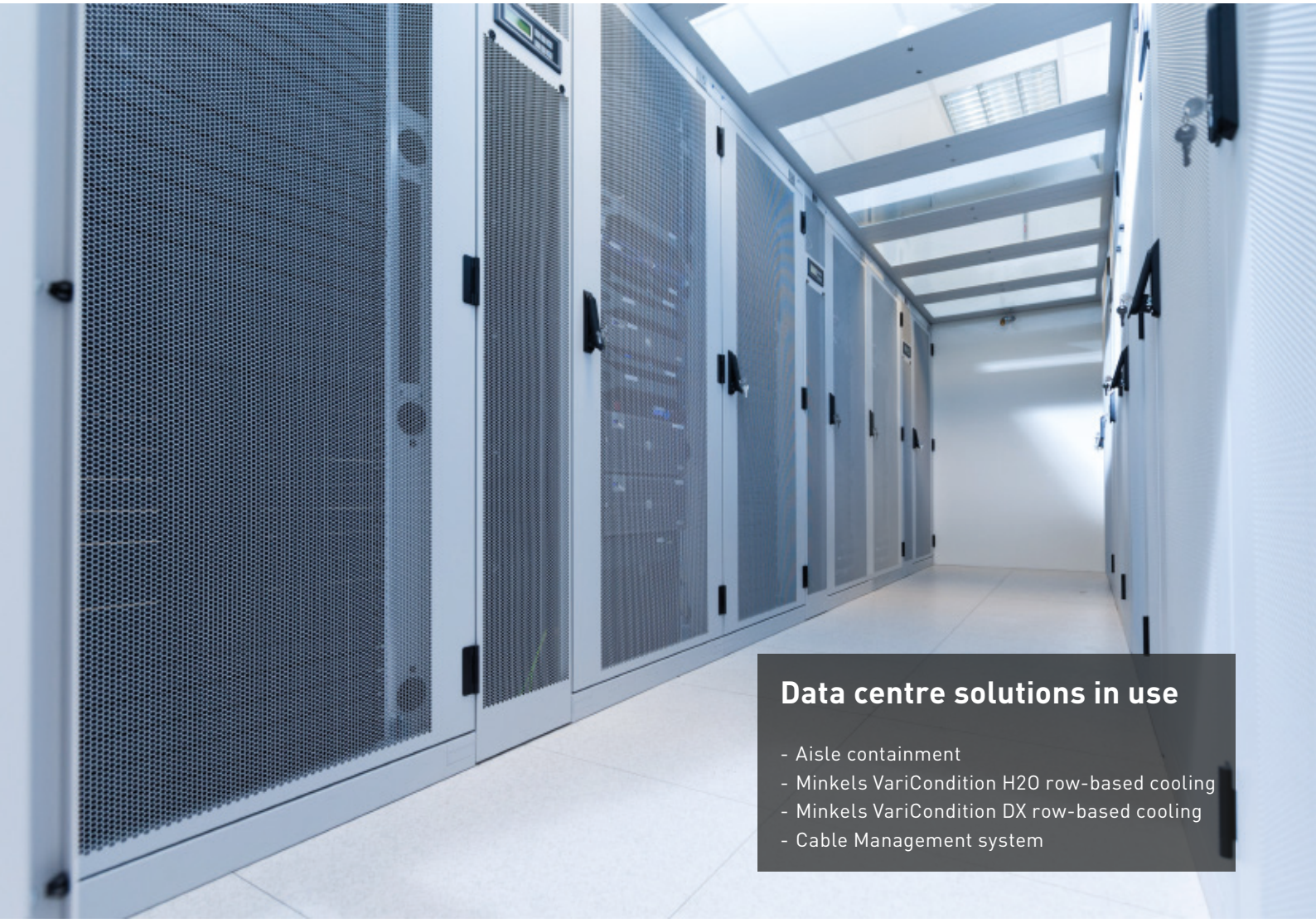
## MINKELS CORRIDORS, UPS AND CABLE ORGANISERS

UZ Brussels didn't only choose Minkels row-based cooling solutions. Van de Velde: "We have also installed Minkels corridors and cable organisers. Minkels provides us with a complete, integrated package."

"The Minkels engineers were on site with the implementation partners to discuss our needs," says Van de Velde. "This is not always the case. Many manufacturers don't know how their products are actually implemented in the field. The Minkels engineers have given us very valuable advice, from design to implementation. Not only on paper, but also on the floor. Minkels then built specific components for optimum integration in the project. That is also one of their strengths, that they can produce custom data centre solutions."

"The data centres have a very redundant cooling capacity with the Minkels DX and

# Brussels
# row-based cooling



## Data centre solutions in use

- Aisle containment
- Minkels VariCondition H2O row-based cooling
- Minkels VariCondition DX row-based cooling
- Cable Management system

water cooling solutions. We no longer have outages due to cooling failures and the reliability of our data centres has increased dramatically."

In 2013, Professor Van de Velde reached the pensionable age at UZ Brussels. He still works for the Free University of Brussels as a scientist and continues to share his knowledge in technology. "In the long-term, I expect that data centres in Europe will be consolidated even more than they are now," cites Van de Velde. "The developments in cloud computing will have the necessary impact and hospitals will also feel the effects. Healthcare budgets in Europe are under a lot of pressure. This means that not all hospitals will set up their own data centres. Certain components will be outsourced more often to centralised data centre environments." ■

# Pioneer Vancis:

## a modern data centre for the past thirty years

**Vancis is a high quality IT service provider for research, education, and healthcare organisations. From its data centres in Amsterdam and Almere Vancis offers data centre, cloud and managed services. Over a span of thirty years Vancis has seen Minkels change from a supplier of products to a supplier of total solutions. We interviewed Jim Jansen, Data Centre Operations Engineer at Vancis.**

*Jim Jansen*

### THIRTY YEARS OF INTERNET

Vancis was founded in 2008 as a subsidiary of SURFsara. Jim Jansen: "With that background Vancis has about 45 years of experience in IT. Our data centre in Amsterdam was one of the first data centres in the Netherlands. It actually led to the emergence of the Dutch internet 30 years ago. We have been doing business with Minkels since the very beginning. At that time we were working with steel racks, not aluminium. Nowadays, the market demands completely different products. Minkels has clearly adapted to these developments and – as a supplier of total solutions – is still a company we can rely on."

### MODERN DATA CENTRE

New data centres are suddenly sprouting up all over. That presents Vancis with an additional challenge to compete with its existing data centre against the newest data centre buildings. "Therefore, we are focusing on energy-efficiency. Each room must meet today's standards. Where necessary, we move customers to new racks and we install cold aisle containment. We are also concentrating more and more on cloud and hybrid services, security, flexibility and pay-per-use. These services enable us to provide our customers with everything you could expect from a modern data centre."

### DATA CENTRE IN AMSTERDAM AND ALMERE

In Amsterdam Vancis has nine computer rooms on two floors in the building. "We have a total of 570 server racks and patch cabinets spread over an area of approximately 1,700 $m^2$. In Almere we have two different computer floors with 150 racks and 400 $m^2$. Both data centres are carrier-neutral and provide excellent connectivity to the leading internet exchanges like AMS-IX, NL-IX and Netherlight. What's more, the Amsterdam location has a PUE of 1.5 and a capacity of 2.5 Megawatts in redundant power supply."

### FLEXIBLE AND CUSTOMER-SPECIFIC DATA CENTRE SOLUTION

Minkels helps Vancis offer its customers a flexible and customer-specific data centre solution. "We work with the Minkels server racks, patch cabinets and cold aisle containment. Our customers clearly prefer Minkels due to the company's flexible, customer-specific solutions as well as the ease of installation. We are also very happy with the excellent quality, speedy delivery and the fact that they offer input into the development and design of the racks. We have been a customer for 30 years. That has to say something." ■

## Data centre solutions in use

- Server & network racks
- Cold aisle containment

# VodafoneZiggo Netherlands chooses Interconnect and Minkels data centre infrastructure

**Telecom operator VodafoneZiggo recently launched its SuperSwitch programme, a complete metamorphosis to reduce its twelve current data centre locations in the Netherlands to just three, high security data centres. The Interconnect data centre in Eindhoven is the only outsourced location in the new telecom infrastructure. Interconnect and Minkels provide VodafoneZiggo with the high reliability, flexibility and quality the company was looking for.**

*Rob Stevens*

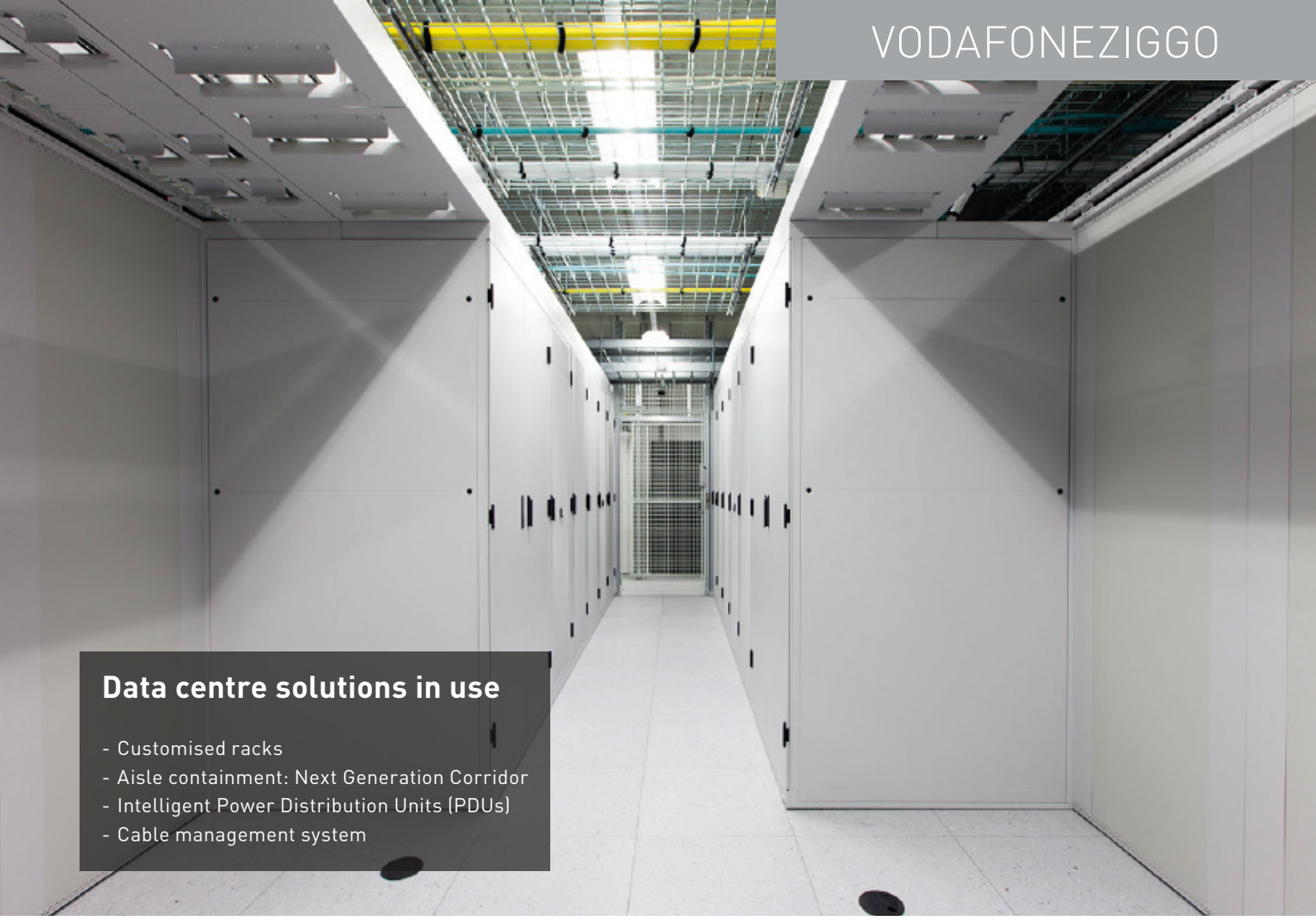
After a negative experience with a large outage in one of its data centres, VodafoneZiggo wanted to create more resilience in its telecom infrastructure. Therefore, VodafoneZiggo recently launched its SuperSwitch programme. The rollout is currently underway. The existing data centre infrastructure in the Netherlands that was built years ago at a time that the telecomsmarket was experiencing rapid growth, must now make way for a fully redundant data centre infrastructure with only three data centres - that can take over fully eachother's role in cases of outages or disasters.

Environmental goals and maximum energy-efficiency are also important to VodafoneZiggo, which results in reduced energy usage, thus lower operating costs. They are also important for the company's strategic environmental goals to reduce its carbon footprint and to be a good corporate citizen. Interconnect exceeds these expectations with its highly energy-efficient Power Usage Effectiveness (PUE) of 1.15. The Minkels airflow optimised racks and the Minkels Next Generation Corridors that efficiently separate hot and cold airflows are key contributors to this energy-efficient PUE value.

## NEXT GENERATION CORRIDORS

The phased construction is expected to be completed by 2017. VodafoneZiggo's complete telecom infrastructure will then be housed in the Interconnect data centre in Eindhoven and in two of its own data centres in Arnhem and another location. The Interconnect co-location data centre is the first VodafoneZiggo location in the SuperSwitch programme to be completed. In September 2014 Interconnect and Minkels have delivered two high security and highly redundant data centre rooms (2N+1) of 300 square metres each to VodafoneZiggo.

Minkels has installed a total of eight Next Generation Corridors in the two data centre rooms. Moreover, Minkels has placed many 19 inch racks and designed custom racks for VodafoneZiggo – including centralised network cabinets that have been optimised by Minkels for a specific, innovative cabling system. The cables in this smart patching system have built-in sensors for self-management. Minkels has also supplied Power Distribution Units (PDUs) and cable management accessories for VodafoneZiggo's infrastructure.



## Data centre solutions in use

- Customised racks
- Aisle containment: Next Generation Corridor
- Intelligent Power Distribution Units (PDUs)
- Cable management system

"The Interconnect data centre and our own two data centres give us a good mix of initial investments and operating costs," says Richard Mes, PR Manager at VodafoneZiggo The Netherlands. "VodafoneZiggo is extremely averse to risk, therefore, we are very critical of our suppliers. We stand for quality and expect the same of them as well. All elements of the infrastructure in the data centre must be of excellent quality, including the racks. It is also very comforting to know that Interconnect and Minkels provide us service as a single team and that they are very flexible when it comes to meeting all our unique needs. We have received a lot of custom work, which we can then purchase as a service from Interconnect. We get all that for a fair price and that is truly superb."

### INNOVATIVE SOLUTIONS

"Minkels leads the market in data centre innovation," says Rob Stevens, director and co-owner of Interconnect. "Minkels shares ideas with us and is capable of supplying the best components for VodafoneZiggo. At Interconnect, we prefer not to use a different rack supplier, as this could result in unnecessary complications and with Minkels we are certain that we can deliver the quality we wish to offer."

The modularity of the Minkels Next Generation Corridors has been implemented right down to the details. This means for instance that VodafoneZiggo can opt to have racks with recesses made in the corridors, in order to be able to house future systems of unknown sizes. Mes: "This illustrates how future-proof this data centre infrastructure is. The modular design of the Minkels systems ensures that we can work with this infrastructure for at least 15 years."

Now that the first of the three data centres is ready for use, the existing VodafoneZiggo data centre in Arnhem will be rebuilt. At the same time, the design of the third data centre that is still to be built will commence. The Interconnect and Minkels infrastructure in Eindhoven will serve as the blueprint. ■

*Richard Mes*

# University in Wageningen chooses Minkels

**Wageningen University wanted to build a new data centre to house its IT systems in a central location on the Wageningen Campus. The new data centre had to replace an aging data centre. Via a tendering process, Minkels was selected to supply aisle containment, 19 inch racks, intelligent PDUs, monitoring and cable management solutions, including technical knowledge for fitting out a data centre.**

*Ron Lukassen*

## DATA CENTRE KNOWLEDGE SESSIONS

Wageningen University follows a twin data centre concept to guarantee high availability of its services. These same data centres also provide basic services, such as a High Performance Computing (HPC) environment. One of the two existing data centres was still located in a building off campus. Once this old location was sold, the decision was made to build a completely new data centre on campus.
The result is a stand-alone data centre of 120 square metres, with indirect adiabatic cooling for maximum energy-efficiency. Minkels was selected to supply fully integrated and energy-efficient solutions for fitting out the data centre.

"We had heard from colleagues at other universities that Minkels supplies very high quality solutions and that they are flexible and can adapt to the needs and requirements of the data centre environment, even if the details change during the building phase," says Ron Lukassen, Senior IT Consultant at Wageningen University. "Minkels was immediately on our shortlist during the

## Data centre solutions in use

- Server & network racks
- Aisle containment
- Intelligent Power Distribution Units (PDUs)
- VariControl-C monitoring & control
- Cable management system

tendering process. The fact that they can supply an integrated solution as an end-to-end supplier is more efficient and reduces the risks in the data centre."

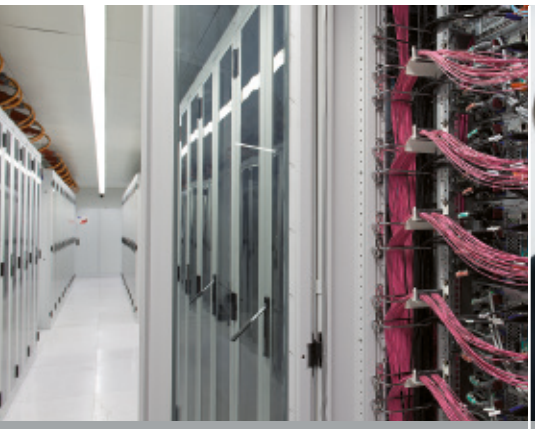
Minkels was involved during the early stages of the project in order to provide knowledge about best practices for fitting out a data centre. Lukassen: "Knowledge sessions were held in the time leading up to the project, in which we had in-depth discussions with specialists from Minkels. We explored different topics such as floor load, power distribution, rack depths and cable management. We don't build data centres on a daily basis and these sessions were extremely enlightening for our IT organisation. One thing that strikes me, which is indicative of their company culture, is that their staff are very helpful."

### A VARIETY OF EQUIPMENT

In line with the energy-efficient adiabatic cooling concept and the environmentally conscious identity of Wageningen University, Minkels implemented intelligent power distribution units (PDUs) and a power monitoring & management solution (Minkels VariControl-C). "We want to know where power is being consumed in the data centre, and the numbers tell the tale," says Lukassen. "This is why we opted for intelligent PDUs, custom made by Minkels, which will show us exactly how much power the different pieces of equipment are using. VariControl-C gives us the ability to manage all power-related parameters in a simple and easy manner, without having to purchase an expensive DCIM solution."

It is also important for Wageningen University that the layout of the data centre can adapt to the cooling needs of the equipment. Lukassen: "We have a diverse selection of brands and types of equipment. The cooling requirements differ and, right now, we do not know what kind of equipment will be added two years from now. The modular design of Minkels' solutions allows us to effectively facilitate those needs." ■

MINKELS
A brand of legrand



SWISSCOM

ESI GROUP

VANCIS

FREIGHTLINER

EQUINIX EMEA

KRIMPENERWAARD MUNICIPALITY

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DATUM DATACENTRES

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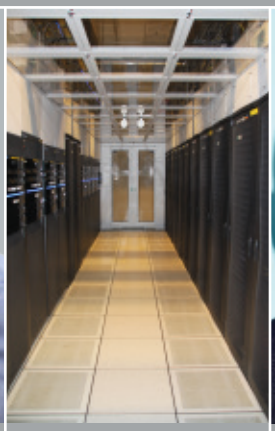

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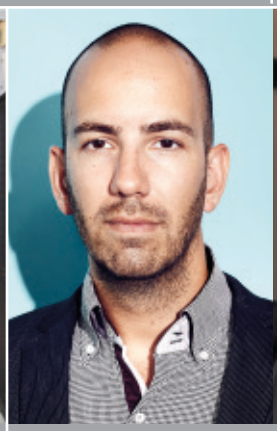

VODAFONEZIGGO

EQUINIX DUBAI

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