



CASE STUDY · INDONESIA · INDUSTRIAL MANUFACTURING

Centiel Protects Critical Industrial Manufacturing Operations at Industrial Factory, Indonesia

7 × 60 kW (420 kW) CumulusPower™ Distributed Active Redundant Architecture Transformerless Modular UPS

CUMULUSPOWER™ · DE-CENTRALIZED MODULAR ARCHITECTURE · 420 kW (524 kW @ 124% Continuous)

97.1%

Efficiency

7 × 60kW

DARA Modules

124%

Continuous Overload

9-Nines

Availability



Authorised Distributor of Centiel UPS in Indonesia

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Centiel Protects Critical Industrial Manufacturing at the Factory

SEGMENT

Industrial Manufacturing Facility

THE PROBLEM

The customer operates a demanding industrial environment with highly dynamic and non-linear loads including **Variable Speed Drives (VSD)**, industrial pumps, fans, and process motors — all backed by generator infrastructure. The facility is located far from Jakarta, making reliability and fault tolerance critical.

RESULTS

PT Centielindo Daya Utama successfully implemented a **7 × 60 kW (420 kW) CumulusPower™ Modular DARA Architecture** transformerless UPS system, delivering continuous, fault-tolerant power protection for the customer's critical manufacturing operations.

POWER PROTECTION SOLUTION

7 × 60 kW CumulusPower™ (420 kW total)

- Online Double Conversion — DARA Architecture
- Battery: 2 Banks × 50 × 12V 200Ah VRLA
- Generator-integrated power protection
- Continuous overload: 124% = 524 kW effective capacity
- Efficiency: up to 97.1%

PROJECT OVERVIEW

Country	Indonesia
Industry	Industrial Manufacturing
Customer	Confidential
Product	CumulusPower™
System	7 × 60 kW (420 kW)
Architecture	DARA Modular
Battery	2 × 50 × 12V 200Ah
Efficiency	Up to 97.1%



Our Customer

The customer operates a critical industrial manufacturing facility in Indonesia. The facility runs a complex combination of **Variable Speed Drive (VSD) systems**, industrial pumps, fans, and process motors — all of which generate harmonic distortion, rapid current fluctuations, and high inrush current conditions.

The site is located far from Jakarta, making system reliability and fault tolerance extremely important. Any severe downtime waiting for engineers or spare parts from Jakarta was unacceptable for a critical manufacturing operation.

PT Centielindo Daya Utama, Centiel's authorised distributor in Indonesia, was engaged to deliver a modern, high-efficiency, fault-tolerant UPS solution purpose-built for this industrial environment.



CumulusPower™ installation — the customer

The Project

PT Centielindo Daya Utama supplied and implemented a **7 × 60 kW (420 kW) Centiel CumulusPower™ Modular DARA Architecture Transformerless UPS system** designed specifically for mission-critical industrial applications. The complete system includes:

System Component	Specification
UPS Configuration	7 × 60 kW modules — 420 kW total
Architecture	Distributed Active Redundant Architecture (DARA)
Technology	Online Double Conversion, Transformerless
Battery	2 Banks × 50 × 12V 200Ah VRLA
Efficiency	Up to 97.1%
Continuous Overload	124% rated — 524 kW effective capacity
Generator Integration	Full generator-backed infrastructure



CumulusPower™ cabinets + control panel



Battery bank — 2 × 50 × 12V 200Ah



UPS modules — interior view

The Challenge

Industrial Load Complexity

VSD fans, tank pumps, glue pumps, and process motors create harmonic distortion, rapid current fluctuations, and high inrush currents. High inrush demands can momentarily exceed rated load — traditional UPS systems trip under such conditions.

Generator Compatibility

PLN utility failures force genset operation. The interaction between non-linear industrial loads and the generator system creates challenging conditions, particularly during utility switchover.

Remote Location Risk

The facility is far from Jakarta. A conventional standalone UPS failure could mean severe downtime while waiting for engineers and spare parts. This risk was unacceptable for a critical manufacturing operation.

The Solution

PT Centielindo Daya Utama supplied the **CumulusPower™ Modular DARA Architecture** — an approach fundamentally different from conventional modular UPS. Each of the 7 modules operates as a **fully independent UPS system** with its own rectifier, inverter, static bypass, DSP controller, and LCD interface.

Power quality measurements confirmed harmonic distortion originated from the facility's VSD-based equipment — **not** from the CumulusPower™ system. Thanks to Centiel's inherently low THDi design, **no external Active Harmonic Filter (AHF) was required** — a significant cost saving.

The DARA architecture provides a critical advantage for remote locations: if one or two modules experience malfunction, **the remaining modules continue supporting the load without interruption**. No panic, no downtime.



CumulusPower™ open frame — 7 independent modules

Key Result — Proven Transformerless Performance in Industrial Environment

The project **successfully demonstrated that Centiel modern decentralized transformerless UPS technology can reliably support highly dynamic industrial manufacturing environments** traditionally associated with transformer-based systems. Operating at **124% continuous overload (524 kW effective)**, the system absorbs high inrush currents from VSD equipment without interruption. At up to **97.1% efficiency**, it delivers one of the lowest TCO in its class.

Why Centiel CumulusPower™ Distributed Active Redundant Architecture Was Selected

The customer selected Centiel based on several critical technical advantages that no conventional standalone or master-slave modular UPS could provide:

True DARA Architecture

Every module is a fully independent UPS — own rectifier, inverter, bypass, DSP controller. No master-slave dependency. Eliminates single points of failure.

Low THDi — No AHF Needed

Advanced rectifier technology minimises harmonic distortion back to the source and generator. No external Active Harmonic Filter required — saving cost and space.

Fault-Tolerant for Remote Sites

If 1–2 modules fail, remaining modules continue the load without interruption. No downtime waiting for parts from Jakarta. Critical for remote industrial facilities.

Complete Solution — Feature Summary

97.1% Efficiency

Higher than any transformer-based alternative — lower energy losses, reduced cooling requirements, lower long-term operational costs.

Zero Single Point of Failure

DARA architecture distributes redundancy across all modules. No centralised controller to fail. 9-nines availability.

Industrial Dynamic Load Ready

Stable operation under rapidly fluctuating VSD loads and generator operation — proven in the customer's demanding environment.

Safe Hot-Swap Modules

Any module can be replaced online, in a live frame, without interrupting the load. Maintenance without downtime.

124% Continuous Overload

520+ kW effective capacity absorbs VSD motor inrush current spikes without tripping — impossible with conventional UPS systems.

Lowest TCO in Class

97.1% efficiency + modular serviceability = one of the lowest Total Cost of Ownership available in the industrial UPS market.

The Result

PT Centielindo Daya Utama successfully implemented the **7 × 60 kW (420 kW) Centiel CumulusPower™ Modular DARA Architecture Transformerless UPS system** together with the complete battery infrastructure and supporting industrial power protection solution at the Factory.

The project now provides **stable and continuous power protection** for the customer's industrial manufacturing operations. Power quality measurements confirmed that Centiel's inherently low THDi design eliminated the need for external harmonic filtering, saving significant cost and installation space.

This project serves as a **strong real-world reference** proving that Centiel CumulusPower™ DARA Modular Transformerless UPS systems are fundamentally different from conventional modular designs — and can reliably support highly dynamic industrial manufacturing environments with exceptional stability, efficiency, fault tolerance, and operational continuity.

For remote industrial facilities where downtime is unacceptable and technical support is far away, the **DARA modular architecture is the only logical choice**: self-healing, self-protecting, and self-sustaining even under fault conditions.



PT CENTIELINDO DAYA UTAMA

Authorised Centiel Distributor — Indonesia

Reach us at:

sales@centielindo.com

(021) 5665369 · 5661872 · 5672837 · 5670216 · 5666053 · 5661787

www.centielindo.com