

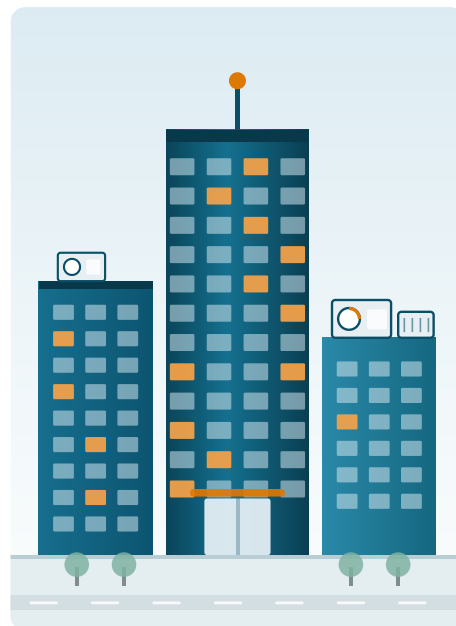
ENERGY MANAGEMENT SYSTEM

SmartNova 5.2 EMS

SmartNova 5.2 EMS is the EnSmart energy management system. It reads the site's electrical, generator, thermal and water meters, stores every reading on a server inside the building, and reports consumption the way the site is accountable for it — by utility, by source, by block and by tenant.

The system is supplied on its own, without the BMS supervisor, for customers who need energy accounting rather than plant control. It runs on the customer's own server, works with meters from any vendor over Modbus or BACnet, and grows later into the full SmartNova platform if the site adds controls.

Modbus RTU / TCP	BACnet/IP	EB · DG · BTU · Water	Web & mobile
On-premises	Carbon reporting		



Web-based No client software to install	4 utilities EB · DG · thermal · water	15 min Default logging interval	Any meter Modbus or BACnet, any vendor	100 % on-site No cloud dependency
---	---	---	--	---

FEATURES & BENEFITS

- Automatic meter reading over Modbus RTU / TCP and BACnet/IP — no manual rounds
- EB, DG, thermal (BTU) and water metering in one system, with solar and other sources
- Sub-metering by tenant, floor, block, feeder or individual machine
- Consumption, demand and load profile dashboards by day, month and year
- EB against DG split, so generator running is costed separately
- Failed or missing reads flagged for correction before the period is reported
- Energy intensity — per sq ft or per unit of production
- CO₂ reporting with configurable emission factor and tree / vehicle equivalents
- Reporting aligned to BEE / ECBC energy conservation requirements
- Air quality (CO₂, AQI, IAQ) reported alongside energy where sensors exist
- Exports to XLS and PDF for finance, ESG and management reporting
- Runs on the customer's own server; no cloud service, no internet dependency

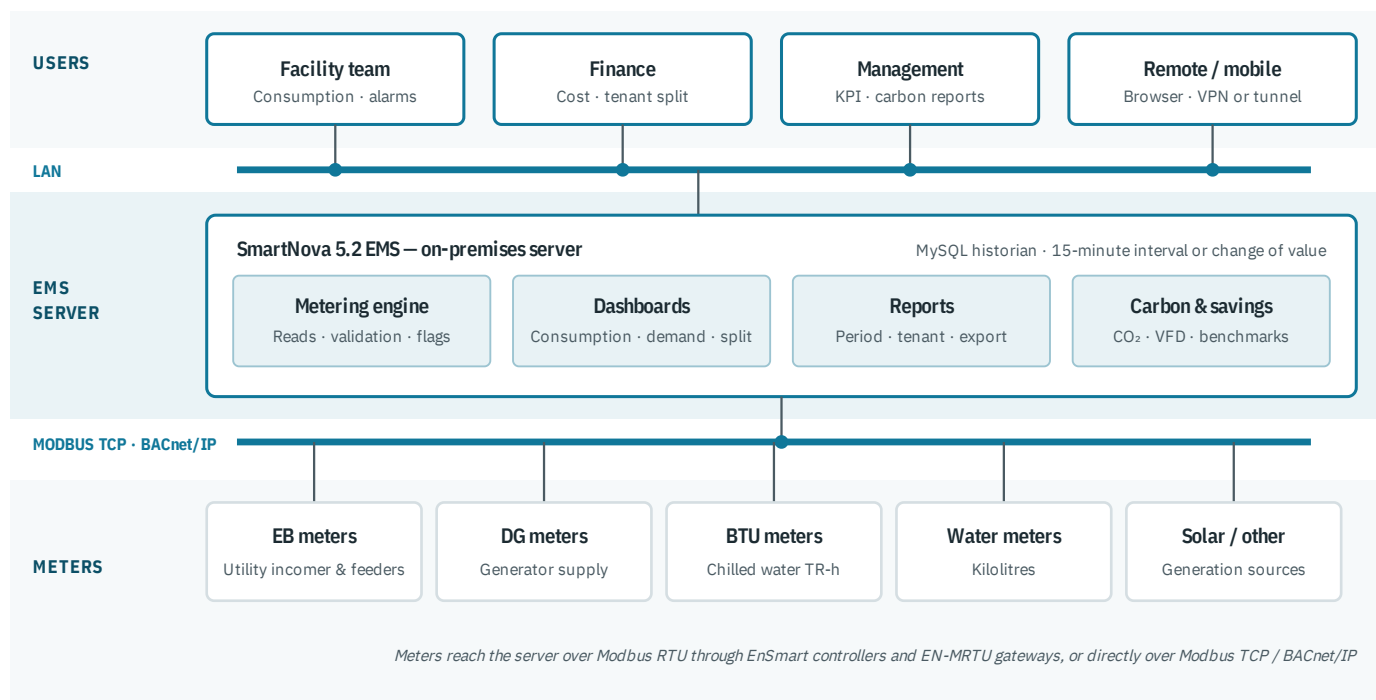
APPLICATIONS

IT parks & commercial Tenant and common-area energy accounting across blocks	Industrial Feeder, machine and utility-wise consumption and intensity	Data centres Critical load and DG accounting with PUE inputs	Campus & portfolio Several buildings reporting into one energy dashboard
--	---	--	--

Typical sectors: Commercial buildings · IT parks · Industrial · Data centres · Pharmaceutical · Retail · Education

— SYSTEM ARCHITECTURE & METERING

One on-premises server polls every meter, stores the readings in a MySQL historian and serves the dashboards to any browser on the network. Meters connect over Modbus RTU through EnSmart controllers and gateways, or directly over Modbus TCP and BACnet/IP.



WHAT IS METERED

- EB (utility) incomer and feeders
- DG sets, so generator energy is separated from utility supply
- Thermal (BTU) meters for chilled water, in TR-h
- Water meters, in kilolitres
- Solar and other generation sources
- Sub-meters by tenant, floor, block or individual equipment

HOW READINGS ARE COLLECTED

- Analogue points logged at a 15-minute interval by default; digital points on change of value
- Readings stored in monthly partitioned tables for fast retrieval
- Automatic reads at period start and close for billing and reporting
- Failed or missing reads flagged for correction before the period is closed
- Meters from any vendor, as long as the register map is published
- Point schedule imported from the meter list — no manual entry of thousands of registers

Where a site already has EnSmart controllers or EN-MRTU gateways, the same devices carry the meter data — no additional field hardware is needed for the EMS.

DASHBOARDS & REPORTS

The dashboards answer the three questions a site asks every month: how much was used, where it went, and how that compares with last month.

DASHBOARDS & KPIS		
VIEW	CONTENTS	PERIOD
Consumption	kWh by meter, feeder, system, floor or tenant	Day · month · year
Load profile	Demand curve through the day, with peak value and the time it occurred	Day · week
Source split	EB against DG consumption and cost	Month · year
Comparison	This period against the previous one, or the same period last year	Any
Thermal & water	TR-h and kilolitres by consumer or block	Day · month
Intensity	Energy per sq ft or per unit of production	Month
Air quality	CO ₂ , AQI and IAQ alongside energy, where sensors exist	Live · day
Carbon	CO ₂ avoided and emitted, with tree and vehicle equivalents	Month · year

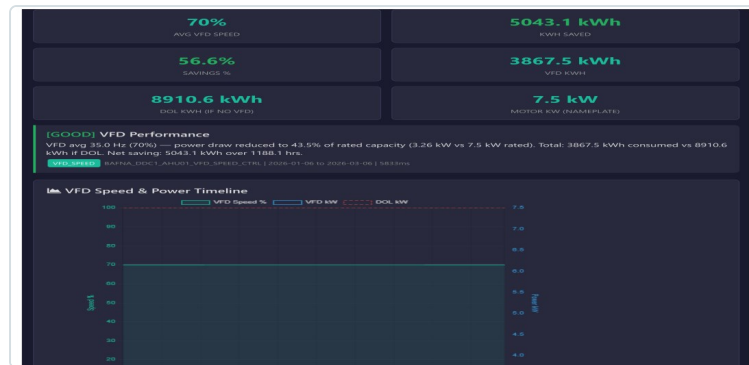
STANDARD REPORTS		
REPORT	CONTENTS	USED BY
Energy consumption	Consumption by day, month or year for any meter, system or consumer	Facility, finance
Tenant / block summary	Consumption for every consumer in one sheet	Finance
EB vs DG	Utility and generator energy with cost at the site tariff	Finance
Thermal (BTU) & water	TR-h and kilolitre consumption per consumer	Finance
Demand & peak	Maximum demand, time of peak and load factor	Facility
Intensity & benchmark	Energy per sq ft or per unit, against the previous period	Management
Carbon	Emissions and avoided CO ₂ with the configured emission factor	Management, ESG
Meter health	Failed, missing and stuck reads for correction	Engineering
Trend / point export	Raw logged values for selected meters and period	Engineering

OUTPUT & DELIVERY

- On screen, in the browser
- Print and PDF
- XLS / CSV export
- Custom formats built to the customer's own template
- Pulled by other systems over the REST API
- Scheduled email to a recipient list

SAVINGS, OPTIMISATION & CARBON

Metering shows what a site spends. The optional Nova AI analytics module turns the same data into what the site can save — and quantifies it in rupees and in CO₂.



VFD performance — speed and power against time, with kWh saved compared to direct-on-line running

WHERE THE SAVINGS COME FROM

- VFD speed optimisation assessed against the affinity law, $P \propto \text{speed}^3$
- Actual consumption compared with direct-on-line operation, per machine
- kWh saved, percentage saving and value at the site tariff
- Valve and coil overcooling flagged for control retuning
- Peak demand reduction by shifting start times
- Live result: 70 % average VFD speed, 56.6 % energy saved on one AHU

CARBON & COMPLIANCE

- CO₂ reported from metered consumption
- Emission factor configurable to the grid or site figure
- Tree and vehicle equivalents for management reporting
- Aligned to BEE / ECBC energy conservation requirements (ECBC certification is not held)
- Data exportable for ESG and sustainability returns

Nova AI analytics is licensed separately (SN-BMS-AI). Without it, the EMS still reports consumption, demand, cost, intensity and carbon from the metered data.



ROI business case — executive summary with system health banding and annual value (Nova AI analytics module)

— INTEGRATION, USERS & DATA

INTERFACES		
INTERFACE	ROLE	NOTES
Modbus RTU (RS485)	Energy, BTU and water meters in the field	Via EnSmart controllers and EN-MRTU gateways
Modbus TCP	Meters, PLCs and third-party systems on Ethernet	Client
BACnet/IP	Meters and plant published by a third-party BMS	ISO 16484-5 / ASHRAE 135
MQTT	Publish selected data to an IoT or cloud platform when the customer wants it	Broker and topics configured per site
REST API	Read consumption data from other applications	Token-based access
SMTP / SMS	Notification by email as standard	SMS by custom development; gateway and SIM are the customer's scope
MySQL database	Direct access to historical data for customer reporting	MySQL is the standard platform; other databases by custom development
CSV import / export	Meter schedules and register maps	Speeds up commissioning

WHAT THE SYSTEM NEEDS FROM A METER	
REQUIREMENT	DETAIL
Communication	Modbus RTU (RS485), Modbus TCP or BACnet — a pulse output can be used with an EnSmart IO module
Register map	Published register list from the meter maker, for energy, demand and the other values to be read
Addressing	A unique slave ID on each RS485 bus; up to 32 devices per segment without a repeater
Cabling	Shielded twisted pair, daisy-chained, 120 Ω termination at both ends
Accuracy	Meter class and CT ratio as required by the site or the tariff authority

USERS & ACCESS

- Named user accounts with role-based permissions
- Access restricted by system, area or consumer where required
- Password policy, expiry and account lock-out
- Session timeout after inactivity
- Active Directory / LDAP authentication

RECORDS & DATA

- Every configuration change and manual entry recorded with user and timestamp
- Audit trail exportable for review; records cannot be edited from the interface
- All data held in the customer's MySQL database on their own server
- Archiving to storage the customer controls, performed as a planned task
- Server hardening, OS patching and antivirus remain under customer IT control

SPECIFICATIONS & SYSTEM REQUIREMENTS

PLATFORM	
Release	SmartNova 5.2 EMS
Architecture	Server with browser clients
Deployment	On-premises only
Database	MySQL
Language	English

METERING	
Utilities	EB, DG, thermal (BTU), water
Other sources	Solar and generation, where metered
Sub-metering	Tenant, floor, block, feeder, machine
Protocols	Modbus RTU / TCP, BACnet/IP
Validation	Failed and missing reads flagged

LOGGING & HISTORY	
Interval	15 minutes by default
Change of value	Digital points on change
Storage	Monthly partitioned tables
Retention	Sized with the server disk
Archiving	Manual, to customer-controlled storage

REPORTING	
Dashboards	Consumption, demand, split, comparison
Intensity	Per sq ft or per unit of production
Carbon	Configurable emission factor
Export	PDF, XLS, CSV
Custom reports	Built to the customer's template

USERS & SECURITY	
Accounts	Named users, role-based
Directory	Active Directory / LDAP
Audit	Changes logged with user and time
Network	LAN / VPN; no internet required
Data	Stays on the customer's server

CAPACITY	
Meters / nodes	Licensed in bands from 100 nodes
Browser users	Not licence-limited on the LAN
Sites	Site licence per building
Trended points	Sized by the server specification
Remote access	Secure EnSmart tunnel

SITE SERVER (MINIMUM)	
Processor	Intel Core i7 or better
Memory	16 GB RAM
Storage	500 GB — size up with meter count and retention
Operating system	Windows 10 or later
Platform	Apache, PHP and MySQL (WAMP stack)
Deployment	On-premises only — customer's own server

CLIENT & NETWORK	
Client software	None — standard web browser
Browser	Chrome, Edge or Firefox
Mobile	Android and iOS browsers, responsive layout
Network	100 / 1000 Mbps LAN to the server
Remote access	Customer VPN, or the secure EnSmart tunnel
Internet	Not required for any function

ORDERING & DELIVERY

ORDERING INFORMATION		
ITEM	DESCRIPTION	PART NUMBER
EMS licence	SmartNova 5.2 Energy Management System, licensed by node band	SN-EMS-100 / -200 ...
Nova AI analytics	VFD and valve optimisation, efficiency scoring, forecasting and ROI reporting	SN-BMS-AI-100 / -200 ...
Tenant billing	Tariffs, invoices, apportionment and billing history	SN-TBS-100 / -200 ...
Additional site	Site licence for a further building reporting to the central dashboard	On request
Support & updates	Annual support, updates and remote assistance	On request

The number in the part number is the licensed size in nodes — one node is three trended datapoints plus the meter's other monitoring points. SmartNova 5.2 EMS is part of the SmartNova platform and can be extended later with BMS supervision (SN-BMS) on the same server.

FROM ENQUIRY TO HANDOVER

- 1 Site survey — meter list, locations and existing cabling reviewed
- 2 Design — meter schedule, tariffs, dashboards and reports agreed
- 3 Meter integration and network cabling, with the site in operation
- 4 Commissioning — reads verified meter by meter against the display
- 5 User training and handover documentation
- 6 Annual support, updates and periodic review

Technical support	Installation & setup	Meter integration	User training	Report customisation	Annual maintenance
-------------------	----------------------	-------------------	---------------	----------------------	--------------------