dejoule
INTELLIGENCE MEETS IMPACT

# How DeJoule cut **Aster MIMS' HVAC energy usage by 15%** through AI-driven Intelligent Automation.

# A hospital built for excellence, **stuck in manual HVAC operations**

**Aster Malabar Institute of Medical Sciences Ltd. (Aster MIMS)**, a 600-bedded multispecialty hospital renowned for its excellent medical expertise, faced substantial energy inefficiencies stemming from an overreliance on manual HVAC operations. The facility's chiller plant ran on fixed setpoints of 7°C throughout the day, regardless of the varying cooling loads, leading to such inefficiencies.

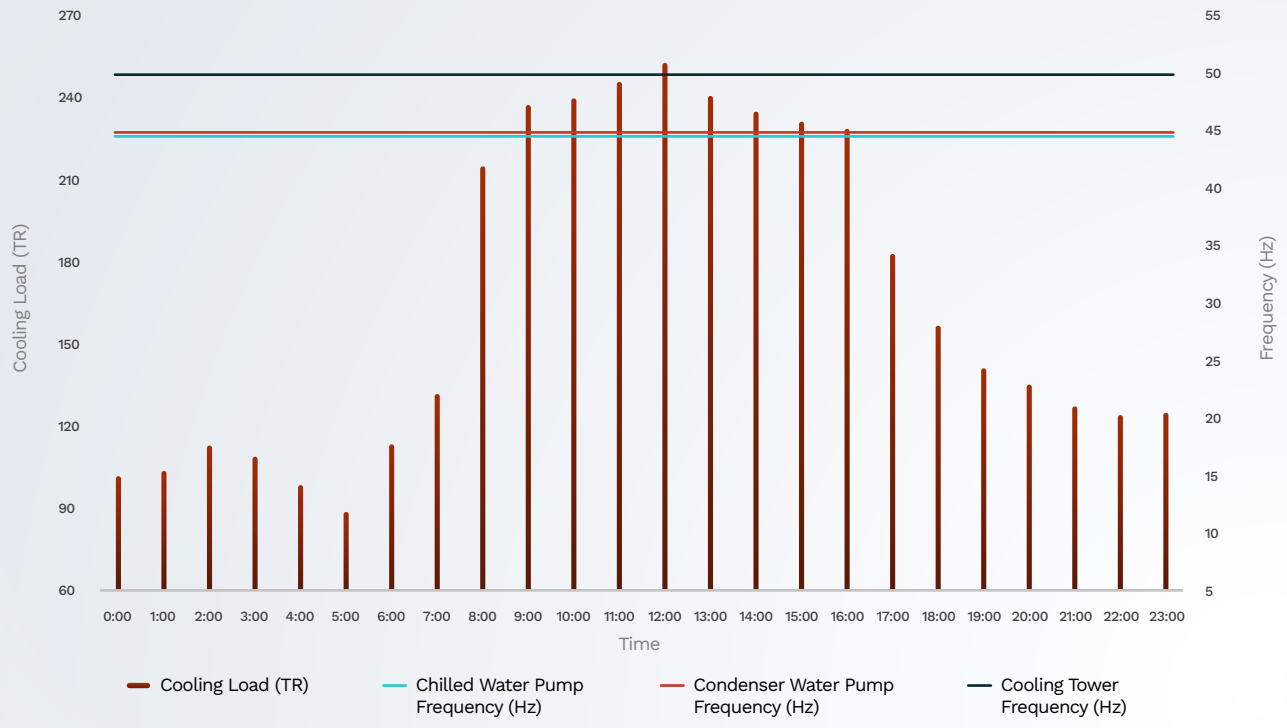
## DAILY SCHEDULE

Mon ✓ Tues ✓ Wed ✓ Thurs ✓ Fri ✓ Sat ✓ Sun ✓

| | |
|---|---|
| Time | 8 AM – 5 PM |
| Operating Status | Two chillers active |
| Chiller(s) Active | 250 TR and 180 TR |

| | |
|---|---|
| Time | 5 PM – 8 AM |
| Operating Status | Either of the two chillers active |
| Chiller(s) Active | 250 TR or 180 TR |

## Chiller plant operations before DeJoule



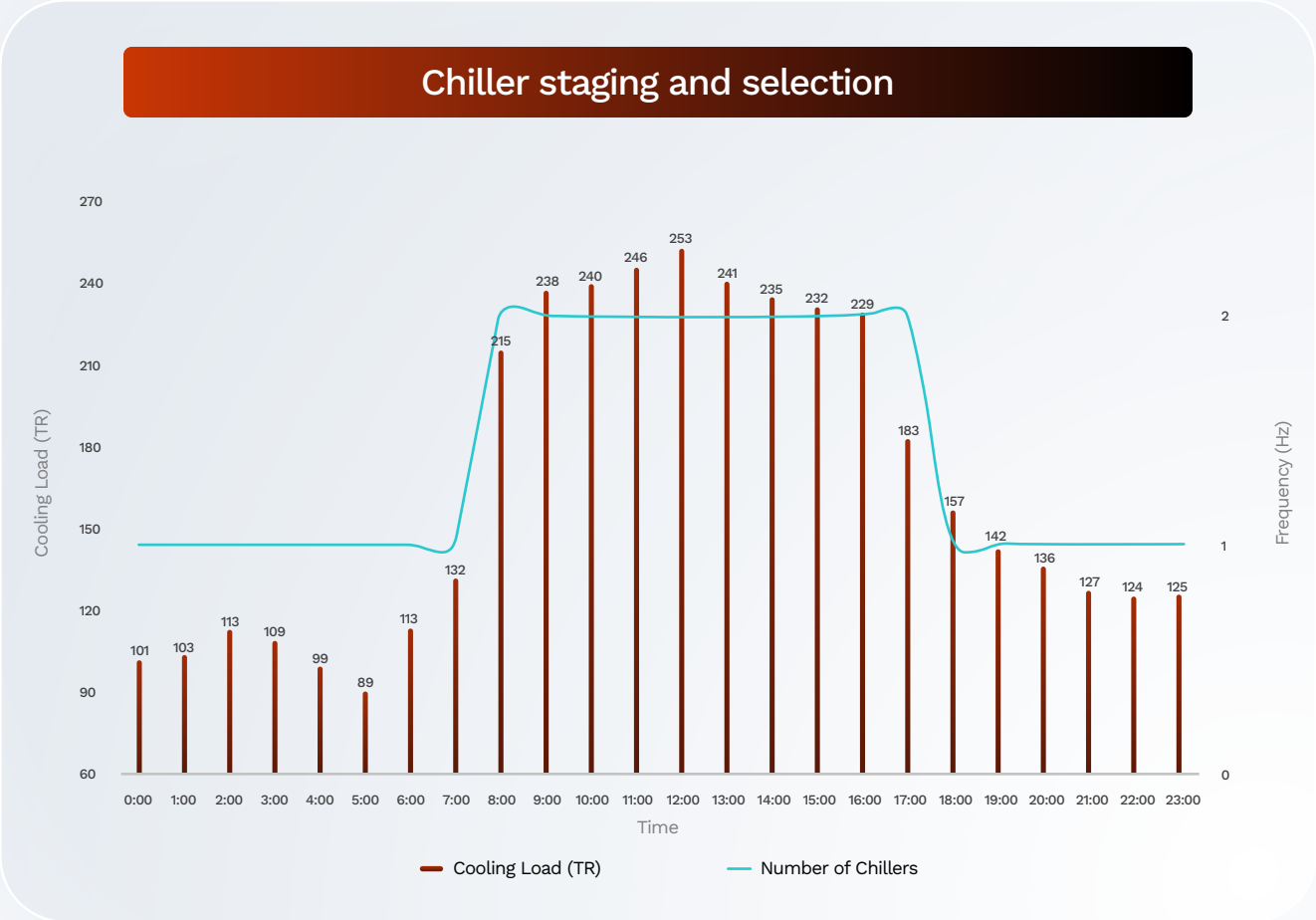
# From fixed setpoints to **minute-by-minute optimization, driven by intelligent automation**

To eliminate real-time energy waste and enable 24x7 monitoring and control, Aster MIMS Calicut deployed DeJoule, our intelligent, full-stack, cloud-native building management system that uses AI-powered algorithms and machine learning to proactively eliminate energy waste, improve equipment performance, and drive operational excellence.

DeJoule eliminated the facility's energy waste every operational minute by optimizing operating setpoints and equipment frequencies to meet real-time cooling loads. To achieve this, DeJoule deployed the following efficiency-first automation strategies:

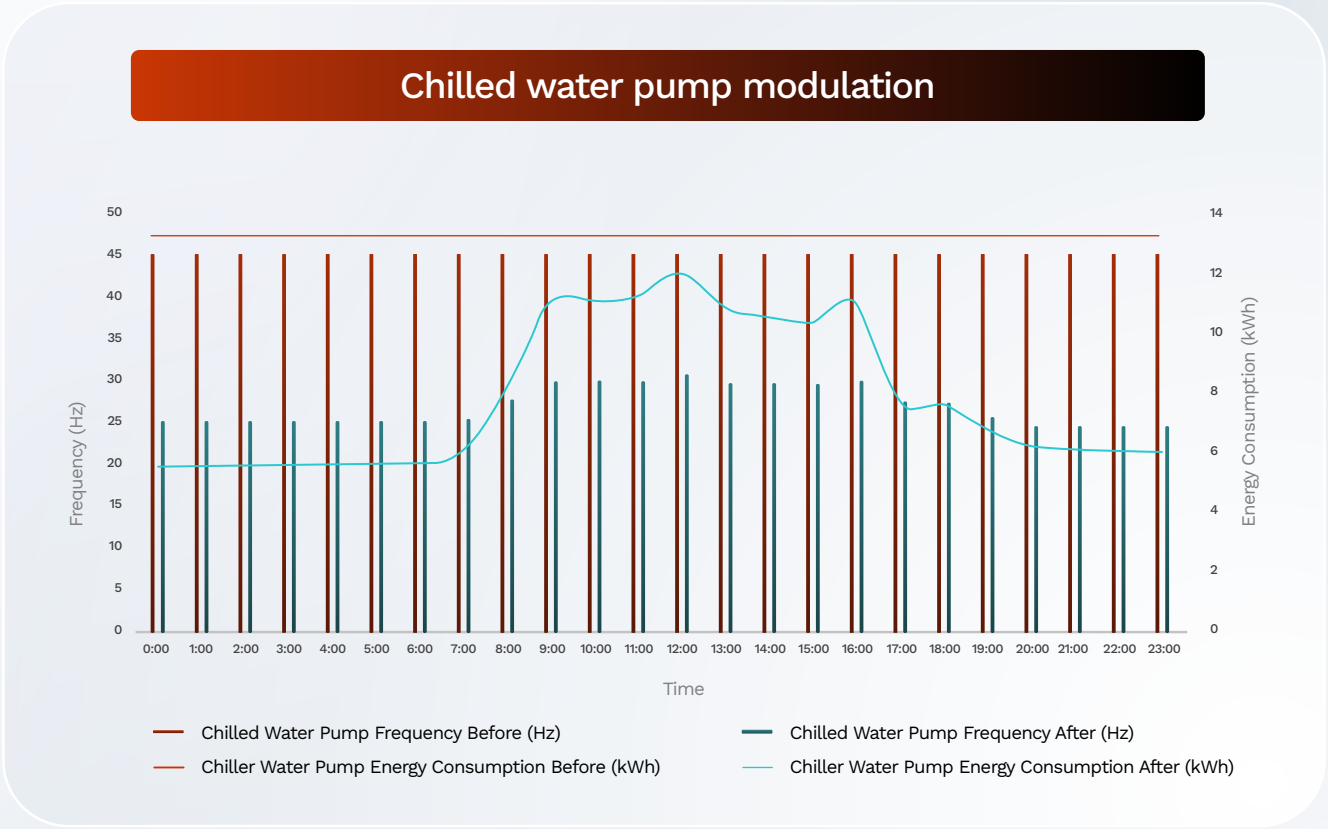
## Chiller Staging and Selection in Real-Time

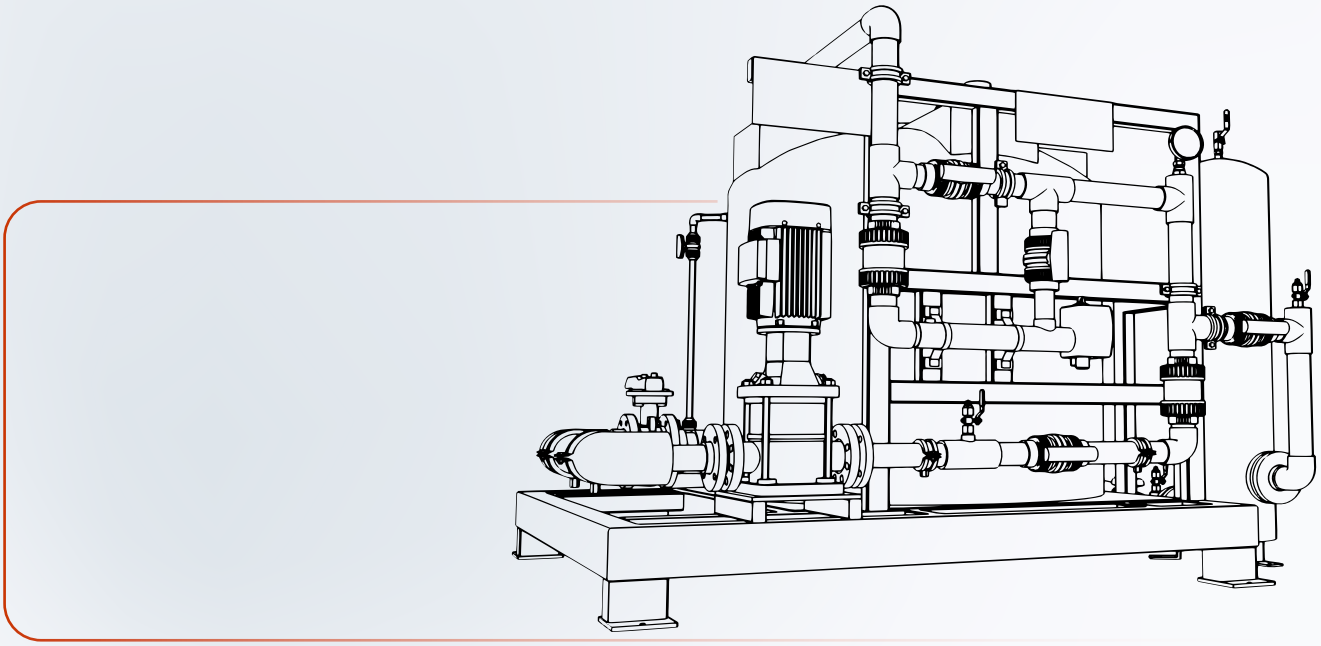
Based on the facility's varying cooling load, DeJoule continuously evaluated and selected the most energy-efficient chiller (or combination of chillers: 250 TR variable speed chiller & 180 TR fixed speed chiller) to deliver precise cooling every minute without unnecessary runtime. Thus, ensuring optimal indoor comfort with minimal energy use in real time.



## Real-Time Modulation of Chilled Water Pump Frequency

DeJoule leveraged deep-learning models to dynamically modulate the chilled water pump frequency based on the chilled water delta temperature. Thus, ensuring optimal indoor comfort while eliminating energy waste in real time.

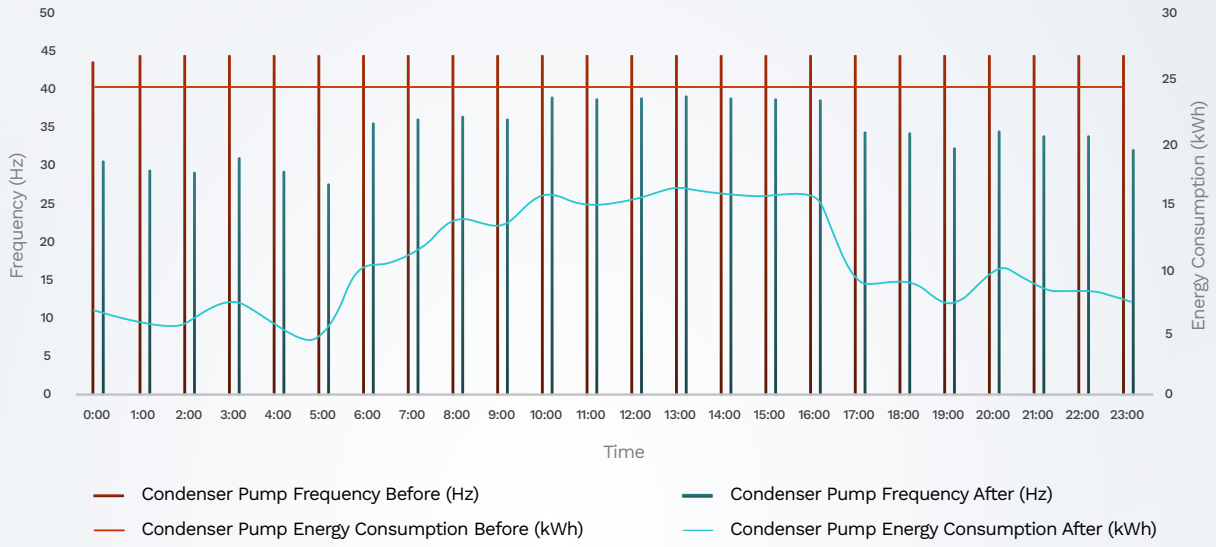


## Real-Time Modulation of Condenser Water Pump Frequency and Cooling Tower Fan Speed

Similarly, DeJoule adjusted the condenser pump frequency based on condenser water delta temperature and the cooling tower fan speed based on the target condenser entry temperature. Thus, avoiding overuse of pumps and fans while ensuring stable cooling with minimal energy wastage.

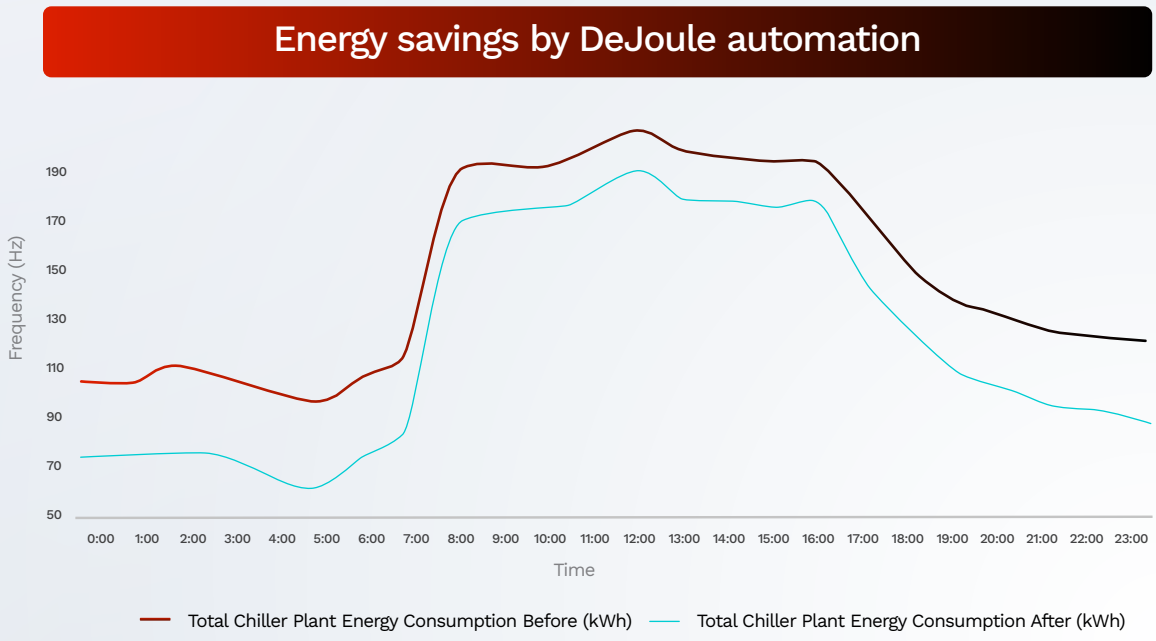
### Condenser pump modulation



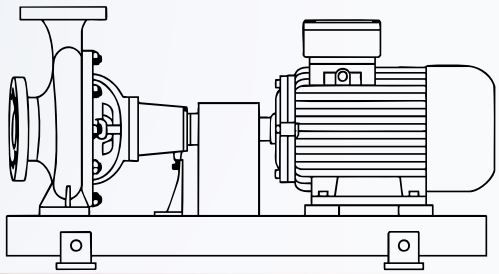

### Cooling tower modulation

# Zero Assumptions. Intelligent decisions. **Substantial Energy Savings.**

DeJoule's Intelligent Automation eliminated energy waste in real-time, delivering a 15% increase in the overall chiller plant's efficiency and saving 525 kWh of energy every single day.




| Metrics | Before | After |
|---|---|---|
| Chiller Plant SEC | **0.87-1** kW/TR | **0.74** kW/TR |
| Daily Energy Saved | - | **525** kWh/day |

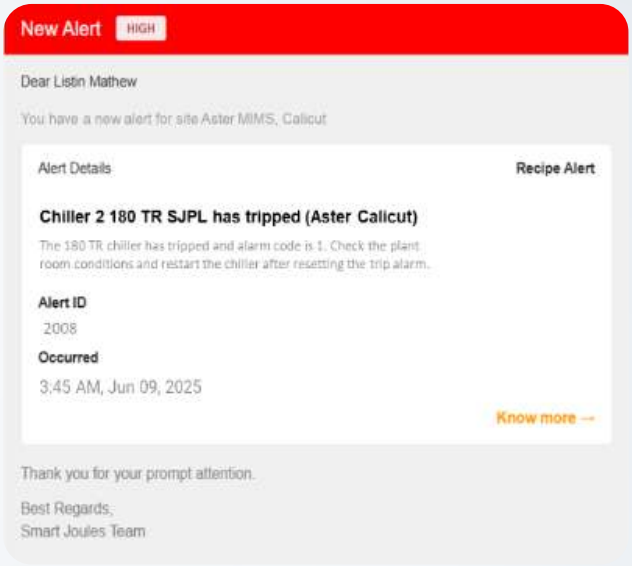


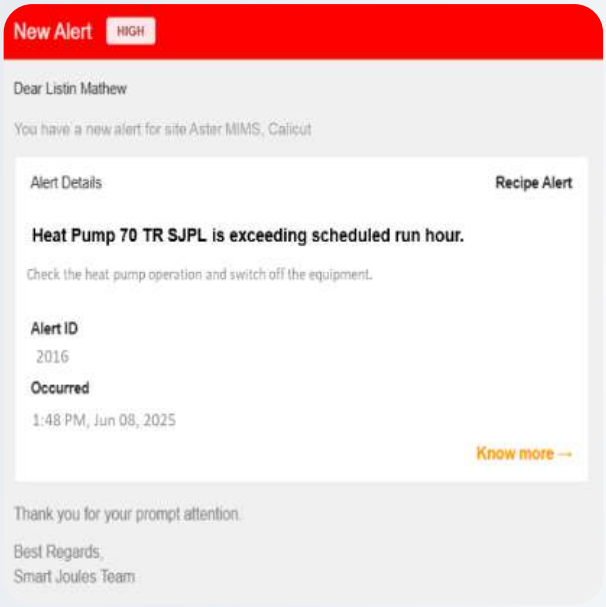
# Beyond Energy Efficiency

Driving operational excellence at the facility, DeJoule's SMART Alerts leveraged 24x7 monitoring and prognosis to provide operators with critical, real-time insights, thus enabling faster decision-making and proactive, preventive actions.

## Chiller Trip Alerts

DeJoule's real-time notification of a chiller trip enabled operators to take immediate action. An email notification was sent to the site engineer, site manager, site electrician, and the project partner. Moreover, an alert was sent on the DeJoule system in the control room, indicating the urgency of the issue. The attached alert, generated at 3:45 AM on June 9th and resolved by the site operations team within two minutes (by 3:47 AM), demonstrates its rapid impact.




## Heat Pump Run Hour Violation

DeJoule intelligently detected and alerted operators when the heat pump operated beyond its scheduled hours, preventing unnecessary energy consumption.

# Did you **know?**

Unplanned chiller trips can quietly cost you ₹8–10 lakhs every year. Each chiller trip forces backups to run at full load, spiking energy use 15–20% per incident.

Root-cause hunting—failing pump, clogged strainer, or a drifting sensor, can take hours or days while inefficiencies pile up unnoticed.

All that hidden waste adds up to 60-80 tons of avoidable $CO_2$ emissions over a year, simply because no one knows what went wrong nor have any information on preventive actions to avoid such trips from happening.

DeJoule's Smart Alerts detect faults instantly, pinpoint the true root cause, and help your team fix issues before they drain your budget.

## About dejoule

INTELLIGENCE MEETS IMPACT

DeJoule is a full-stack, intelligent building management system designed to eliminate hidden energy waste, boost operational excellence, and help buildings perform at their peak, every minute, every day.

Born from SmartJoules' mission to make energy efficiency simple, substantial, and profitable, DeJoule combines lean, frugal hardware with cloud-native capabilities and AI-driven automation to keep your building running at its best, 24/7. From hospitals to factories and commercial spaces, our solutions empower operations teams to spend less time firefighting and more time delivering measurable impact.

Since 2016, we have enabled this transformation in over 60+ buildings. Now is your turn!

Contact us for a demo

info@smartjoules.in | dejoule.co.in