

From Watts to Shots: Power Systems for High- Energy Lasers

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DEFENSE

Our experience

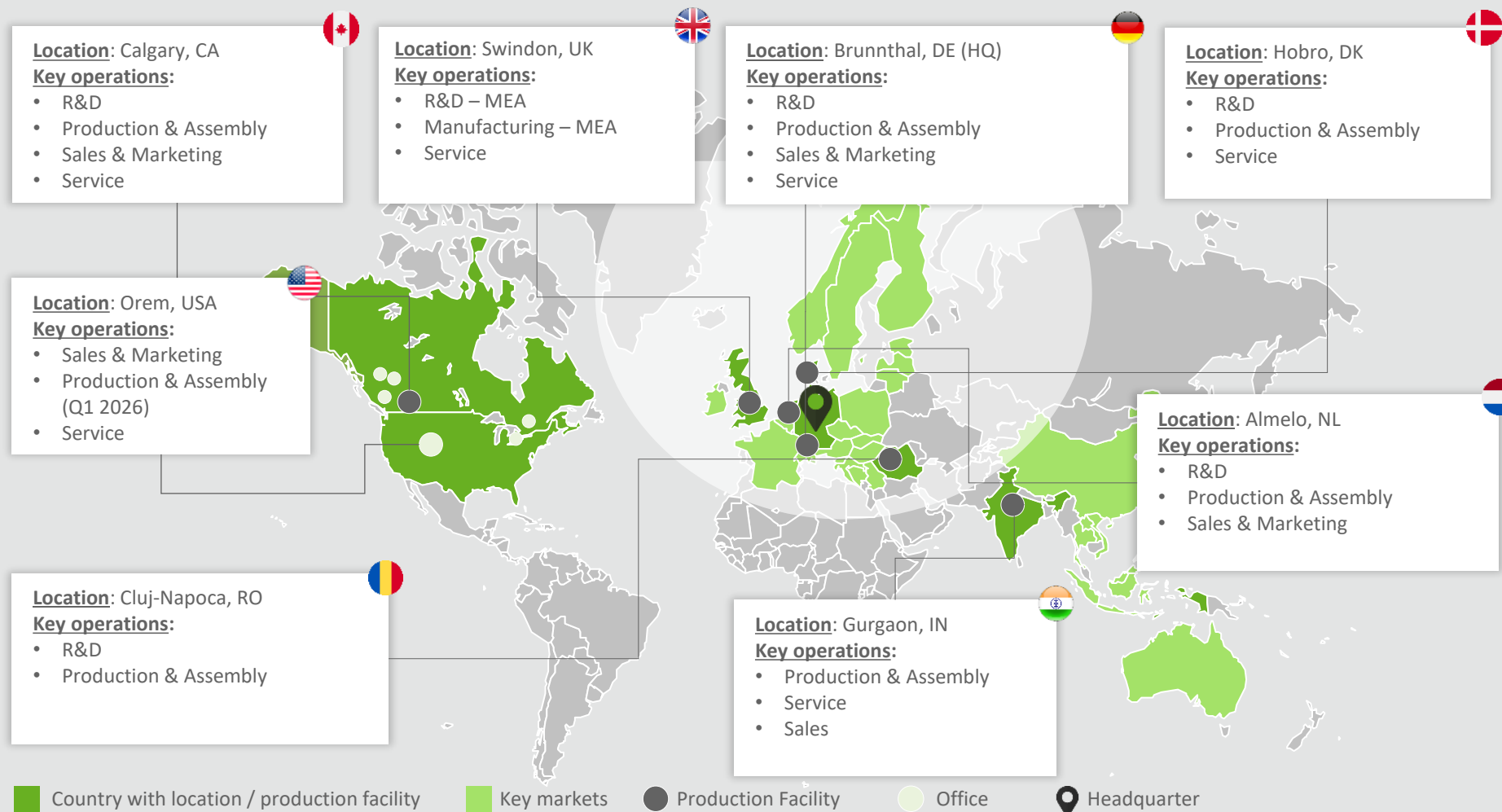


>20 years of experience as a high-tech supplier for defense

- RADA – PSU for Ground mobile & Naval RADAR
- HUD – Inverter for Head Up Display (HUD) in Avionics
- HEL – PSU for High Energy Laser (LDEW/HEL)

Market access and business segments

Strong Global Footprint



Reporting Segments

Clean Energy



Fuel cells & integrated energy solutions

- Defense and public security
- Commercial use cases: telecom, wind, infrastructure, security, energy, traffic, Marine & Carava

Clean Power Management



Power management & electronics

- Live Science Industry
- Laser, semi-conductor and defense industries
- Oil and gas

SFC Energy –Group

Product groups



Fuel Cells (Clean Energy)



Power Supplies (Clean Power Management)



Coils & Linear drives (Clean Power Management)



Power Supply Solutions, Coils & Linear Drives

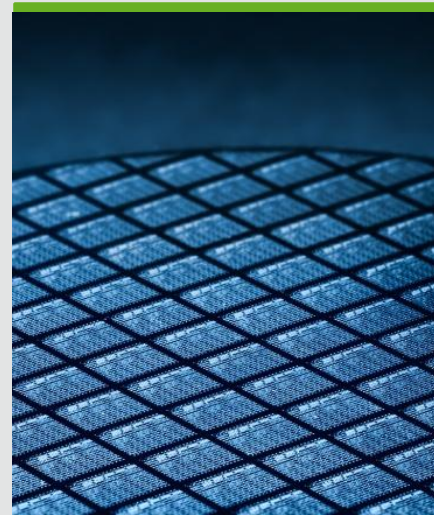
Our Focus Markets



Laser



Analytical



Semiconductor



Defense

Why laser weapons?

PATRIOT MISSILE:
~\$4,000,000
PER UNIT

TACTICAL DRONE:
~\$20,000
PER UNIT

**ASYMMETRIC WARFARE:
THE COST OF INTERCEPTION**

SFC-ENERGY.COM

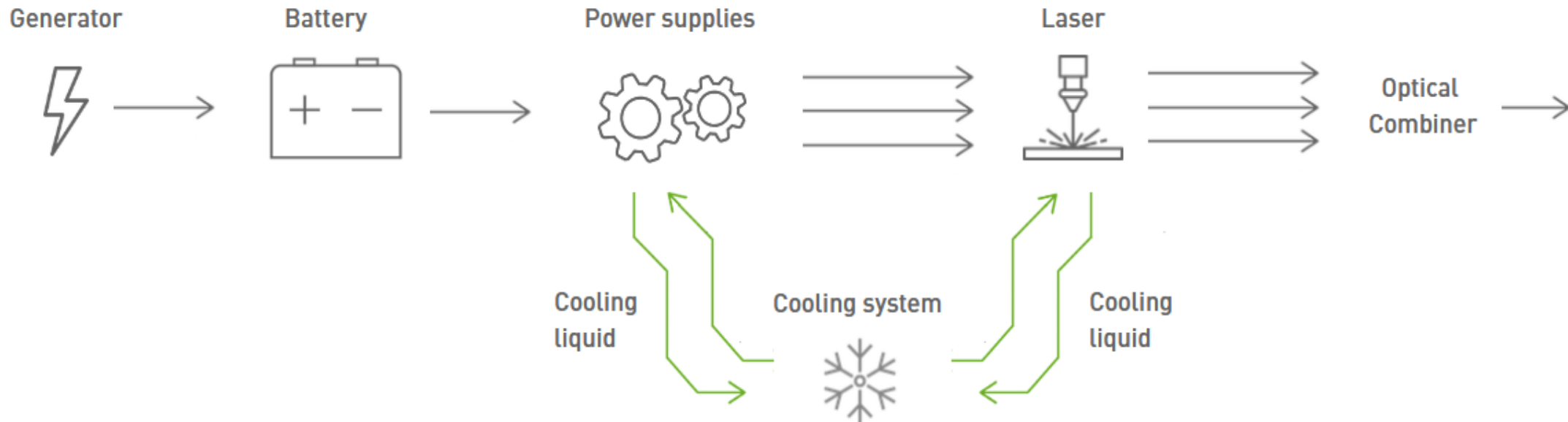
Solving the asymmetric warfare cost



High Energy Laser System (HEL)

Typical HEL system

- Generator delivers average power/charges the battery
- Battery delivers required peak power
- Power supplies drive directly to multiple laser modules
- Laser from the modules are combined to one big Laser Beam
- Cooling system cools both laser and power supplies

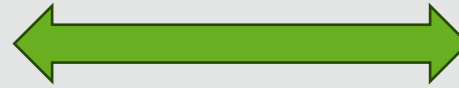


SFC Energy power supply solutions

LAPS-R systems for defense



Standard mode



Battle mode



Protections

- 🔌 Temperature
- 🔌 Input undervoltage
- 🔌 Using too long peak power

System protects itself against faults and misuse

Protections

- 🔌 Temperature
- 🔌 Input undervoltage
- 🔌 Using too long peak power

System is operational until the end

Power Systems for High-Energy Lasers

Challenges

Technology available. Prototypes in the field.

Challenges:

- ⏻ Peak Power levels
- ⏻ Battery voltage ranges / grid voltages
- ⏻ Required output voltage
- ⏻ Shot duration, limited field data present
- ⏻ Etc.

SFC Energy can help partners to develop

- Semi-custom future-generation **reliable** HEL systems
- Optimized for size, weight, and performance



Thank you for your attention

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