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DATA CENTRES

Planning for failure

How robust is your power contingency plan?

Foreword

For householders a power blackout is an irritation. But for an organisation, be they public or private sector, it can be at best extremely costly, or at worst catastrophic.

Power loss is still causing significant problems within the data centre industry. The recent heatwaves experienced across Europe has resulted in downtime, including IT equipment overheating, UPSs coming alight, electrical systems failing and power outages.

The result of power loss for a data centre can be catastrophic. In the last year alone, much of Mexico's banking services went offline, with customers unable to make purchases or withdraw money due to a data centre electrical fault. Cloud service providers and communications companies were hit by a power outage at one of the UK's largest data centres, impacting many thousands of end customers. The list goes on.

Very often the cause of the power cut is beyond the organisation's direct control. Lightning strikes, vehicle accidents, equipment fault, flooding and vandalism, can all result in blackouts that leave businesses at risk of failing to meet demand.

Ageing equipment can also be a disruptor. If power or temperature control equipment fails, the data centre will fail to run. There has been a rise in equipment failure which, if not dealt with, can lead to extended downtime.

However, what organisations can do is plan for failure and have a robust contingency plan in place that helps provide extra stability to your operations. Ultimately, this gives your customers peace of mind, that if the worst was to happen, you have a plan in place that can fix the problem without too much impact.

For data centres, the problem is complex. Impacting multiple systems, a lack of knowledge and skill to find a quick solution is resulting in crucial time being lost.

We hope this report helps emphasise the importance of contingency plans. If you have any questions, please don't hesitate to get in touch with me and we can discuss your individual concerns and thoughts.

Chris Rason
Managing Director
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The scale of the problem in numbers

There is a plethora of statistics available which demonstrate the scale of the issue downtime causes across UK industry.

In a recent survey of 200 UK energy decision makers, Aggreko found that 82 per cent of UK businesses describe power continuity as a major or significant concern. This is clearly encouraging, as it shows an awareness of the potential impact downtime can have on a business.

However, slightly more concerning is the fact that of those Aggreko surveyed, one quarter do not have a power continuity plan in place.

The Ninth Annual Uptime Institute Data Centre Survey, launched in July 2019, backs this up, stating that power loss is causing significant problems. Of 1,600 operators and IT practitioners surveyed, a staggering 60 per cent believed management strategies and process configuration could have prevented power loss and outages.

Complacency is clearly a worrying trend among UK industry, where the cost of failure is only taken into consideration after an outage has occurred.

Downtime, whether caused by power or equipment failure, has a large impact on business. It can result in end-users being left frustrated and investors nervous about the stability of the data centre.

Can your business really afford this damage?

Delving a little deeper into power outages, and one third of IT professionals report that recovery times for power failures are five hours or longer (Source: Uptime Institute). Even more concerning is that it has been reported that 43 per cent of IT professionals do not calculate the actual cost of a power outage (Source: OAG).

Another cause for disruption is freak weather. Incidents such as floods, fires, and extreme heat are growing. And as forecasters expect the UK and Europe to continue experiencing further extreme heatwaves, organisations must act now in order to prepare for overheating and system failure.

Recent research suggests the communications industry could use 20 per cent of all the world's electricity by 2025 (Andrae). Power demand in industry is set to increase from 200-300 terawatt hours (TwWh) of electricity a year, to a minimum of 1,200THw by 2025. With the well-documented strain on the national grid, data centres may want to consider a decentralised energy solution if not already in place.

Making the decision to implement a contingency plan has never been more important. With so much to consider, it is recommended that a professional site survey is undertaken. The rest of this paper delves into the requirements, what you should be looking for and reiterates the benefits to your business.

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Site surveys

Should you have a contingency plan in place?

Contingency plans are an absolute necessity in order to mitigate risk. As the economic climate continues to remain unclear, failing to have a plan in place should the power fail, or there be a problem with a chiller or boiler, could cost hundreds of thousands of pounds in lost income. These costs aren't per day, but per hour.

Companies simply cannot afford to take the gamble.

Contrary to belief, the most common contingency plan call-outs we see is through equipment failure, rather than a blackout. If any owned equipment fails, it is the responsibility of the organisation to replace it. Sourcing a replacement item, and finding the budget to fund it, can be timely. And in these situations, time really does cost money.

As servers fail, customers become left frustrated. And if frustration grows, reputation is damaged.

You will understand the risks associated with not having an adequate contingency plan. But where do you start when it comes to implementing a plan? And how do you know you have covered all possible risk?

Given the intricacies of equipment, having a trained eye to spot the signs of potential fault is critical. This is why the site survey plays a crucial role.

Technical site survey

The process of implementing a contingency plan all starts with a technical site survey. This truly delves into what your business really needs in order to plan for failure.

Technical site surveys go beyond simply looking at what equipment is required. It considers the infrastructure of the building, the logistics of delivering replacement power or equipment, and also what modifications are required should the worst happen.

The survey is of paramount importance. Without it, you could call for back-up power or equipment and have the wrong cables or the roads could be too narrow to fit a certain sized vehicle.

Essentially, it provides an overarching view of the considerations you need to consider from trained engineers. Identifying potential points of failure, the surveys importantly establish the changes required to prevent significant downtime. It ensures your business is fully prepared if a power failure was to occur, which is priceless.

Contingency plans – what to think about

We have emphasised the importance of having a contingency plan in your facility. The difficult part is actually implementing one. There are lots of considerations which can often feel overwhelming.

Here, we have identified some of the key considerations which are consistently uncovered during technical site surveys.

Six considerations for your contingency plan

1. What is your escalation procedure?

Every contingency plan needs to have an appropriate escalation process. Each shift needs to have somebody who can take a lead and know what to do in case of emergency. Ensuring that an escalation procedure is in place means you are in the best place possible to react, because an outage can happen at any time.

2. How much equipment is required?

The list of equipment that you may need can be endless. Whether it's power, high voltage power, or temperature control, having an understanding of how much equipment is needed is crucial.

3. Is your site accessible?

Infrastructure is key for any contingency plan. We have already touched upon site access within the technical site survey, but it is surprising how ill-prepared facilities are even when replacement equipment is delivered. Site access stretches to transportation, unloading and equipment placement, and that doesn't even cover connectivity.

4. Are you well connected?

When you do manage to receive critical equipment, one of the biggest challenges is ensuring it connects. As not all machinery has the same connection requirements, it is imperative the existing site systems, such as cabling, pipework modifications or building adjustments are seen to ahead of the contingency equipment being installed.

5. Have you engaged all stakeholders?

Gaining approval from all stakeholders ensures that the contingency plan is signed off and actioned. The benefit of a contingency plan is that all costs are pre-agreed and budgeted for. Stakeholders range from facilities managers, finance departments, landlords and even customers. Leaving no stone unturned is key here and results in a smooth delivery.

6. Establishing fuel management services

How often do you need to refuel? This the final major consideration required when implementing a contingency plan for your plant or facility. Establishing the levels of fuel required, which again will be calculated in the technical site survey, is critical for re-establishing smooth operations.

There are other considerations, including having emergency engineers prepared, which will also be covered in a detailed plan following the site surveys.

Benefits of a contingency plan

Any business that relies on power needs a contingency plan.
The importance is clear, but the benefits should not be overlooked.

Insurance

Having a contingency plan could reduce insurance premiums. If there is a disaster recovery plan in place, some insurers will offer litigation against any losses. It can also help to bring insurance costs down, due to the reduced downtime risk.

Immediate activation

If a contingency plan is pre-agreed, then it can be delivered within hours. Customers will have a reference number, and once this is quoted the plan is in full flow. By having a plan, everything is pre-approved and in place for successful installation.

Additionally, contingency plans can be activated at any time of the day meaning you can immediately act should you lose power.

Fixed prices

Another important element of a contingency plan is ensuring that a flat cost is sought. This allows power or cooling failures to be budgeted for without the worry of extorted costs. Unfortunately, some suppliers may see an opportunity to raise the cost of the equipment.

At Aggreko, a flat rate is pre-agreed, meaning budgets can be managed and therefore no further surprises occur when you least need them.

Contractor availability

When taking out a contingency plan, utilising a supplier which has trusted and nominated contractors available can also be a huge benefit. As power failures happen at the most unexpected time, sourcing a reliable contractor or engineer to come in on short notice is difficult. Aggreko has a number of contractors across the UK who are available to respond when a contingency plan is actioned.

Final thoughts

If you were to lose power, would you be able to fulfil the demands of your end users? The number of risks facing UK industry is rising. And these are out of our control. From extreme weather changes to overreliance on the national grid and through to ageing equipment, the chances of power failure are only likely to increase.

Having a contingency plan is therefore not just essential for providing that much-needed peace of mind should the unexpected happen, but also fulfils your customers' expectations that you are fully prepared.

And even if a contingency plan is in place, is it updated regularly with the correct contact details and facility information?

Before making a decision, taking advantage of a complete site survey is an easy and cost-effective way for you to truly understand the risks you face.

To make a decision you need to be aware of your infrastructure limitations, equipment performance and energy reliance. Once you have this, you are well-placed to decide whether a contingency plan is a necessity for your business.

We cannot predict the future but we can ensure that any risk associated with power outage and downtime is mitigated. You will know the top-line impact downtime will have on your business.

If this isn't actioned, then you run the risk of losing power, money and reputation. Can you afford to not have a contingency plan in place?

If you were to lose power, would you be able to fulfil the demands of your end users?

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Case study:

How a UK power plant prepared for data centre failure

When a period of particularly hot weather started to strain the chiller plant at a UK data centre, Aggreko's contingency plan was quickly put into action.

Challenge

The need for constant power and cooling is critical for a data centre to function. If failure was to happen, it would cause untold problems for the facilities management companies that run them.

Aggreko was approached by a leading FM company to help mitigate this risk and to implement a contingency plan for power failure and cooling that could be actioned quickly and with minimal fuss.

Solution

After carrying out a detailed site survey of the FM's data centres, Aggreko's engineers designed a bespoke plan that every site knew what to do in the event of an emergency, while also having reliable backup power and cooling when required.

Each contingency plan detailed the rental equipment requirements, where it would be located, the installation and connection intricacies, the transport considerations, and clearly defined roles and responsibilities.

Benefit

The contingency plan was put into action. Following a period of hot weather leading to a strained chiller plant, Aggreko delivered, installed and commissioned three 200kW chillers, a 1MW heat exchanger and two 500kVA generators, as well as all relevant hoses, cables and fuel tanks.

Plugged into the site's chiller plant, the contingency plan supported it with supplementary cooling to meet the requirements until the season spike in temperature subsided.

As the site survey, installation plan and responsibilities were pre-agreed, it allowed business to be restored to normal in a quick and efficient time.

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For more information

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aggreko.com/contingency