WASP IPU



Your partner for power resilience

The power holds. Until the fuel doesn't.

Power failures are still the single largest cause of major data centre outages. When the grid drops, the standby generator is the last line of defence — and it is only as dependable as the diesel sitting in the tank behind it.

Power outages, generator resilience and the fuel-supply blind spot — a WASP IPU perspective.

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Everyone plans for the power to fail. Fewer plan for the fuel.

Each year the Uptime Institute publishes its *Annual Outage Analysis* — the industry's most-cited read on why data centres go dark. The 2026 edition [1] confirms what every operations team already feels: outages are becoming less frequent but more expensive, more interconnected, and harder to contain.

We read the report differently to most. WASP IPU has spent decades in the part of the stack that only matters when everything else has already failed — the standby generator, and the fuel that feeds it. So we went looking for what the data says about that moment.

The headline finding is blunt. Power-related incidents remain the leading cause of major outages, accounting for **45% of impactful events in 2025**.[1] Dig into those power failures and the generator sits near the top of the list. Yet when operators list what their resiliency risk assessments actually cover, **fuel supply is one of the least-examined items on the page**.[2]

That gap is the subject of this paper. Our argument is simple: a generator that will not run on demand is not redundancy — it is a liability with a maintenance schedule. And more often than the industry admits, the reason it will not run is the condition of the fuel. This is our perspective on the findings, and on what it takes to close the gap.

Power is still the largest single cause of major outages.

Uptime's survey data continues to show that power-related incidents are the leading cause of major outages, at 45% of impactful events in 2025.[1] That is a notable decline from 2024 — but power failures remain uniquely disruptive because their impact is immediate and often total.

Even a brief interruption can turn into an extended recovery as systems restart, data is resynchronised, and damaged equipment is repaired or replaced. There is no graceful degradation. When protected power drops, the load drops with it.

This is precisely the scenario standby generation exists for. The utility fails, the UPS holds the load for seconds, and the generators take over for the minutes, hours or days that follow. The entire premise rests on one assumption: that the generators start, and keep running.

45%

of impactful outages in 2025 were power-related — the leading cause.[1]

28%

of power-related outages involved a generator failure.[2]

65%

of operators say their risk assessment covers fuel supplies — near the bottom of the list.[2]

Inside the power failures, the generator keeps its seat at the table.

When Uptime asks operators to name the root causes of their power-related outages, the same names recur year after year: UPS failures first, then transfer switching, then the generator itself.[2] The generator sits third — behind the UPS, but ahead of most of the electrical distribution chain.

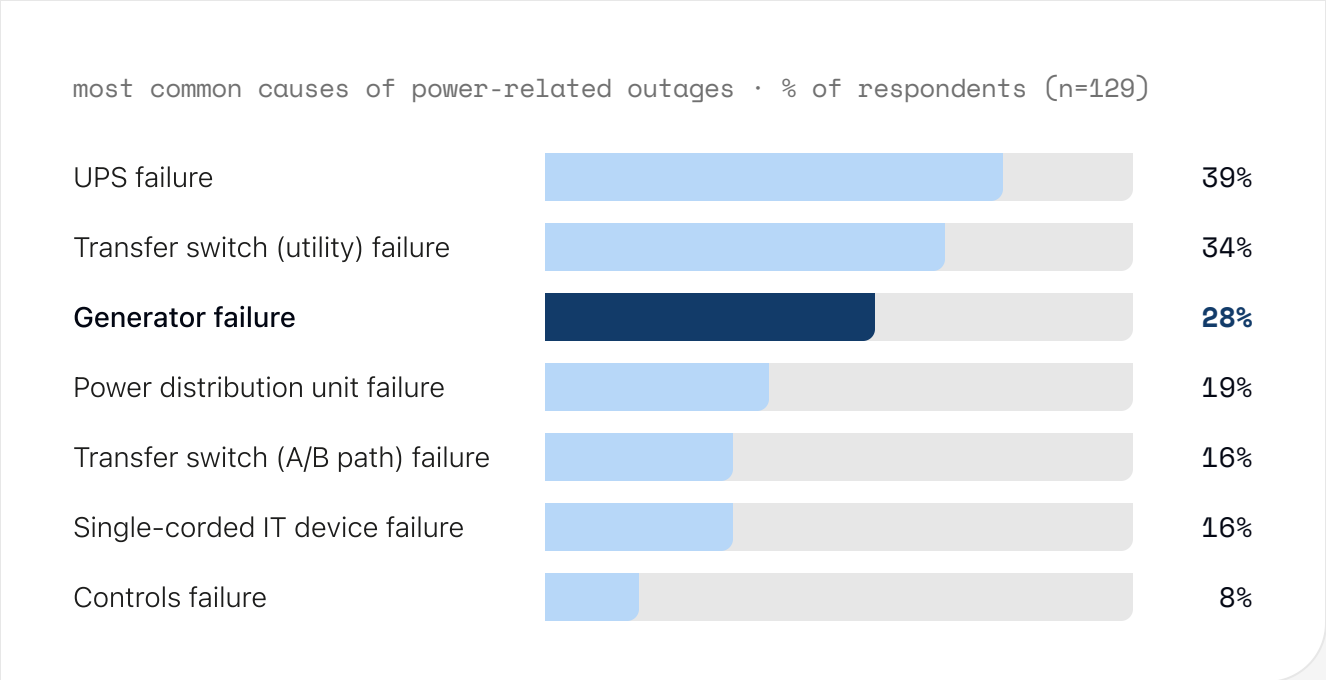


Figure A · Rebuilt from Uptime Institute Data Center Resiliency Survey 2026, Figure 10. Respondents chose up to three causes.[2]

wasp perspective

A UPS failure is measured in seconds of ride-through. A generator failure is measured in however long the outage lasts. When the generator is the cause, there is no deeper layer of protection behind it — which is why a 28% share understates its true operational weight. Uptime itself notes that a generator failing to start is frequently logged as a "power issue" when the underlying cause is a maintenance or testing miss.[2] Fuel condition is exactly the kind of maintenance factor that hides inside that number.

As batteries grow, so does the case for an independent generator.

2025 was the year battery fire risk stopped being theoretical. In one Category 5 incident, a lithium-ion battery entered thermal runaway during removal from an IT facility, triggering a fire that disrupted hundreds of systems — including emergency services — and caused the permanent loss of hundreds of terabytes of data, alongside injuries to personnel.[3]

A separate exchange fire, attributed to a suspected electrical fault, took out national connectivity and resulted in fatalities and injuries.[3] As on-site energy storage scales up to buffer AI-era load, fire suppression is becoming a first-order design requirement rather than a compliance checkbox.



The more the industry leans on batteries to hold critical load, the higher the stakes when a battery room is the thing on fire — and the more the diesel generator becomes the resilience layer that has to be beyond doubt.

Our read: Every argument for better fire suppression is also an argument for a generator you can trust without reservation. You cannot treat batteries as an at-risk asset and simultaneously treat the generator's fuel supply as an afterthought. They are two halves of the same resilience case.

Operators assess almost everything — except the fuel.

In 2026 Uptime asked, for the first time, which areas operators' resiliency risk assessments actually cover.[2] Operations, electrical and physical security dominate. Fuel supplies sit near the bottom — assessed by fewer operators than mechanical or cybersecurity risk, and far below the electrical systems the fuel exists to keep running.

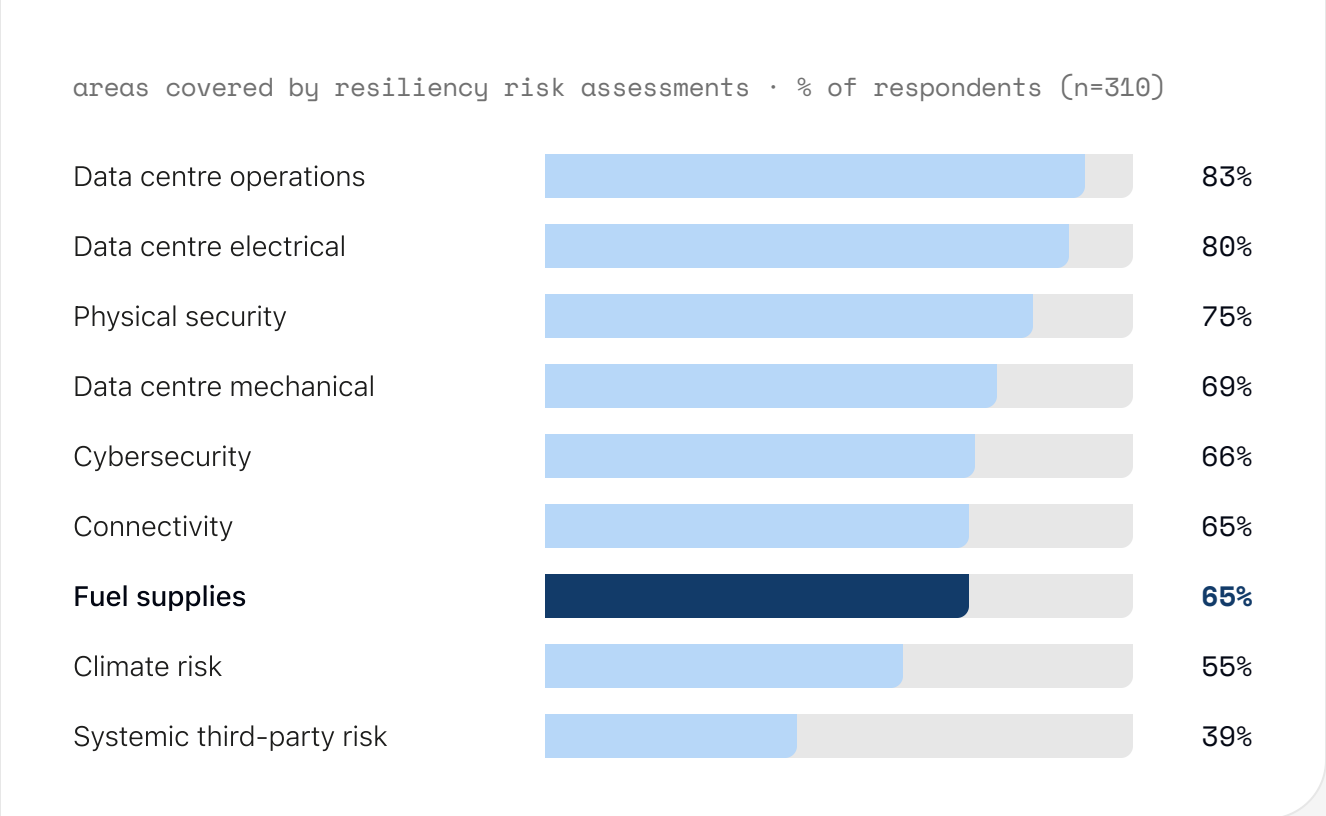


Figure B · Rebuilt from Uptime Institute Data Center Resiliency Survey 2026, Figure 18.[2]

There is an uncomfortable logic here. The generator is one of the more scrutinised assets on site — yet the diesel that determines whether it runs is one of the least. Roughly a third of operators do not formally assess it at all. Fuel is treated as a commodity that was correct when it was delivered and will be correct when it is needed. Diesel does not work that way.

Diesel is a perishable. Stored fuel does not stay to spec.

Standby fuel spends most of its life doing nothing — which is exactly the problem. Modern diesel, with its biofuel content, is hygroscopic: it pulls water out of the air with every temperature swing and tank breath.

Water in the tank feeds microbial growth — the so-called "diesel bug" — which forms sludge, clogs filters, and corrodes tank internals. Add settled particulates and degraded fuel, and the result is a tank that passed on delivery and will not pass when it matters.

Water ingress

Condensation and tank breathing introduce water that no delivery spec can prevent over months of storage.

Microbial growth

Water at the fuel interface feeds the diesel bug — biomass that blocks filters and fouls injectors within a single start attempt.

Particulates & ageing

Rust, sediment and oxidised fuel settle out and are drawn up under the high-flow demand of a real start.

The cruel irony: a generator's fuel is drawn hardest at the worst possible moment. The first minutes of a real outage demand maximum flow — and that surge lifts settled water, sludge and debris straight off the tank floor and into the fuel filters. A unit that ran fine on a light-load monthly test can choke within minutes of a genuine full-load call. The test proved the engine. It did not prove the fuel.

Closing this gap takes two interventions at two different moments in the fuel's life: **clean it on the way in**, and **keep it clean while it waits**.

Filter the fuel before it ever reaches the tank.

Every tank starts its life at the mercy of what came off the tanker. Road diesel picks up water and particulates in transit and in the delivery infrastructure; a single dirty delivery can seed contamination that sits in the tank for years.

A WASP **tanker offloading unit** — an off-loader — sits inline between the delivery tanker and the storage tank. As fuel is pumped in, it passes through staged filtration and water separation, so what enters storage is already clean and dry to a defined specification.

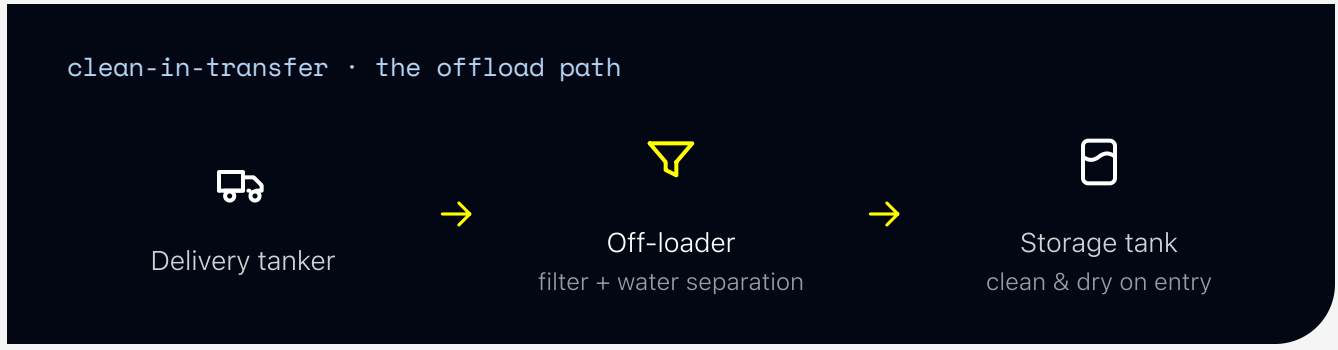
You are no longer trusting the delivery. You are verifying it, litre by litre, at the point of intake.

- Staged particulate filtration and coalescing water separation on the fill line.
- Contamination stopped at intake, not discovered during an outage.
- Every delivery documented to the same spec the site was commissioned to.



Skid-mounted offloading & filtration unit — staged filtration on the fill line.

clean-in-transfer · the offload path



Keep the fuel to spec for as long as it sits in storage.

Clean fuel on delivery is only half the job. From the moment it enters the tank, diesel begins its slow slide out of specification — water condenses, microbes colonise, sediment settles. Offloading cannot stop what happens over the months and years of storage that follow.

A WASP **fuel polishing system** works continuously on the stored fuel. It recirculates the tank contents through multi-stage conditioning — water separation, fine particulate filtration and fuel conditioning — on a controlled schedule, actively holding the fuel to a defined cleanliness standard rather than hoping it holds itself.

- Continuous or scheduled recirculation of the whole tank volume.
- Water, sludge and particulates removed before they reach the engine.
- Fuel maintained to a documented spec — verified, not assumed.



WASP fuel polishing system — continuous recirculation and multi-stage conditioning.

Together they close the loop the outage data exposes: the off-loader guarantees the fuel is clean when it arrives, the polisher guarantees it is still clean when the generator finally calls for it. The 28% is not fate — it is a maintenance factor, and maintenance factors can be engineered out.[2]

Built by the same hands. Serviced the same way.

Hardware alone does not deliver fuel resilience. What does is treating the fuel supply as a system with a lifecycle — designed to the site, supplied to a spec, installed correctly, and then maintained for as long as the generators are expected to run. That is how WASP IPU works, and it is the difference between a unit on a skid and an assurance that the generator will start.

01

Design

Filtration stages, valve placement and flow rates specified to the actual site.

02

Supply

Off-loaders and polishers built and documented to the commissioned spec.

03

Install

Integrated into the fuel system and commissioned against defined run-time settings.

04

Service

Ongoing maintenance and fuel testing for the full life of the installation.

> "When a WASP fuel polishing system leaves our workshop, the spec is documented to the site: filtration stages, valve placement, flow rates, run-time settings. That detail doesn't sit in a folder. It sits with the engineers who built it."

Redundancy you can't rely on isn't redundancy.

The outage data is consistent. Power is the leading cause of major outages; the generator is a leading cause of power failures; and fuel supply — the thing that decides whether the generator runs — is one of the least-assessed risks in the building.[1,2]

As battery-driven fire risk pushes the industry to lean even harder on standby generation, the margin for a fuel-related no-start keeps shrinking. Clean it on the way in with an off-loader; keep it clean in storage with a polisher; and treat the whole thing as a serviced lifecycle rather than a delivery. That is a solved problem — provided someone owns it.



Skid-mounted multi-stage fuel filtration — built, documented and serviced by WASP IPU.

References

All outage statistics in this paper are drawn from the Uptime Institute's published research, as cited below. Commentary, interpretation and product recommendations are WASP IPU's own.

1 Uptime Institute — Annual Outage Analysis 2026 (Keynote Report), 2026. Power-related incidents as leading cause of major outages (45% of impactful events, 2025); Figure 4, causes of impactful outages. © Uptime Institute.

2 Uptime Institute — Data Center Resiliency Survey 2026. Figure 10, most common causes of power-related outages (n=129: UPS 39%, utility transfer switch 34%, generator 28%). Figure 18, areas covered by resiliency risk assessments (n=310: fuel supplies 65%). Generator no-start frequently attributed to maintenance/testing factors.

3 Uptime Institute — Annual Outage Analysis 2026, Table 4: Ten major outages in 2025 (Category 5). Lithium-ion battery thermal-runaway fire during removal from an IT facility; exchange fire attributed to suspected electrical fault. Referenced here to illustrate rising energy-storage fire risk.

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WASP IPU

Your partner for power resilience

when uptime is non-negotiable.

Talk to our engineers about protecting your generator fuel supply — from tanker offloading to in-storage polishing, designed, supplied, installed and serviced to your site.

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capabilities

Fuel management
Engine control systems
Filtration & fluid handling

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