CYIENT | Nothing Less



# Engineering energy efficient and resilient data center power plants

## for the digital era

## The challenge

As digital infrastructure accelerates worldwide, the energy demands of data centers continue to surge. Hyperscalers and enterprises must expand capacity while reducing energy consumption, emissions, and operational risk. This balance is becoming increasingly difficult as global demand rises and grid constraints intensify.

**Key challenges shaping the industry include:**

Rising power consumption placing unprecedented stress on regional and national grids.

Escalating operational costs driven by cooling demand and energy inefficiencies.

Fragmented asset ecosystems making visibility, governance, and control difficult.

Stricter ESG requirements and regulatory expectations.

Ireland offers a clear example. Rapid data center expansion consumed more than 20% of the country's total grid capacity, triggering stricter planning controls. As countries race to support digital infrastructure, the Ireland case shows how quickly growth can collide with grid limitations and why operators and policymakers must rethink how capacity, sustainability, and resilience are engineered.

## Our solution

We provide engineering services for high-performance data centres, power generation, and mission-critical infrastructure, with end-to-end lifecycle support from concept and detailed engineering through commissioning, operations, and long-term maintenance. Our work brings together deep power systems expertise, digital intelligence, and sustainability-led design.

We support hyperscalers, enterprises, and OEMs in building efficient, resilient, and scalable data center ecosystems built for what's next.

| Core area | What we deliver |
|---|---|
| **Design and planning** | • Concept design, feasibility, budgeting<br>• Multidisciplinary engineering: electrical, mechanical, civil, structural, controls<br>• BIM coordination, engineering management, procurement support<br>• Technical documentation, document control, commissioning readiness |
| **Electrical and power systems** | • Redundant high and low voltage power distribution<br>• UPS, generators, and battery energy storage solutions<br>• Power monitoring, optimization, and electrical safety<br>• Grounding and lightning protection<br>• Backup and failover architectures aligned to Tier standards |
| **Mechanical, HVAC and civil** | • Energy efficient ventilation and cooling solutions<br>• Thermal engineering<br>• Structural and seismic compliant design<br>• Civil and architectural support for compliance and resilience |

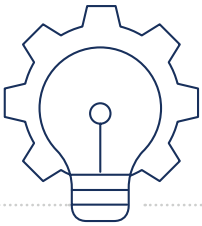
| Core area | What we deliver |
|---|---|
| **Fire protection and safety** | • Safety integration aligned with global standards<br>• Plant replacement strategy |
| **Operations and optimization** | • IoT-enabled monitoring and predictive maintenance<br>• AI-driven analytics for performance and reliability<br>• Data governance and multi-site standardization<br>• SAP EAM and PLM integration<br>• Centralized dashboards for unified operational visibility |
| **Sustainability and energy resilience** | • Renewable and hybrid power integration<br>• Microgrid-ready designs<br>• Heat recovery for district heating<br>• Carbon reduction and energy transition planning<br>• Sustainable design backed by our global certifications including ISO 9001, ISO 14001, ISO 45001, ISO 27001, CMMI-DEV Level 5 and SOC Type II |

## The results

**Improved power usage** and overall **energy efficiency** across facility operations

**Enhanced operational reliability** with a significant **reduction** in **unplanned downtime**

**Accelerated project delivery** through value engineering and **optimized workflows**



**Our integrated engineering and digital approach enabled**

**Reduced carbon footprint** supported by **stronger sustainability** performance

**Scalable execution** models delivered through onsite, offshore, and hybrid teams

**Streamlined procurement, documentation, commissioning,** and automation processes that support **faster time-to-market**

## Industry impact

Advancing 1,000+ power plants globally, Cyient delivers cleaner, more efficient, and resilient power systems that can strengthen modern data center infrastructure.

## Why us

### Complete lifecycle expertise

From feasibility and engineering to operations and maintenance, we deliver end-to-end capability under one partnership.

### Deep engineering heritage

Over 30 years of proven experience in plant, energy, and digital infrastructure engineering.

### Energy systems integration

Strong capabilities in hybrid and renewable power design, enabling microgrid-capable data centers that mitigate grid dependency

### Digital engineering strength

IoT, analytics, and automation technologies for performance visibility and continuous optimization.

### Sustainability commitment

Engineering solutions that meet performance targets while advancing global environmental goals.

## Speak to our experts, today.

Cyient is a global lifecycle engineering services company powering mission-critical industries from design to aftermarket across products, plants, and networks. With 300+ customers and 15,000+ associates across 30+ countries, we combine human expertise, deep domain knowledge, and AI to deliver intelligent engineering for every lifecycle across Aerospace and Rail, Automotive and Mobility, Connectivity, Energy, Healthcare, Mining, Utilities, and beyond.

To learn how we deliver exemplary outcomes, nothing less, visit www.cyient.com.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