

PRODUCT PORTFOLIO

# JOHANN

*Maximum autonomy.*



LINE 01

## JOHANN X3 Battery

Modular electricity storage.



LINE 02

## JOHANN X3 Calor

Integrated storage, heating and cooling.



LINE 03

## JOHANN X3 Hydrogen

Long-term hydrogen energy storage.

PRODUCT LINE 01

# JOHANN X3 Battery

*Modular battery storage — for intelligent electricity management.*

Part of the **JOHANN** energy platform



# Energy storage that pays you back.

*JOHANN X3 Battery is a modular energy-storage system that stores your power and does four practical jobs — each one shows up on your bill and in your resilience. It reports its energy in real time — monitored for continuous optimisation.*



## Cuts your peak charges

Stored energy covers demand spikes, so you shave load peaks and lower the demand-charge part of your grid bill.



## Uses more of your own solar

Store surplus PV by day, use it by night — far more self-consumption instead of buying expensive grid power.



## Keeps you running in a blackout

Island-capable with built-in UPS and switchover < 20 ms (grid-loss transition) — critical loads stay live when the grid drops.



## Scales with your needs

Modular by design — start where you are today and add storage in steps as demand or PV grows.

**Standalone today, expandable tomorrow.** Complete on its own — or the first step into the full JOHANN energy hub.

# Two standardized models, one proven platform.

Same footprint and same maximum capacity — the X3-45 grows into the same usable kWh as the X3-90, just with the smaller inverter class. Choose the power class that fits your site.

## JOHANN X3-45 Battery

*The scalable choice*

- 45 kVA nominal · 75 kVA peak (5 s)
- 94.47 – 188.94 kWh usable · expandable in 2-module steps (28 / 30 / 32 ... / 56)

## JOHANN X3-90 Battery

*The high-power choice*

- 90 kVA nominal · 150 kVA peak (5 s)
- 188.94 kWh usable · 56 modules (max power)

| Specification                 | X3-45               | X3-90               |
|-------------------------------|---------------------|---------------------|
| Inverter nominal power        | 45 kVA              | 90 kVA              |
| Peak output (5 s)             | 75 kVA              | 150 kVA             |
| Usable capacity               | 94.47 – 188.94 kWh  | 188.94 kWh          |
| Storage modules               | 28–56               | 56                  |
| Cell chemistry                | LiFePO <sub>4</sub> | LiFePO <sub>4</sub> |
| Charge cycles (25 °C)         | ≥ 6,000             | ≥ 6,000             |
| Inverter efficiency           | 95%                 | 95%                 |
| Backup switchover (grid-loss) | < 20 ms             | < 20 ms             |
| Operating range               | -20 to 45 °C        | -20 to 45 °C        |
| Protection                    | IP54 / IK10         | IP54 / IK10         |
| Fire rating                   | R90 / EI90 / REI90  | R90 / EI90 / REI90  |
| Footprint (L×W×H)             | 3.54×2.84×2.99 m    | 3.54×2.84×2.99 m    |



**188.94 kWh** usable storage

**< 20 ms** backup switchover

**≥ 6,000** charge cycles

PRODUCT LINE 02

# JOHANN X3 Calor

*Electricity storage, heating and cooling —  
for integrated power-to-heat optimization.*

Part of the **JOHANN** energy platform



# Heat that runs on your own power.

*JOHANN X3 Calor keeps every benefit of JOHANN X3 Battery — peak shaving, PV self-use, blackout backup and modular scaling — and adds a high-efficiency air-to-water heat pump on top. It turns your own power into heat, so the same system that cuts your electricity bill decarbonises your heat as well.*



## Cuts your heating costs

At COP up to 4.5, one unit of electricity delivers up to ~4.5 units of heat — ≈ 55–65% lower heating running cost vs oil/gas (annual average).



## Removes fossil CO<sub>2</sub>

Electric heat with the R290 natural refrigerant ends Scope-1 emissions from your boiler — a direct ESG and reporting gain.



## Heats and cools in one

One modulating system for heating, cooling and process heat — quiet, odourless, centrally controlled, no on/off cycling.



## Pairs with your power

Driven by JOHANN X3 Battery's stored and PV power — summer heat at near-zero marginal cost, scalable 16 / 32 kW.

**Everything the Battery does — plus heat.** One energy and thermal hub — the full X3 Battery system with a heat pump built in.

# Two power classes, two heat outputs.

Two models — JOHANN X3-45 Calor and JOHANN X3-90 Calor — matched to the 45 or 90 kVA Battery. Each ships with a 16 or 32 kW monobloc heat pump (R290).

## JOHANN X3-45 Calor

*Pairs with X3-45 Battery*

- On the 45 kVA Battery · 16 or 32 kW heat-pump variant
- Heating + cooling · 35 °C = design point (best efficiency); 55 °C max (reduced efficiency)

## JOHANN X3-90 Calor

*Pairs with X3-90 Battery*

- On the 90 kVA Battery · 16 or 32 kW heat-pump variant
- Same heat module · scaled for larger sites

| Specification                     | X3-45                            | X3-90                            |
|-----------------------------------|----------------------------------|----------------------------------|
| <b>Pairs with Battery</b>         | X3-45 · 45 kVA                   | X3-90 · 90 kVA                   |
| <b>Heat-pump variant</b>          | 16 or 32 kW                      | 16 or 32 kW                      |
| <b>Outdoor units</b>              | 1× or 2× R290 monobloc heat pump | 1× or 2× R290 monobloc heat pump |
| <b>COP (A7/W35)</b>               | 4.51                             | 4.51                             |
| <b>Backup heater</b>              | 3 or 6 kW                        | 3 or 6 kW                        |
| <b>Refrigerant</b>                | R290 · GWP 3                     | R290 · GWP 3                     |
| <b>Flow temp (design / max)</b>   | 35 °C design / 55 °C max         | 35 °C design / 55 °C max         |
| <b>Min. outdoor temp</b>          | -25 °C                           | -25 °C                           |
| <b>Sound power L<sub>wa</sub></b> | ~65–68 dB(A)                     | ~65–68 dB(A)                     |
| <b>Protection</b>                 | IP54 / IK10                      | IP54 / IK10                      |
| <b>Fire rating</b>                | R90 / EI90 / REI90               | R90 / EI90 / REI90               |
| <b>Footprint (L×W×H)</b>          | ~5.0×2.84×2.99 m                 | ~5.0×2.84×2.99 m                 |



**up to 4.5** COP (A7/W35)

**R290** natural refrigerant · GWP 3

**55–65%** lower heating cost vs gas / oil (up to ~85% at best operating point)

PRODUCT LINE 03

# JOHANN X3 Hydrogen

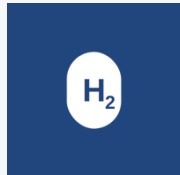
*Long-term hydrogen energy storage — full energy stack for true seasonal balancing.*

Part of the **JOHANN** energy platform



# Energy stored for months, not days.

*JOHANN X3 Hydrogen is the maximum-advantage configuration — it combines the electricity benefits of JOHANN X3 Battery and the thermal benefits of the JOHANN X3 Calor, then adds reversible hydrogen for true seasonal, summer-to-winter storage.*



## Seasonal long-duration storage

Stores ~1,409 kWh as hydrogen (chemical energy) @ 150 bar ≈ ~700 kWh usable electricity via fuel cell — shifting your summer PV surplus into winter, where a battery alone lasts hours to days.



## Maximum autonomy & resilience

Electrolyser, hydrogen store and fuel cell enable up to 100% autarky and worst-case resilience — independence beyond battery backup alone.



## Battery and Calor, plus Hydrogen

Inherits the Battery electricity jobs and the Calor heat pump, then couples them with hydrogen — power, heat and H<sub>2</sub> in one orchestrated system.



## A genuine sustainability showcase

An investor, ESG and first-mover case built on genuine decarbonisation — real seasonal autarky, not greenwashing.

**The full energy hub.** Power, heat and seasonal hydrogen in one platform — unique product for maximum autonomy.

# One integrated hydrogen system.

JOHANN X3-H45 Hydrogen combines a battery, electrolysis, high-pressure hydrogen storage, a fuel cell and a heat pump in one Hybrid Energy Hub.

## JOHANN X3-H45 Hydrogen

Full stack: battery · electrolysis · H<sub>2</sub> store · fuel cell · heat pump.



**~1,409 kWh** hydrogen (chemical) ≈  
~700 kWh usable electric

**2.0 Nm<sup>3</sup>/h** H<sub>2</sub> electrolysis · 1–4× AEM

**45 kVA** inverter · 94.47 kWh battery

| Specification                   | JOHANN X3-H45  |
|---------------------------------|--|
| Inverter nominal power          | 45 kVA   |
| Usable battery capacity         | 94.47 kWh · 28 modules (fixed)                       |
| Cell chemistry                  | LiFePO <sub>4</sub> · ≥6,000 cycles                  |
| H <sub>2</sub> storage (energy) | ~1,409 kWh chem. ≈ ~700 kWh electric                 |
| H <sub>2</sub> storage pressure | 150 bar (max. operating pressure)                    |
| Electrolysis                    | up to 2.0 Nm <sup>3</sup> /h · 1–4× AEM electrolyser |
| Compressor                      | high-pressure compressor                             |
| Fuel cell                       | 3.0 kW (1.5 kW electrical / 1.5 kW thermal)          |
| Backup switchover               | < 20 ms  |
| Protection / fire               | IP54 / IK10 · R90 / EI90 / REI90                     |
| Footprint (L×W×H)               | 8.0×3.0×3.0 m (provisional)                          |
| Operating range                 | -20 °C to 45 °C                                      |



# The right configuration, considered carefully.

For a detailed overview and an analysis tailored to your requirements, our engineering team is at your disposal — clarifying the specifics and advising on the configuration best suited to your needs.



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