RECOGNIZING AND MITIGATING FIRE RISKS IN DATA CENTERS

The amount of information and data used and processed worldwide is growing minute over minute. CloudTweaks and Seedscientific state: "Today, our best estimates suggest that at least 2.5 quintillion bytes of data is produced every day (that's 2.5 followed by a staggering 18 zeros!)".[1]

Without the support of powerful and dependable data centers all over the world, our fast-paced life would not be possible. But this 24/7 availability of information comes at a price. In favor of cost savings, sometimes, some inherent risks get neglected. As such, incidents such as a fire at a data center can disrupt millions of websites, knock out government agencies' portals, banks, and shops, and affect e-mail communications – as seen happening at the most recent fire event at OVHcloud in Strasbourg, in March 2021.

The Strasbourg fire raised questions from both data center operators and customers alike. The main question being: "What was the main cause? Could the fire have been prevented?"

As per the Uptime Institute Intelligence, fires at data centers are rare but do occur. They have some details of 25 data center fires, collected over several years. But most of these fires are quickly isolated and extinguished; it is extremely uncommon for a fire to rage out of control, especially at larger data centers, where strict fire prevention and containment protocols are usually followed.[2]

With the growing reliance on processing of data, reliability has taken center stage. Considering high heat densities coupled with an abundant source of fuel and the potential that something can go wrong in these critical environments, fire protection is an essential element of risk mitigation. The concept should be comprehensive to protect life, assets and continuity of services.

Data centers are particularly prone to fire, given the high energy density and the nature of the materials present. The most common instigator of fire events in data center facilities are building systems. This includes but is not limited to electrical and mechanical systems. Bad housekeeping practices can also be a contributor.

To address the unique and dynamic challenges risk-based integrated performance solution is essential for mitigating fire risks.

Fire protection selection

At Viking, we understand that the adequate fire protection solution depends on several factors, for example the data center type. An enterprise type with a hot aisle containment concept can apply different protection methods compared to a hyperscale, non-compartmentalized hard floor data center.

Data centers are comprised of many inter-dependent adjacencies, each contributing to the operational continuity of the facility. An event in any part of the facility can affect uptime objectives.
A good design considers a holistic approach applying protection elements appropriate to the hazard. Viking - your global fire protection partner with regional footprint - is uniquely equipped to provide the right solution, based on data center activity, operation and plant location. Viking understands the challenges of modern data centers. Our partners, both local, independent fire contractors and the Global Engineering Support Services Center (GESSC), have specialized design & support engineers that have extensive experience in data center environments. Together, we will work jointly with you to tailor specific solutions, to meet every application challenge.

Source:
[1]https://cloudtweaks.com/2015/03/how-much-data-is-produced-every-day/ &
[2]https://seedscientific.com/how-much-data-is-created-every-day/
https://www.datacenterdynamics.com/en/opinions/learning-ovhcloud-data-center-fire/

Learn more at *https://www.viking-emea.com/Data-Center/* or contact us directly: *DataCenter@viking-emea.com*

Where are the risks?

White space / Data hall (❶):

- High energy densities
- Combustible materials
- Hot spots, due to inadequate cooling
- Manufacturing defects, mechanical damage, component degradation, and malfunctions
- High air movement
- Dark centers with limited staff to respond early on to developing events
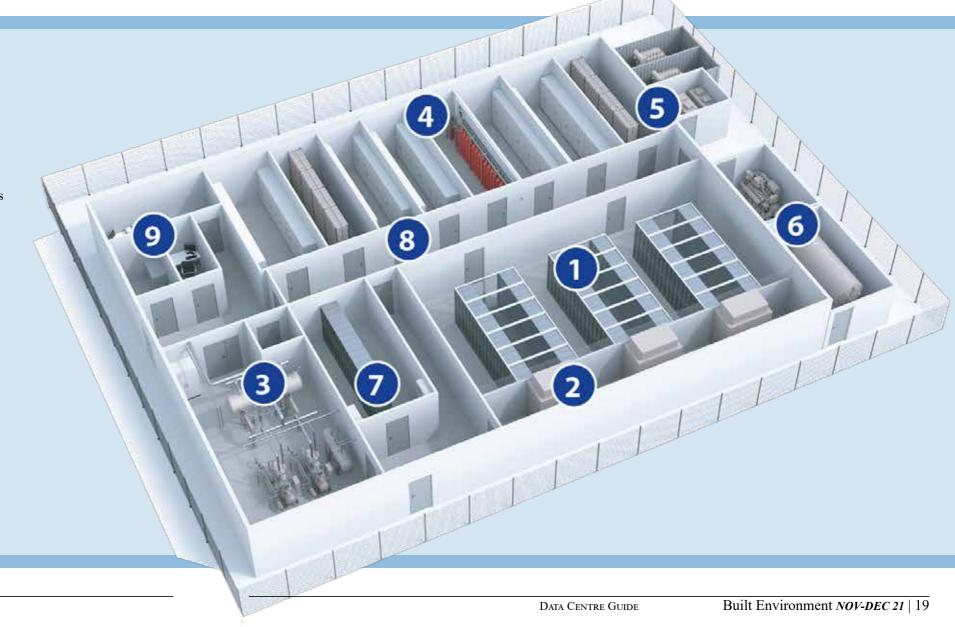
Technical support areas (❷,❸):

- Overheating of technical equipment
- Short circuits
- Minor fires causing serious damage due to loss of control

Emergency power systems (❹,❺,❻):

- Flammable electrolytes, oils, and carbon-based fuels
- Lubricating oil escaping through leaks
- Friction from mechanical systems

Administrative spaces (❼,❽,❾):

- Defects in electrical device, e.g. computers, fans, etc.
- Short circuits in automatic (vending) machines, or kitchen fire