

A wide-angle photograph of a city street. In the foreground, a road with white lane markings and a yellow 'X' marking is visible. A white van is driving away from the camera, and a blue car is further ahead. The road is flanked by lush green trees and bushes. In the background, a dense urban skyline with various skyscrapers is visible under a clear sky. A traffic light and a street sign are visible on the left side of the frame.

skeleton+

Rebuilding industry
for a net-zero future.

The high power energy storage company.

A Pan-European Company

European value chain, European energy storage innovation

skeleton⁺



Tallinn, Estonia

- Software development
- Electronics engineering
- Module & system development



Berlin, Germany

- Sales & application engineering
- Grant & IP management
- Solid-state battery development



Großröhrsdorf, Germany

- SuperBattery R&D and production
- Supercapacitor research & development center
- Main production location from cells to systems



Varkaus, Finland

- SuperBattery pilot production
- Electrode manufacturing



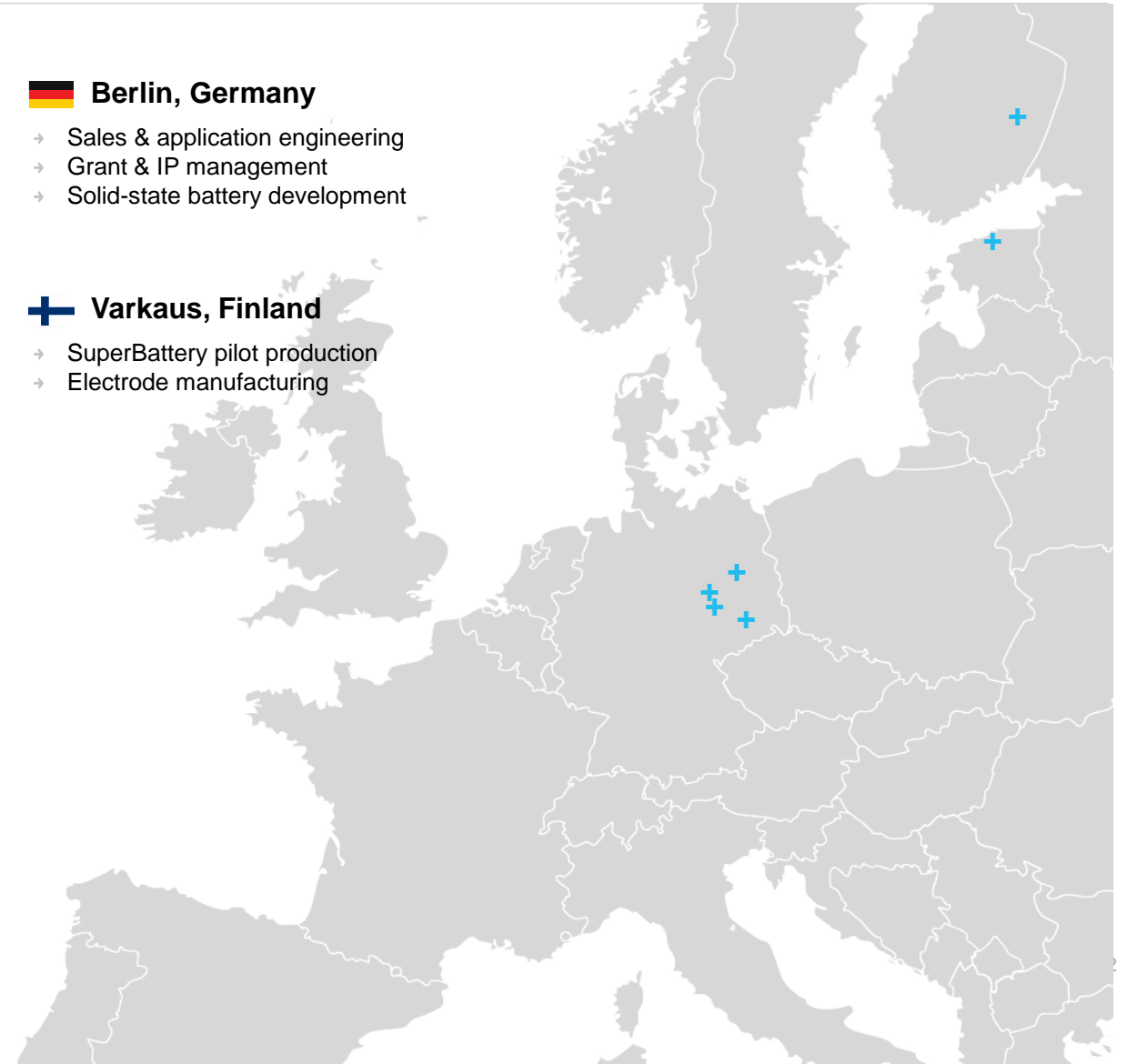
Markranstädt, Germany

- The largest and most modern supercapacitor factory in the world
- Start of production in 2024



Bitterfeld-Wolfen, Germany

- Curved Graphene synthesis and production
- Material pilot & development plant
- Solid-state material research



Technological Advantage Through Superior Carbon Raw Material

skeleton⁺

Backed by the largest R&D team in the industry

Li-ion Batteries

use a chemical reaction to store energy

 Slow

- + Limited power density (0.5 kW/kg)
- + **High energy density** (205 Wh/kg)
- + Limited cycle life (<3000)
- + Slow charge rate (1.5 C)
- + Safety concerns
- + Lithium, nickel, cobalt

Supercapacitors

use an electric field to store energy

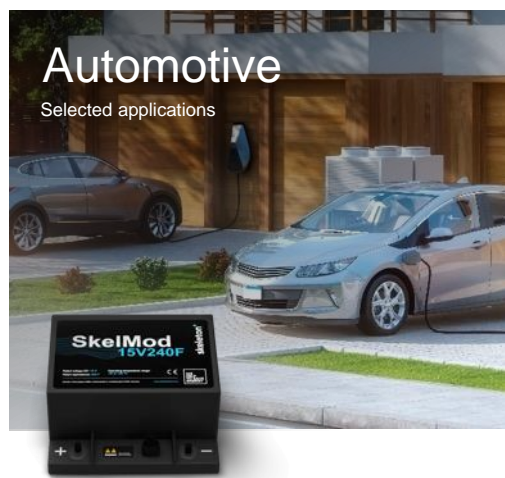
 Fast

- + **High power density** (up to 60 kW/kg)
- + Limited energy density (up to 16 Wh/L)
- + Extreme cycle life (>1 million)
- + Extremely fast charge rate (2000 C)
- + High inherent safety
- + No rare metals

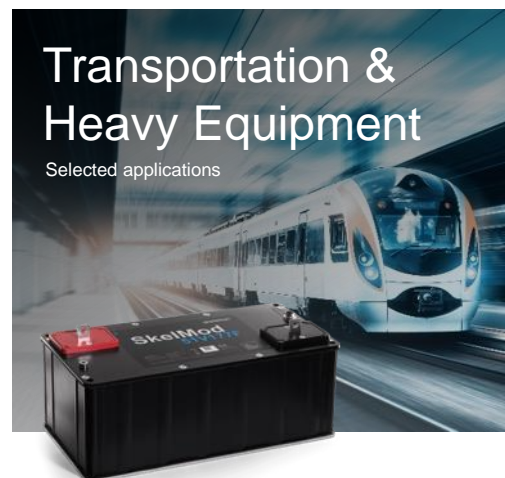
Key Enabling Technology to Power Electrification Across Industries

skeleton⁺

A qualified supplier & system provider to industry leaders



- Fuel cell power support solutions
- 48V active suspension
- KERS / Push-to-pass
- 12V board net stabilization & back-up solutions



- KERS for light rail
- Engine start
- Mild hybrid bus energy storage
- Fuel cell power support solutions for rail and bus transportation



- Wind turbine pitch control
- Virtual inertia / Grid forming in STATCOMs
- Microgrid power back-up and quality
- Backup power for medical equipment



- Peak load shaving to cover short-term peak power demands
- KERS for port cranes, forklifts, and elevators
- Fast-charging for warehouse AGVs and shuttles



Backed by a Strong Investor Base – Over 300M EUR of Capital Invested

skeleton⁺

Committed to supporting Skeleton becoming a global market leader in high power storage

Marubeni

SIEMENS

HARJU ELEKTER

eit InnoEnergy
Knowledge Innovation Community

FIRSTFLOOR CAPITAL

MMG
MM GRUPP

Co-founder of

adyen

Founder of

CTEK
MAXIMIZING BATTERY PERFORMANCE

Co-founder of

wise

“**Enabling carbon-neutral electrification** is a key priority for us and Skeleton Technologies fits in our portfolio perfectly. The company has **validated its competitive advantage** in **real-life applications** and has shown **strong commercial traction.**”



Masayuki Omoto

COO, Next Generation Business Development
Marubeni Corporation

Led by a World-class Management Team of Industry Veterans

Energy storage experts, entrepreneurs, and experienced leaders

skeleton⁺



Oliver Ahlberg

Chairman of the Board

- Co-Founder of Skeleton Technologies
- Successful exits in e-commerce and digital marketing



Taavi Madiberk

CEO

- Co-Founder of Skeleton Technologies
- Member of the board in the European Innovation Council
- Former Chairman of the Supervisory Board of Estonian Railways



Dr. Linus Froböse

CTO

- PhD in solid-state batteries from Technische Universität Braunschweig
- Previously Head of operations at Vitesco Technologies, and Head of Manufacturing Technology Battery and Electric Engines at Continental



Tobias Hüppe

COO

- Long experience in the automotive and battery manufacturing industries
- Formerly Senior Director of Manufacturing at Northvolt, Plant Manager at Faurecia Interior Systems



Grischa Sauerberg

CCO

- 23 years at Shell, most recently as VP of Sectoral Decarbonization & Innovation, driving the decarbonization of the mining sector, new sector development, and Shell's innovation roadmap.
- As General Manager Customer Operations at Shell, Grischa lead ca. 1000 staff across Europe, Russia, and Africa in sales & marketing



Tero Järveläinen

CPO

- Previously R&D Director at Danfoss Power Solutions, leading R&D activities in Danfoss' eMobility division; CTO at Visedo, a smart hybrid and electric drive train manufacturer; Research Engineer and Team Lead at Robert Bosch



David Arsenault

SVP Business Development

- 15+ years of experience with supercapacitors and heavy-duty vehicle hybridization and electrification as founder of Effenco, acquired by Martinrea
- PhD in Mechanical Engineering from École de Technologie Supérieure in Montréal, Canada



Dr. Jaan Leis

Materials Science Consultant

- Co-founder of Skeleton Technologies
PhD in Theoretical and Computer Chemistry from University of Tartu, Estonia
- 20+ years in nanomaterials research and co-author of more than 65 peer-reviewed research articles and 20+ patents in the fields of nanoporous carbon and energy storage.



Dr. Anti Perkson

Materials Science Consultant

- Co-founder of Skeleton Technologies
- PhD in Theoretical and Computer Chemistry from University of Tartu, Estonia
- 20+ years in nanomaterials R&D, co-author of 20+ peer-reviewed research articles and 10+ patents in nanoporous carbon and energy storage.
- Previously CEO and R&D Director of Silmet AS

Technology Advantage Throughout the Entire Energy Storage Industry

skeleton⁺

Highest performance and quality for every energy storage application, powered by Curved Graphene



SkelCap supercapacitors (Gen 1)

- 4x power density compared to competitors
- High power (up to 60x compared to batteries)
- 1,000,000+ lifecycles
- Ultrafast charging times (<1 s)



Graphene supercapacitors (Gen 2)

- +72% increase in energy (16 Wh/L), while maintaining high power
- 1,000,000+ lifecycles
- Ultrafast charging times (<1 s)
- Increased efficiency & lower footprint



SuperBatteries

- High energy density (65 Wh/kg)
- 50,000+ lifecycles
- Fast charging (60s)
- Extremely competitive cost-base compared to similar energy storage technologies

Addressable Energy Storage Application Space

High power from sub-second to up to 15 minutes duration

skeleton⁺

Skeleton products provide **high power energy storage** for applications with **<5-minute charge / <15-minute discharge** cycle durations

Lower cost compared to **Li-ion batteries** in this application space

Supercapacitors



SuperBatteries



Lithium-Ion batteries



<1s to 60s

1-5 min

1-15 min

>15 min

Fast charging

From Single Cells to Full Energy Storage Systems

The only full value-chain manufacturer on the market

skeleton⁺



Raw Material

Curved Graphene

Single Cells

300-5000F
Industrial supercapacitors

Industrial Modules

From low to high voltage needs
Supercapacitor modules with smart
balancing and management systems

Systems

MWs of immediate power
Modular, supercapacitor-based
energy storage systems

Modular product portfolio for SuperCapacitors and SuperBatteries

Product portfolio

Cells



SkelCap
300-5000F
cells



SuperBattery
Cells (D60)

Modules



SkelStart
12V & 24V
Engine start module



SkelMod
51V 177F
module



SkelMod
102V 88F
module



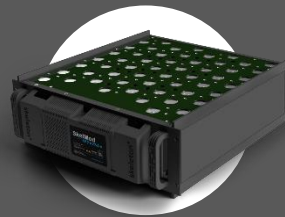
SkelMod
162V 62F
module



SkelMod
54V 188F
module



SkelMod
162V 92F
module



SkelMod 162V 23Ah
SuperBattery module

SkelGrid 2.0

Modular and scalable 19" rack systems, available with all generations of Skeleton's 162V modules



Independent 3rd Party Verified Advantage

Superior power and energy densities in energy storage

skeleton⁺



“Your cells have very low resistance so are truly high-power devices. I think **they are the best in the world of the carbon/carbon type.**”

Dr. Andrew F. Burke

UC DAVIS
UNIVERSITY OF CALIFORNIA

“One property **that stands out is the ESR of the Skeleton capacitor**, which is significantly less than the others.”

C. N. Nybeck, D. A. Dodson, D. A. Wetz and J. M. Heinzel, "Characterization of Ultracapacitors for Transient Load Applications," in IEEE Transactions on Plasma Science, vol. 47, no. 5, pp. 2493-2499, May 2019



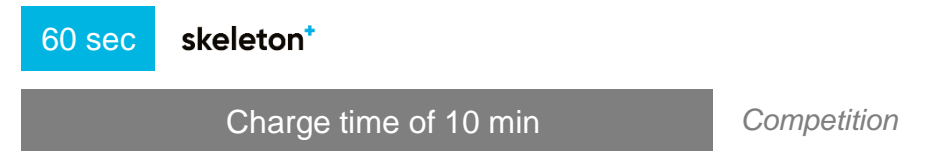
Supercapacitors

4X power density vs competitors



SuperBattery

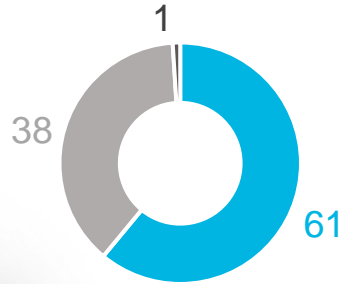
Uniquely fast charge times with high energy density



Increased Safety Compared to Lithium-ion Batteries

Lower cost due to Curved Graphene and abundance of other raw materials

skeleton⁺

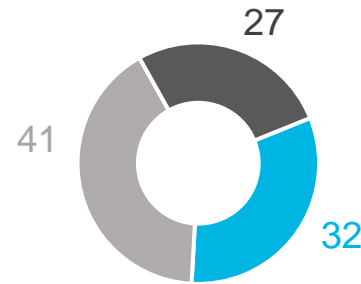


- Organic components
- Aluminum
- Other

Supercapacitor

Composition

- Mostly carbon and aluminum – easy to recycle
- Contains no heavy metals



- Organic components
- Aluminum
- Other

SuperBattery

Composition

- Safer to handle than Li-Ion batteries (no lithiated graphite)
- Contains lower cost elements compared to Li-Ion



Curved Graphene

- Proprietary carbon, produced without any rare earth materials
- Synthesis byproducts re-usable – zero waste created

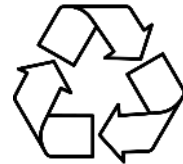
Sustainable Products And Production Process

From supercapacitors to SuperBatteries



Little to no rare earth metals used

- ✓ The only metal content in supercapacitors is aluminum
- ✓ SuperBattery uses no graphite, nickel or cobalt, and very little lithium (<5% of weight)



Easy and affordable to recycle

- ✓ Carbon and aluminum are easy to recycle
- ✓ Products use lower cost elements than in Li-ion



Sustainable production and processing

- ✓ Skeleton uses water-based process for coating and recycling
- ✓ Products are safer to handle than li-ion batteries due to no lithiated graphite or lithium plating

Modular, Intelligent Supercapacitor Energy Storage Systems

MWs of power, immediately available

skeleton+

Systems

SkelGrid energy storage system

Supercapacitor-based turn-key energy storage solutions for high-power needs



High Performance Energy Storage - Made in Europe

Fully integrated production – control over the entire manufacturing chain

skeleton+

**The largest
supercapacitor
factory in Europe**
(Großröhrsdorf, Germany)



Leipzig Superfactory

State-of-the-art supercapacitor production

skeleton⁺

Building the **largest supercapacitor factory** in the world

(Markranstädt, Germany)



Skeleton Materials

Curved Graphene production facility in Bitterfeld, Germany

skeleton⁺



Skeleton Materials is Skeleton's material development arm, situated at the Bitterfeld-Wolfen Chemical Park in Saxony, Germany.

Led by world-class material scientists and researchers, Skeleton Materials is already the global leader in synthesizing capacity and scaling up Curved Graphene material production to industrial levels to meet the demand for Skeleton's GEN 2 supercapacitors, SuperBatteries, and solid-state batteries.

German Quality, Certified According to the Highest Standards

Qualified supplier to some of the largest OEMs in the world

skeleton⁺



Linus Froböse
CTO

“Quality is the bedrock of Skeleton’s success and something we have put an enormous amount of work in – to produce the most robust and long-lasting products for our customers.”

Certified



Compliance and selected product certifications



A Qualified Supplier & System Provider to Industry Leaders

To automotive, grid, transportation, and industrial companies, OEMs & Tier 1s

skeleton⁺



German automotive
OEM



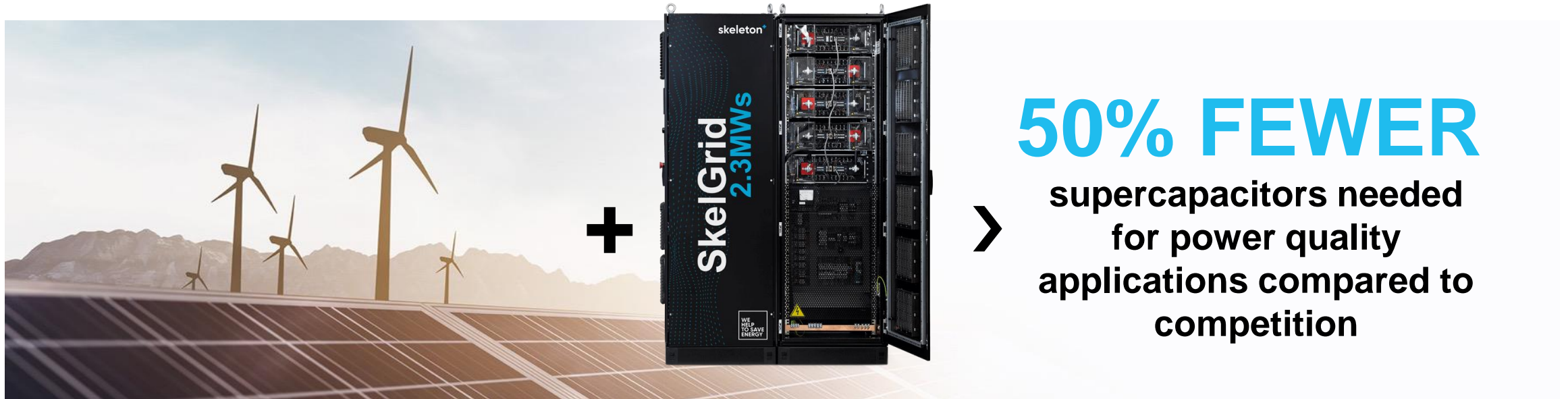
North-American
Truck OEM



Enabling Higher Penetration of Renewable Energy & Stabilizing Power Grids

skeleton⁺

MWs not, kWh business – 50 MW solution delivered



50% FEWER
supercapacitors needed
for power quality
applications compared to
competition



“Most competitive supercapacitor-based ESS for grid applications.”
(Virtual Inertia)

Supercapacitors Electrifying Trams Across Europe

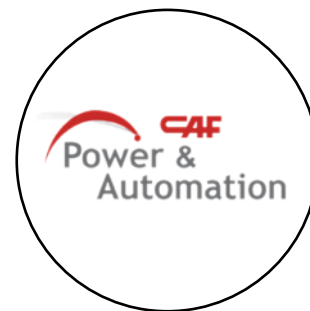
Kinetic energy recovery reduces costs and protects infrastructure

skeleton⁺



“Skeleton Technologies brings the necessary quality mindset to critical applications. **The highest power density and efficiency in the industry provides us with a very clear competitive advantage.**”

Stanislaw Wizur
Škoda Electric



“**Skeleton’s cells are a perfect fit to the rail and tram industry.** Adding them to our energy storage systems will greatly benefit our existing and future customers, **allowing to maximize energy efficiency at an unprecedented level.**”

CAF Power & Automation

Supercapacitors Kickstarting Fusion Reactors

Enabling technology to create clean energy

skeleton⁺



120 MW
For 3s, enabling plasma
to be heated to
100 million degrees Celsius



Supercapacitors are used to provide **20 MW of power** for each gram of hydrogen to be heated in less than 1 second. Skeleton is supplying a global leader in fusion energy.

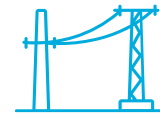
Key Benefits

To working with us

skeleton⁺



IATF-certified & the **largest supercapacitor factory** in Europe



100+ MWs of grid & industrial installations, **10 000+** systems & modules in the field



Unique technology & product roadmap with **Curved Graphene**, protected by more than 11 patent families



World-class team of **350+** **professionals** with vast experience in energy storage development & production

skeleton+

Thank you!

For more information
contact us:
www.skeletontech.com

Certified

