embin

ENERGY & POWER

Demand & Load Management Controller

Custom Hardware Design | Embedded Firmware | Power Monitoring | Load Management

CLIENT

An in-house product developed by Embin for facilities on commercial power contracts looking to control their electricity costs.

THE PROBLEM

Many commercial power contracts charge a penalty if a facility's peak demand exceeds the level agreed with the utility — and that peak can be set by just a few minutes of overlap, like an air-conditioning compressor kicking in at the same time as a production line starts up. Facility managers usually only find out after the fact, on the bill, by which point the penalty is already locked in for the month. What they needed was something watching demand in real time, every second, that could act on its own before the threshold was crossed.

WHAT WE BUILT

We designed this as a standalone controller that sits at the incoming power feed and continuously tracks demand against the facility's contracted limit. The hard part wasn't measuring demand — it was deciding what to do in the seconds before a breach, automatically and safely. We built in a configurable priority list of loads, so the controller knows which ones are safe to shed first (and which should never be touched), and a shedding sequence that kicks in as demand approaches the limit rather than after it's crossed. Once the load profile drops back to a safe margin, the controller restores those loads in the same order, without anyone needing to flip a switch.

WHAT IT DOES

- ✓ Continuously tracks incoming power demand against a configurable contract limit, second by second
- ✓ Automatically sheds pre-designated low-priority loads in a defined order as demand approaches the threshold — before a penalty-triggering peak occurs
- ✓ Restores shed loads automatically, in the same order, once demand drops back to a safe margin
- ✓ Logs every demand event with a timestamp, so facility managers can see exactly what happened and when
- ✓ Operates with no day-to-day intervention — runs continuously in the background of the facility's electrical system

OUTCOME

Facilities running this controller get automatic protection against demand-related penalty charges without changing how their operations run day to day. It's a self-contained product Embin developed and can deploy to any site on a standard power contract, with a full event log that gives facility managers visibility into demand behaviour they previously only saw after the fact on a bill.

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