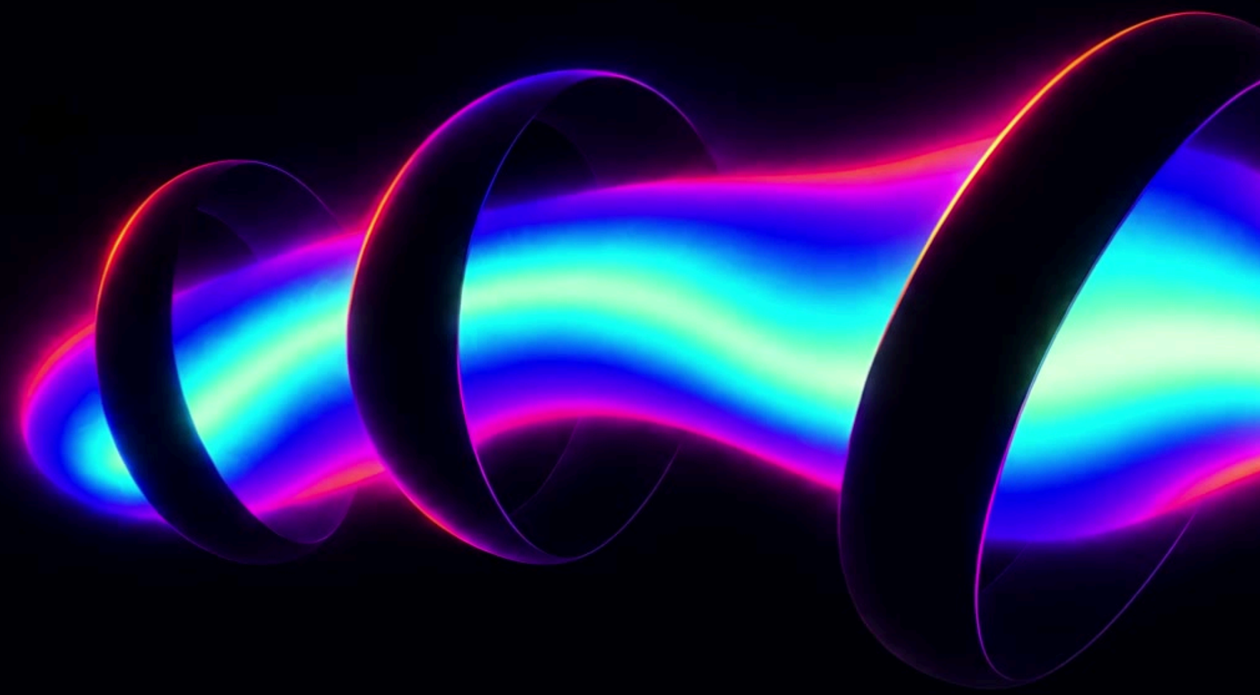


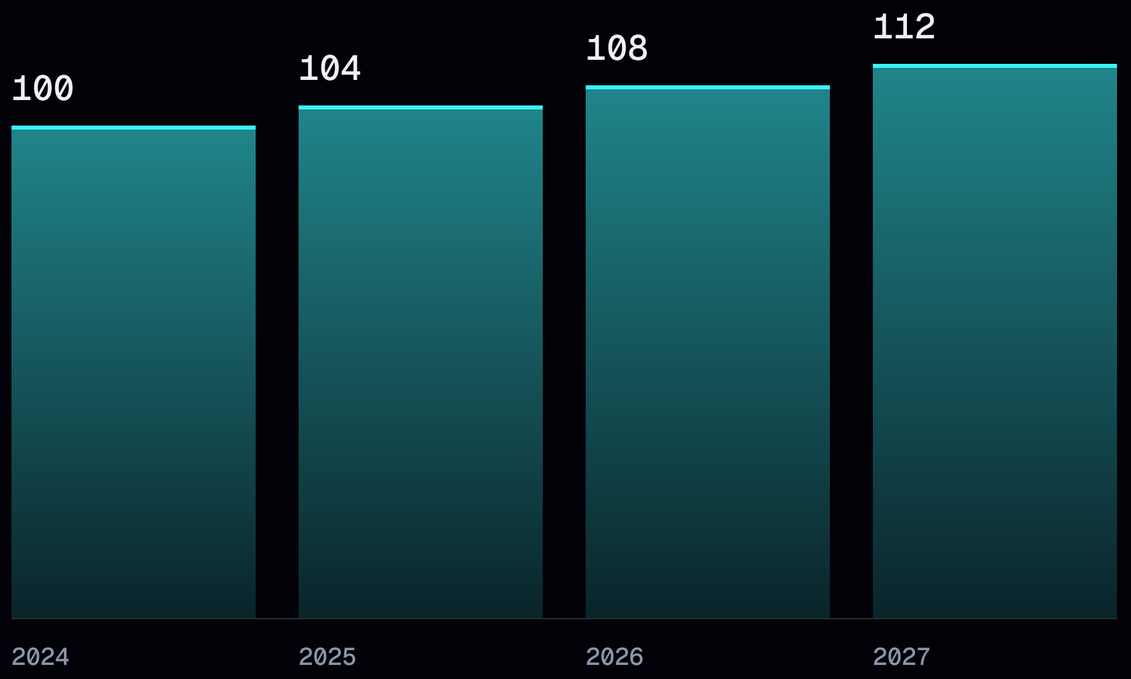
SUPERCONDUCTING MAGNETS FOR FUSION

The magnet that makes fusion small

ENERGY DEMAND

The world needs more clean power, day and night

Electricity use is forecast to grow about 4% a year to 2027. Fusion would add clean power that runs day and night.



Global electricity demand, index 2024 = 100, at the IEA's forecast growth of about 4% a year · source: IEA, Electricity 2025

WHY FUSION

Power from the reaction that runs the sun

No carbon, no long-lived high-level waste, and fuel from seawater and lithium. It runs around the clock.



The fuel has to reach about 100 million K, so no wall can hold it. A magnetic field does.

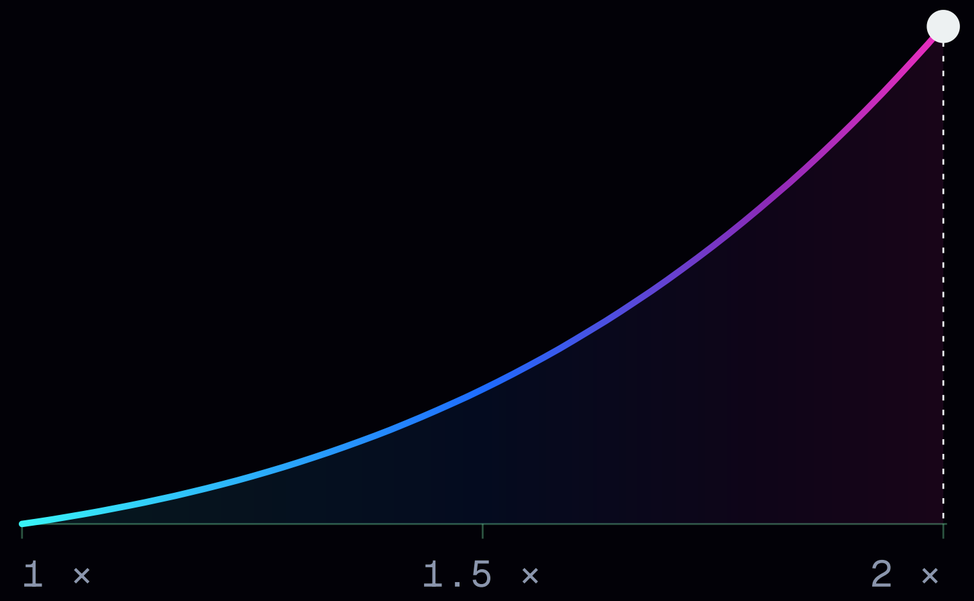
OUR APPROACH

Stronger magnets, smaller reactor

Fusion power density rises roughly with the fourth power of the field. Double the field and the same output fits in a much smaller machine.

16 ×
POWER DENSITY

2 ×
FIELD STRENGTH



AR-1 MAGNET MODULE

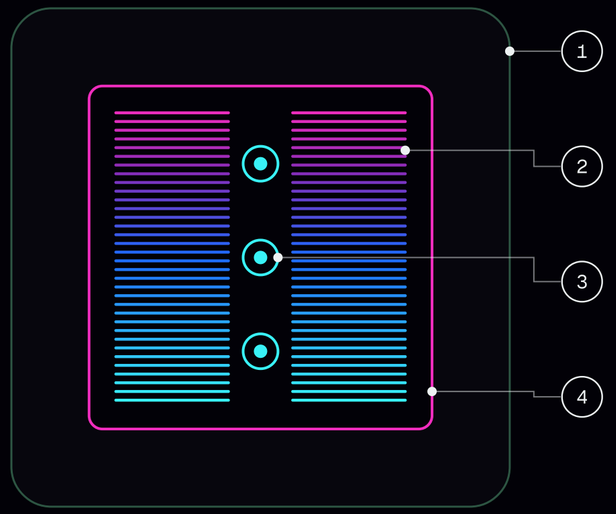
One coil, delivered ready

20 T
PEAK FIELD

20 K
OPERATING TEMP

18
PER REACTOR

40 kA
CURRENT



01

Steel case

Holds the coil together against the magnetic forces.

02

REBCO tape stack

Superconducting tape, stacked in plates. Carries the current with no resistance.

03

Cooling channels

Helium gas flows through to hold the coil at 20 K.

04

Copper

Wraps the tape stack and protects it.

PROOF

21.3 T, held for six hours

Our AR-0 demo coil, October 2026. The AR-1 is the same winding, built to ship.

2026

AR-0 demo coil

21.3 T held for 6 h

2027

First AR-1 delivered

Evaluation module for a fusion developer

2028

Pilot line

One module a month

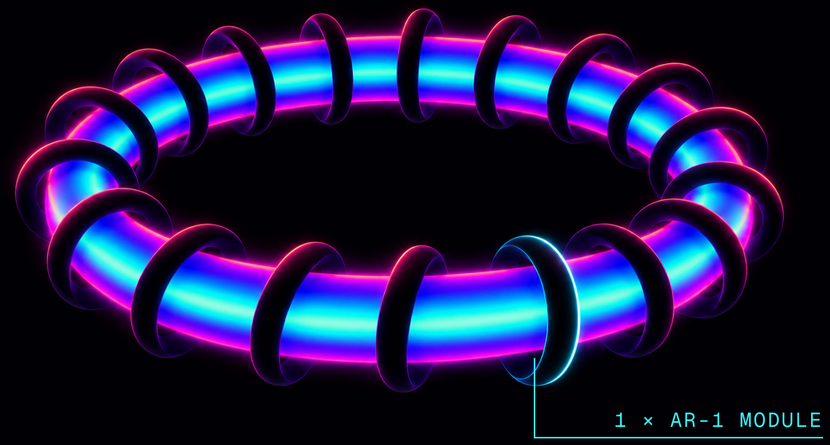
2030s

Full magnet sets

For the first power plants

WHY NOW

Every reactor needs eighteen



18 MODULES · ONE REACTOR

ILLUSTRATIVE, NOT TO SCALE

01

The tape is ready

REBCO tape is now made at industrial scale.

02

The buyers are here

Private fusion developers are designing around HTS magnets.

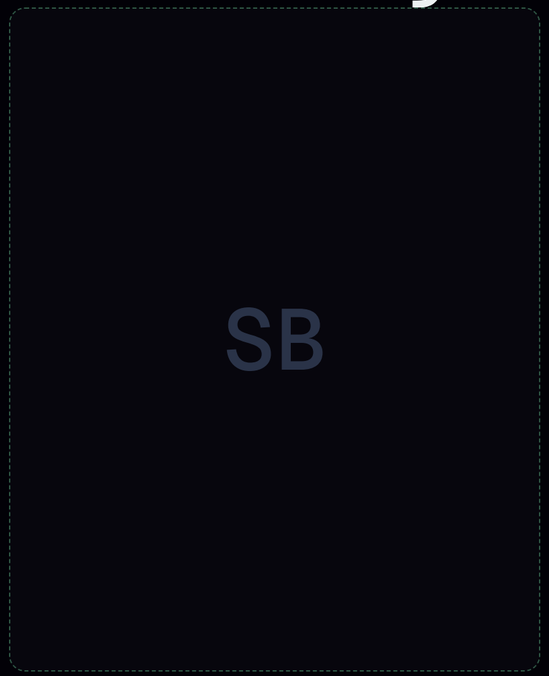
03

Coils are the bottleneck

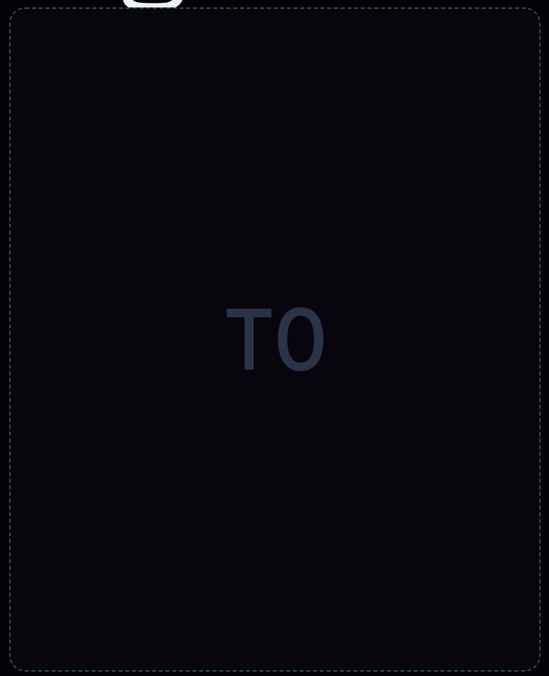
Few teams can wind and test them at full field.

TEAM

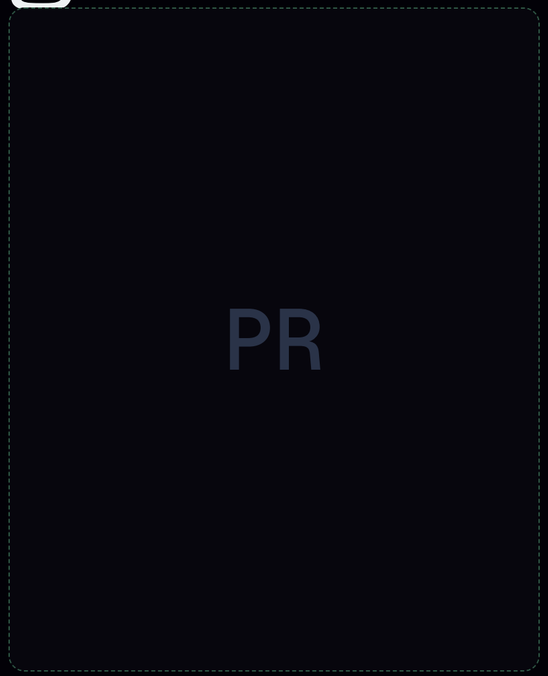
Built by magnet engineers



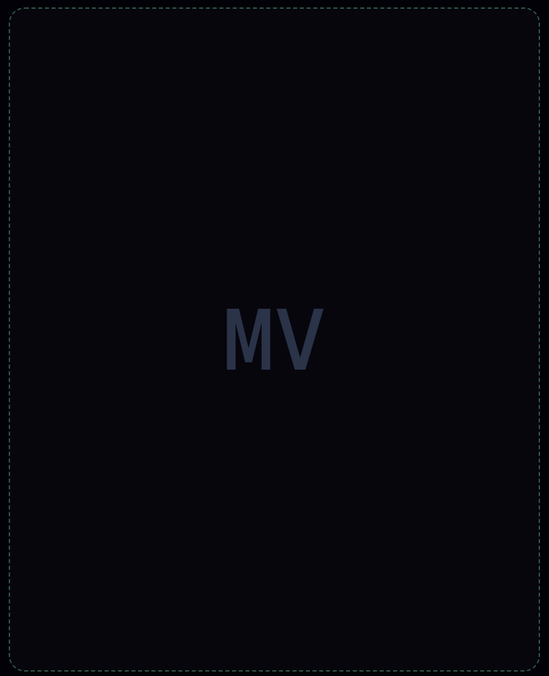
Sanne Bakker
Chief Executive



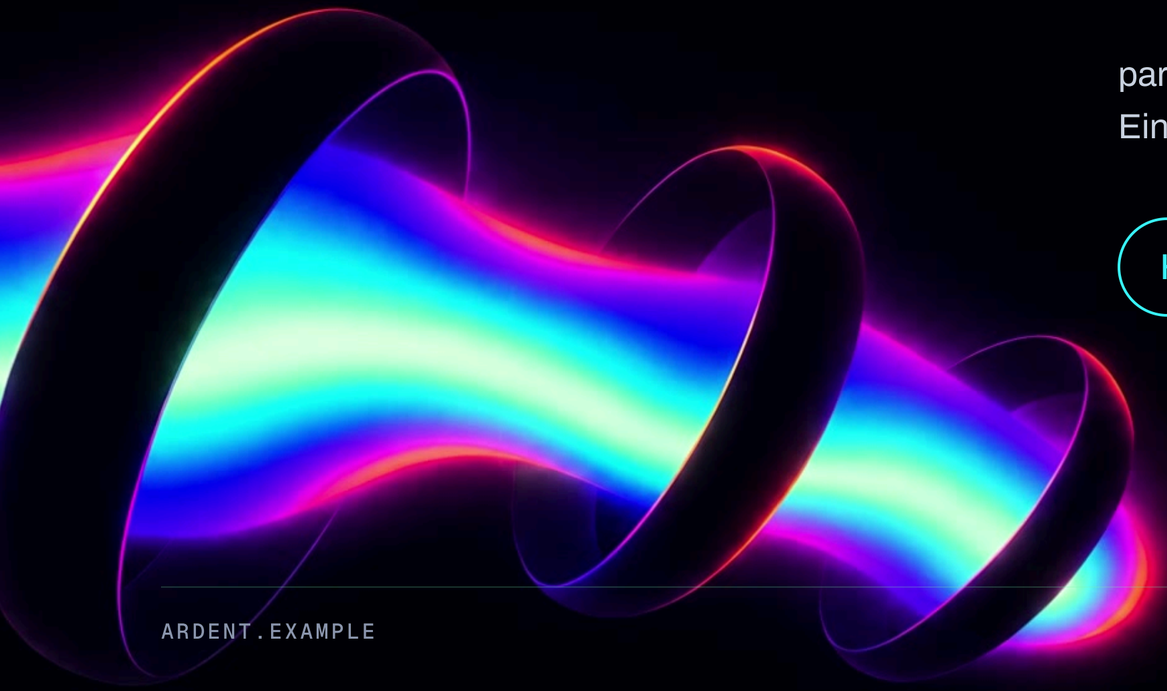
Tomás Ortega
Chief Technology Officer



Priya Raman
Head of Plasma Physics



Maya de Vries
Head of Magnet Engineering



NEXT STEP

Let's size your magnet set

partners@ardent.example
Eindhoven, the Netherlands

HALL 4 · B21

Power Futures Expo · Amsterdam · 3 to 5 March 2027