



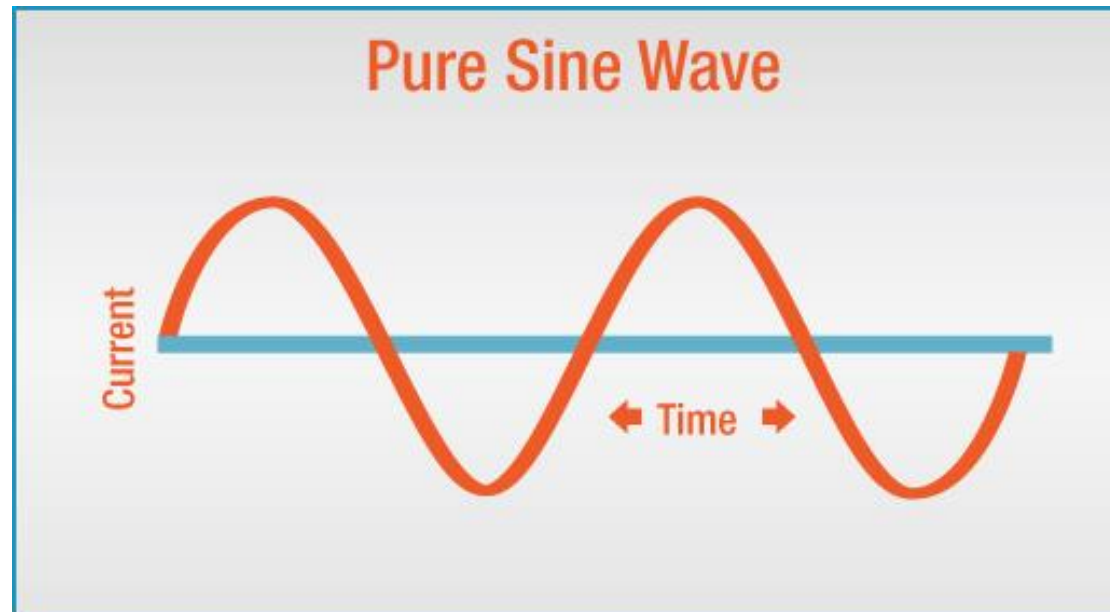
GRID STABILIZATION AND POWER QUALITY WITH ROTARY UNINTERRUPTIBLE POWER SUPPLY (DUPS-RUPS)

Eng. Anna Bruno
Managing Director

ATME SpA
Distributor for Hitec Power Protection bv

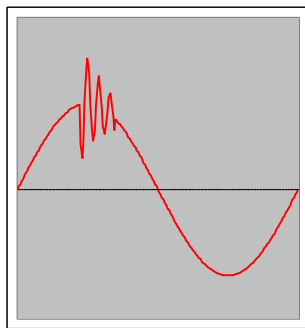
Introduction Power Quality

What is **Power Quality** ?

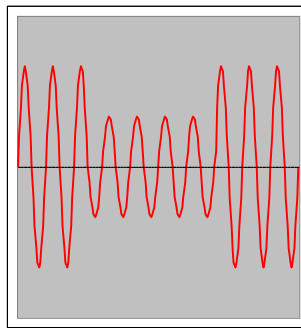


Introduction Power Quality

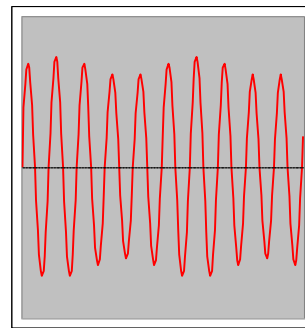
What is it not ?



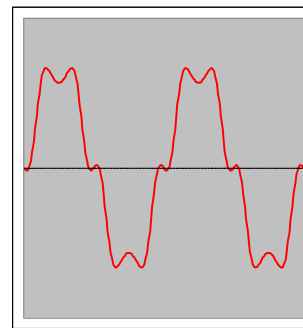
Overvoltage
/ Surge



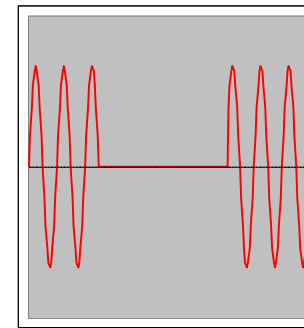
Voltage dip
/ Brown-out



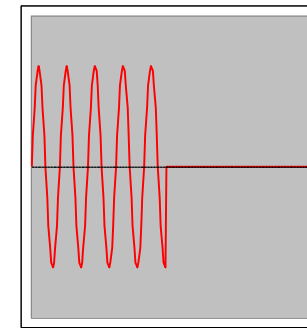
Voltage
fluctuation



Harmonics
/ Distortion



Microcut
/ short cut



Power failure
/ Black-out

Uninterrupted power \neq **High Quality** power!

Introduction Power Quality

What affects Power Quality ?



External causes (mains side)

- Lightning
- Fault on transport or distribution lines
- Transformer failure
- Surrounding users

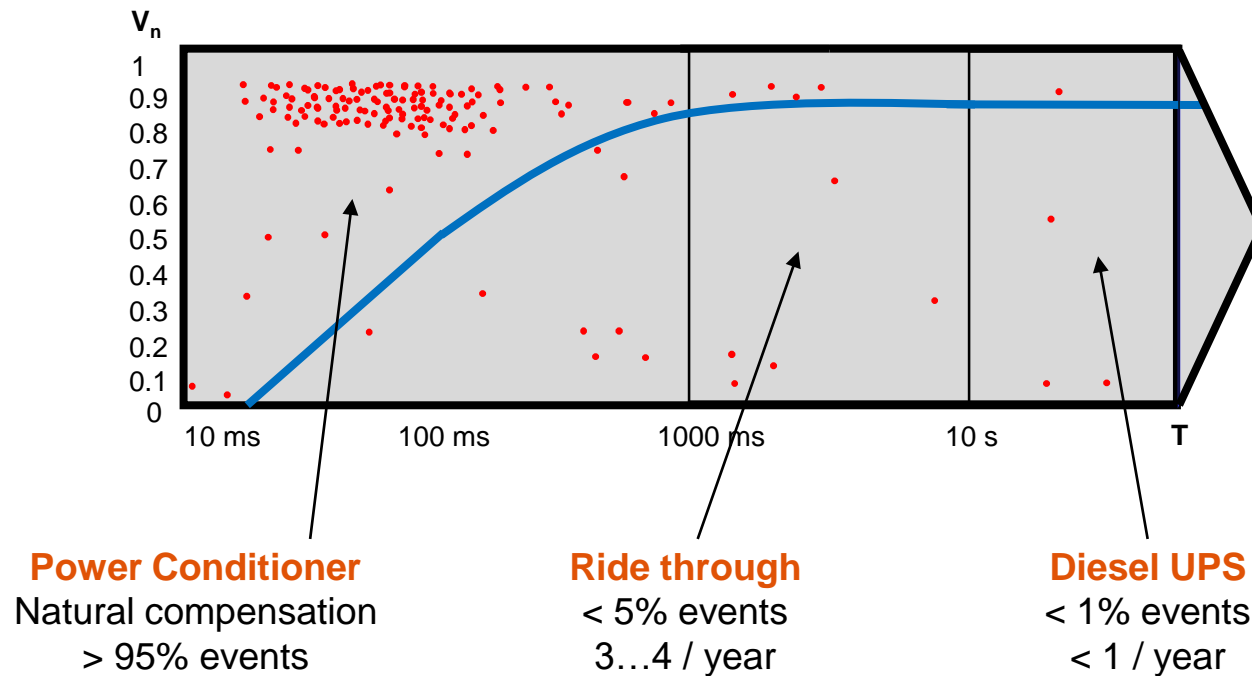


Internal causes (load side)

- Load step, peak current...
- Short-circuit, fault, transient
- Current distortion, harmonics
- Unbalance

High Quality Power Supply = Protection against mains disturbances + Capacity to handle load disturbances

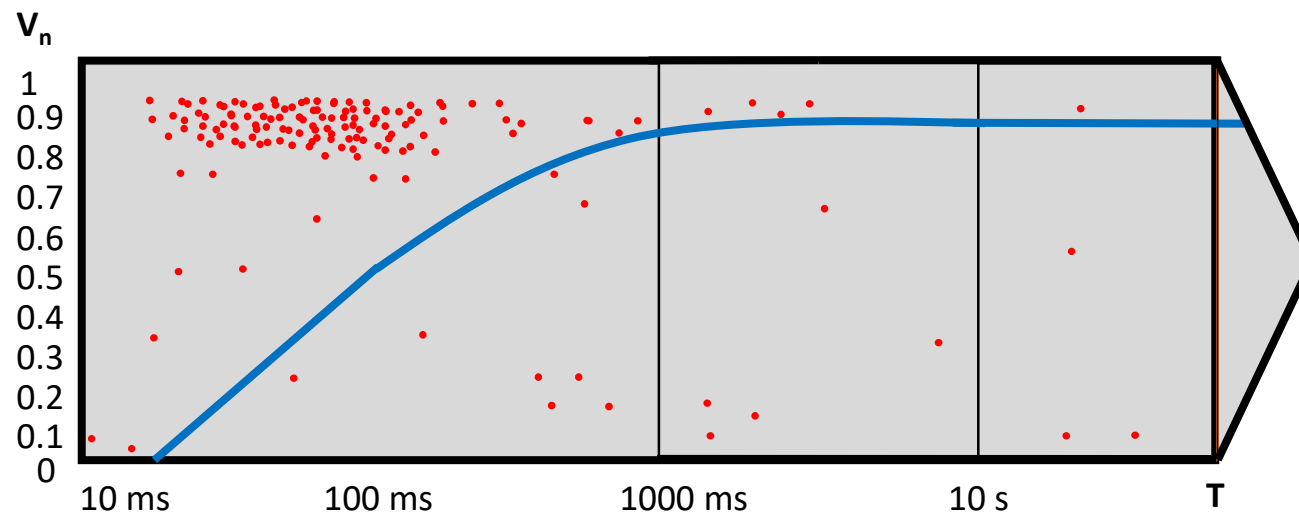
MICROINTERRUPTIONS IN THE ITALIAN GRID



Extract from TAB. A-3 UNIPED survey on the characteristics of voltage dips – quality of the electric power supply in the industrial plants - ENEL



MICROINTERRUPTIONS IN THE ITALIAN GRID



FREQCON UGS / U-UPS



HITEC R-UPS

Power
Protection

DR-UPS / E-RUPS

ATME
Applicazioni Tecnologiche Motoristiche ed Elettriche

is the Italian official dealer and engineering company for these products

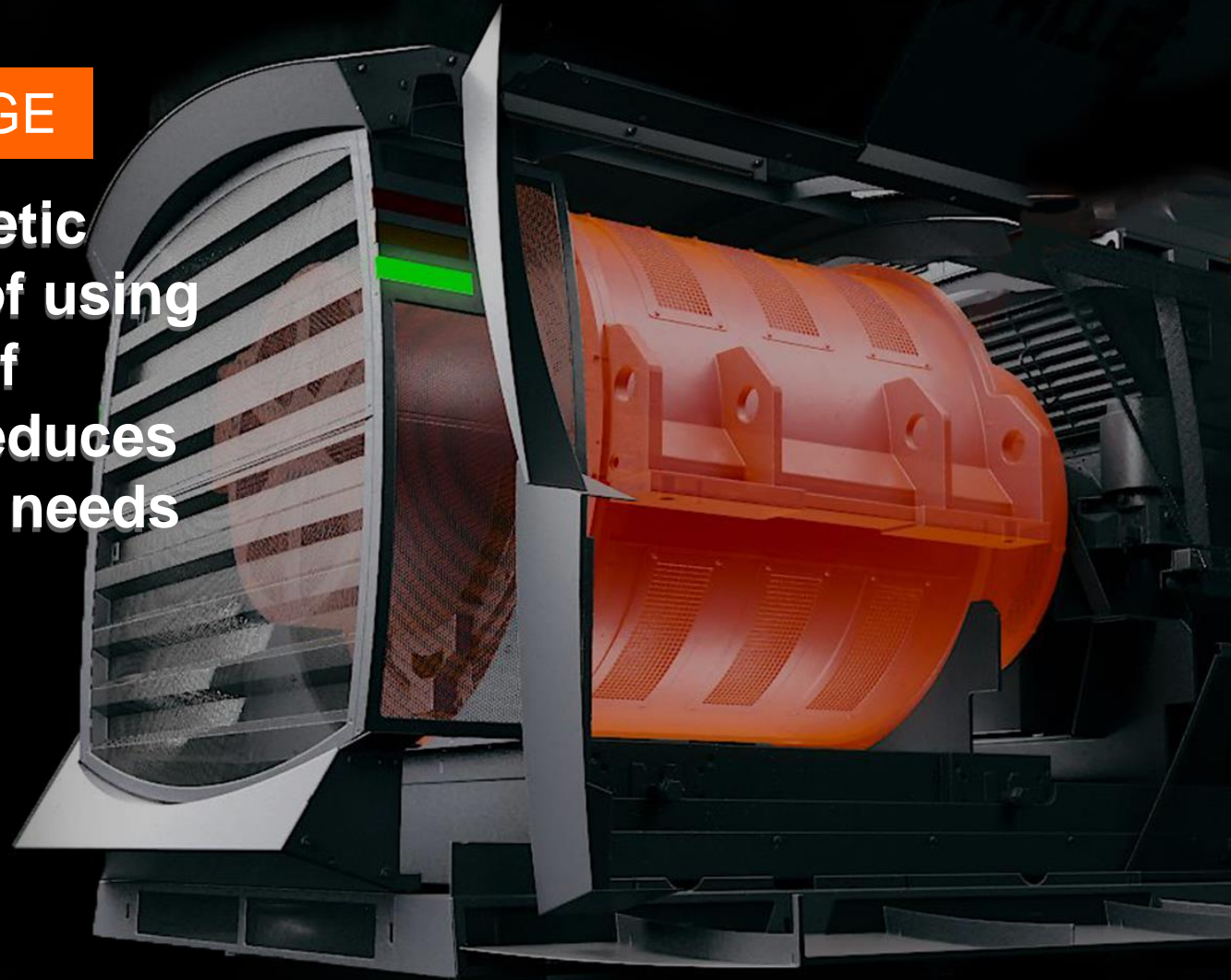


(D)RUPS - WHAT IS IT ?

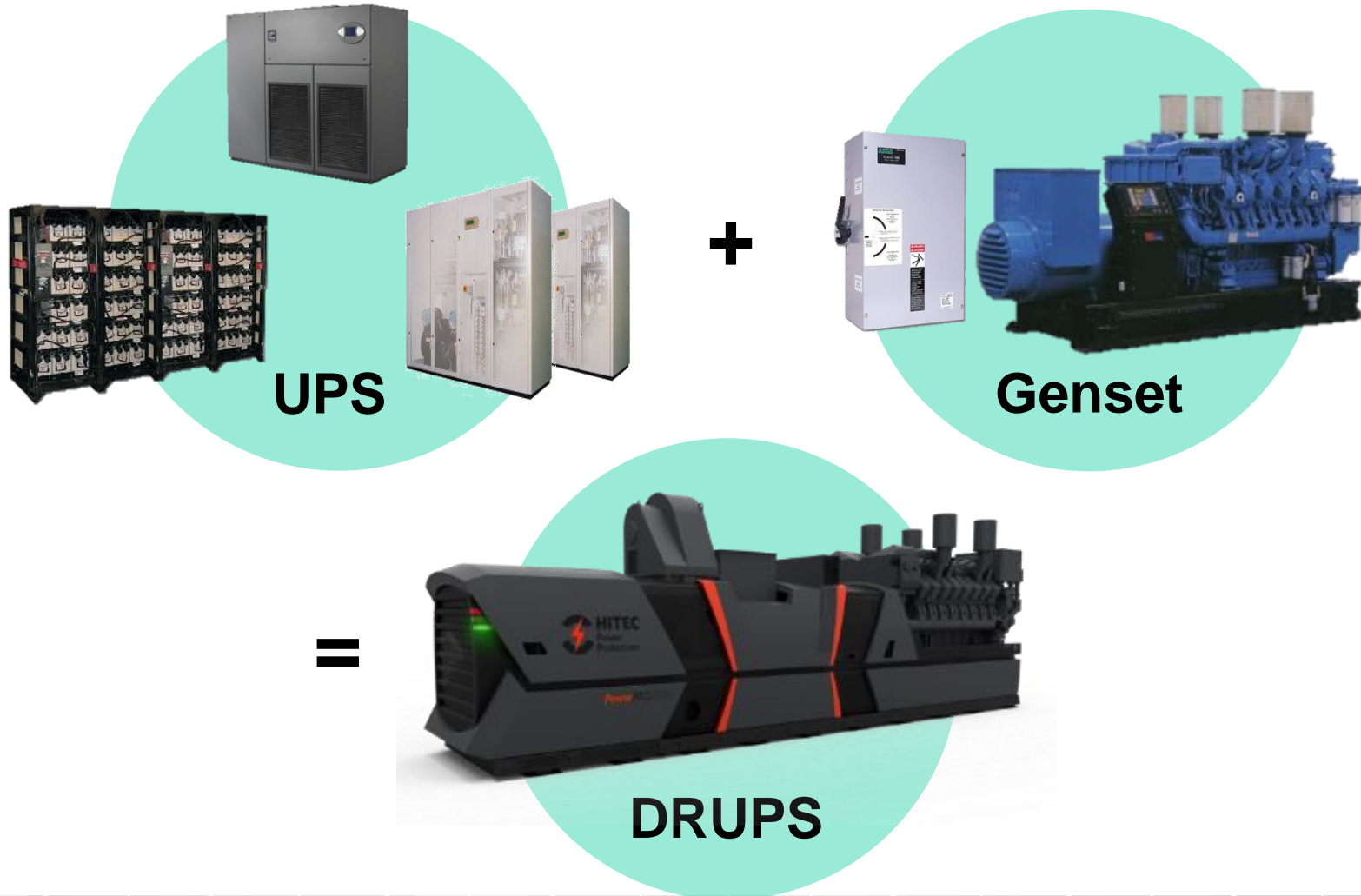


KINETIC ENERGY STORAGE

We store Energy in a Kinetic Energy Module in stead of using toxic batteries. The use of Kinetic Energy storage reduces energy consumption and needs fewer maintenance.



The complete and seamless mechanical integration of a UPS with a stand-by diesel generator set...



...but it's not static – it's dynamic!



battery (chemical)
based energy storage



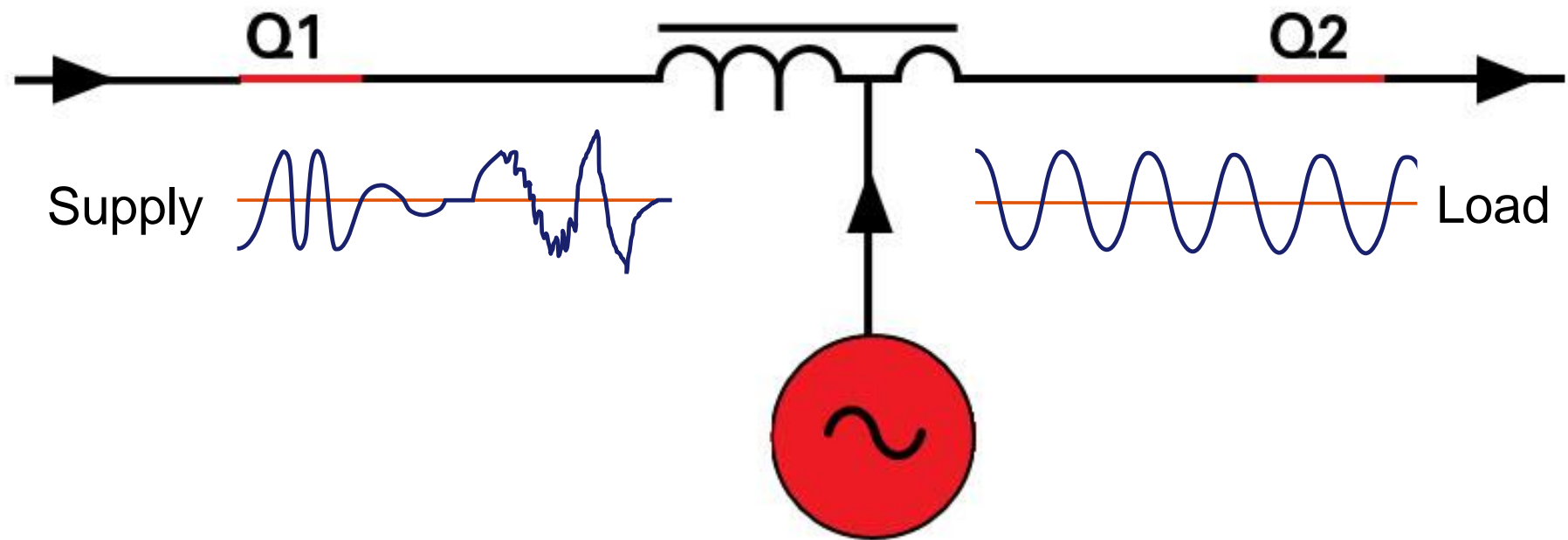
flywheel (mechanical)
based energy storage



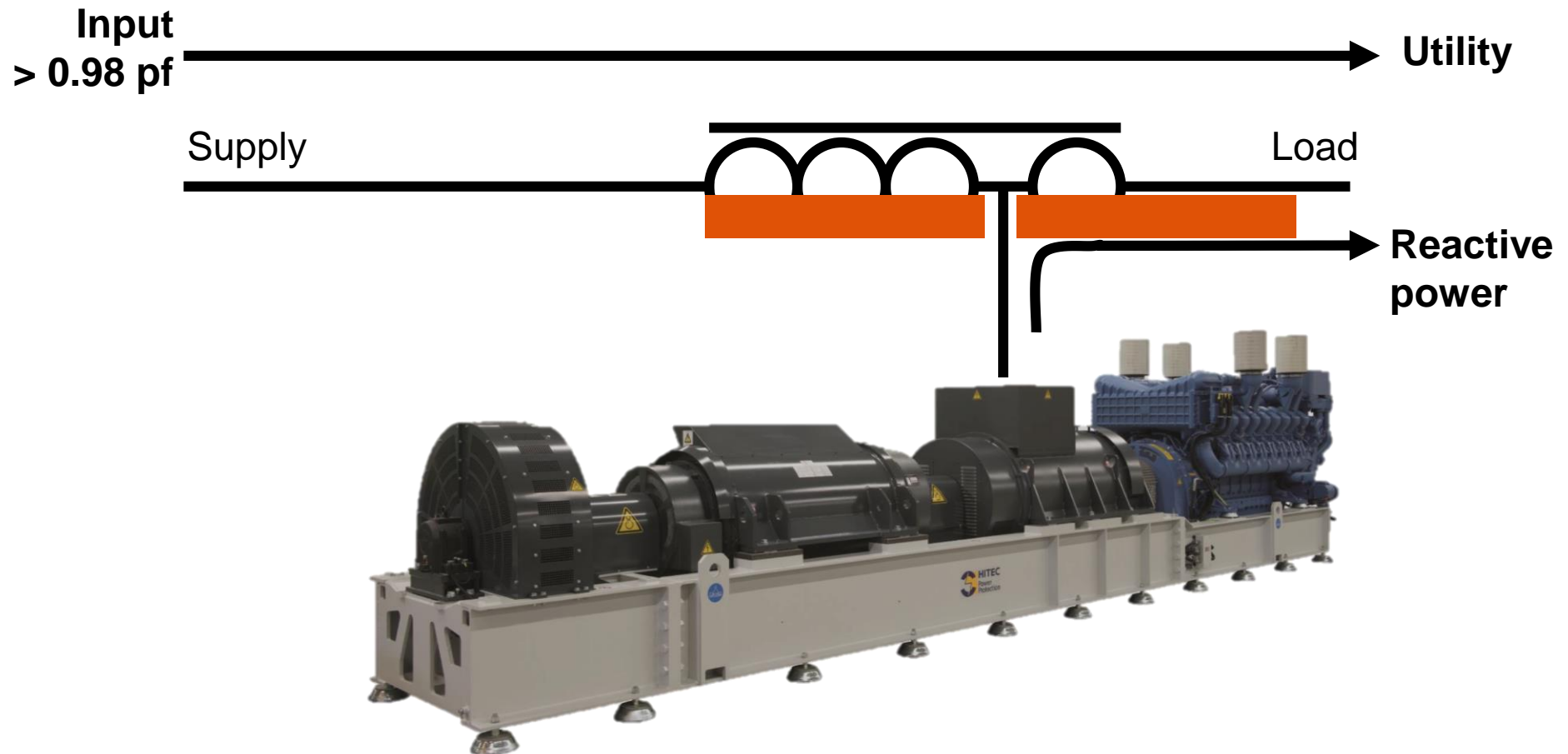
HOW DOES IT WORK ?



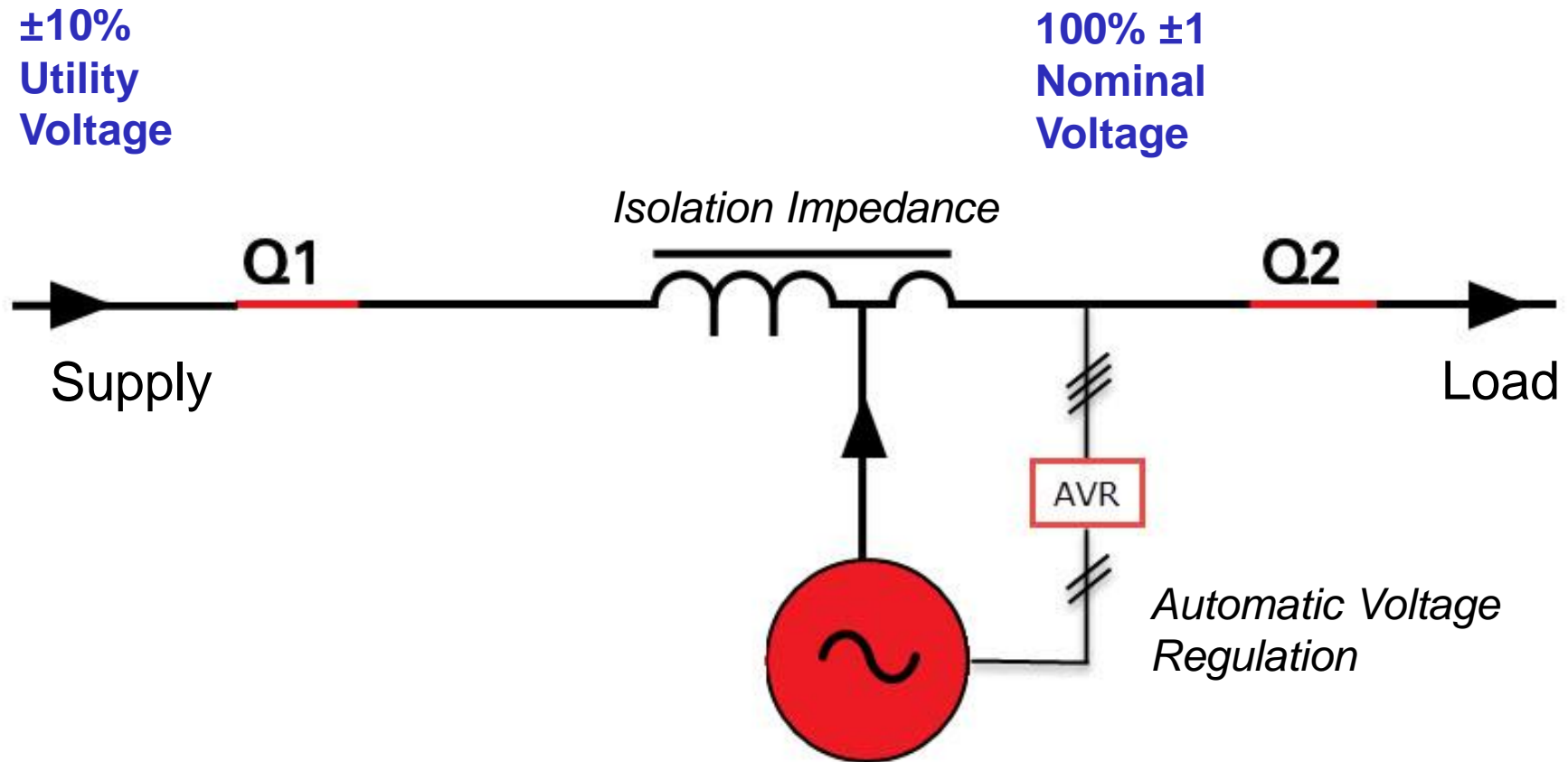
As a Power Conditioner



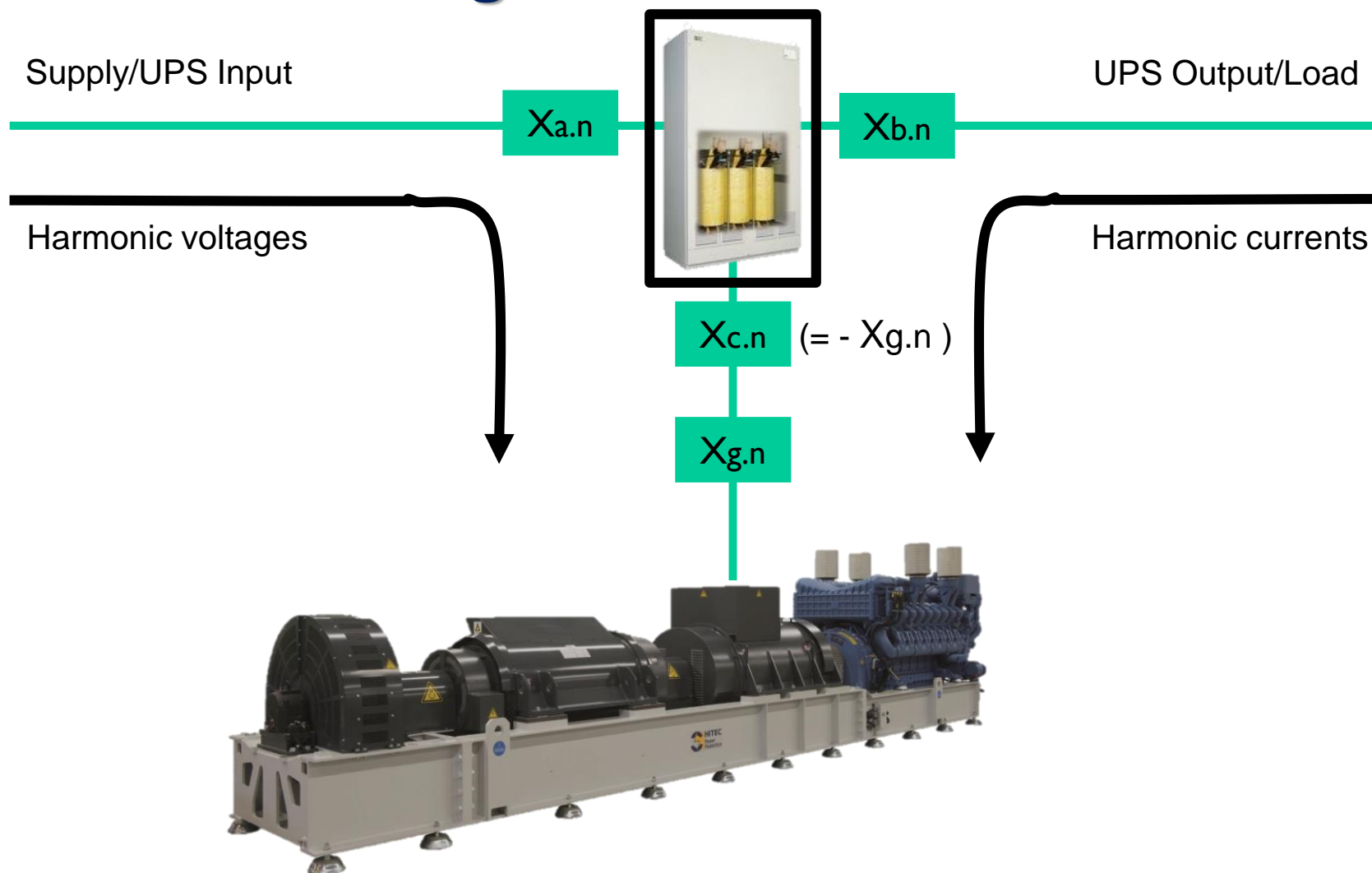
Power Factor Correction



Sag/Surge Mitigation



Harmonic Filtering

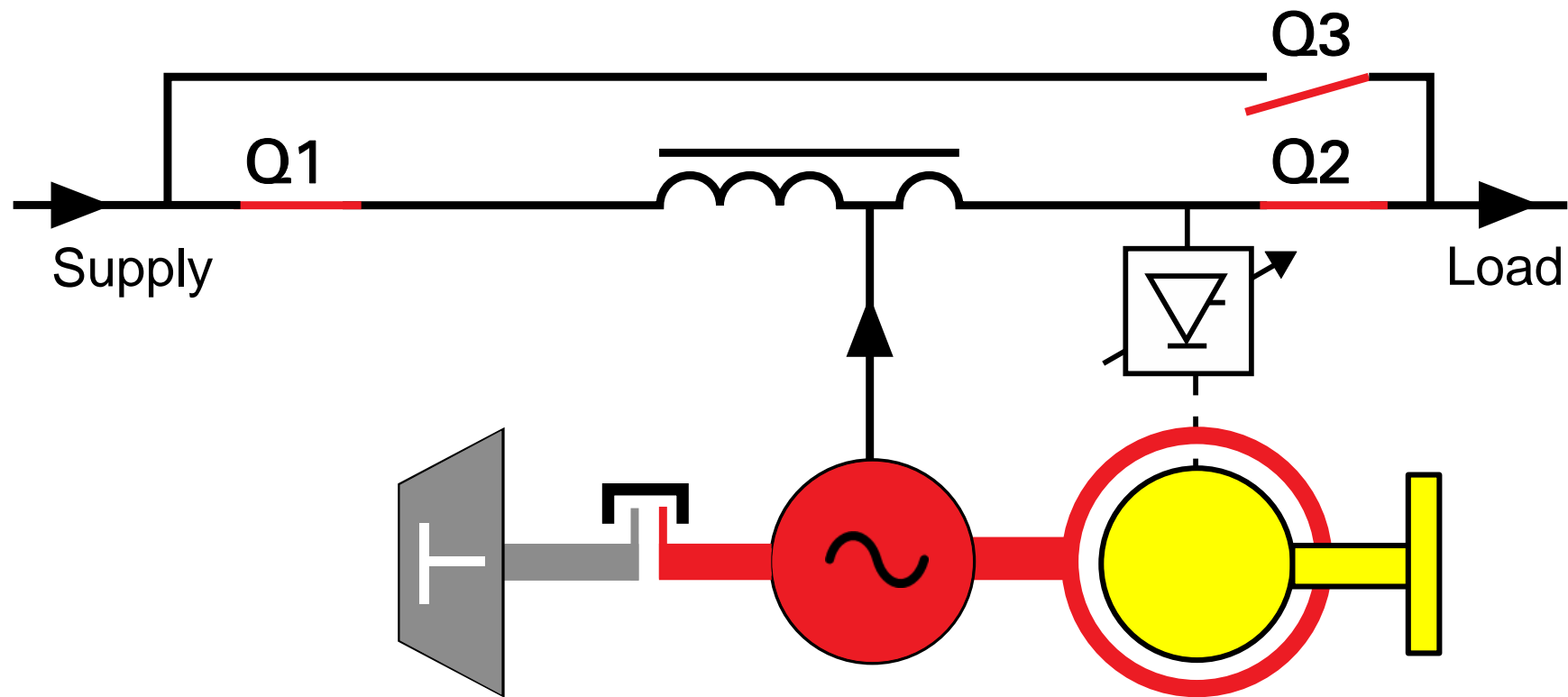


Fault Clearing Capability

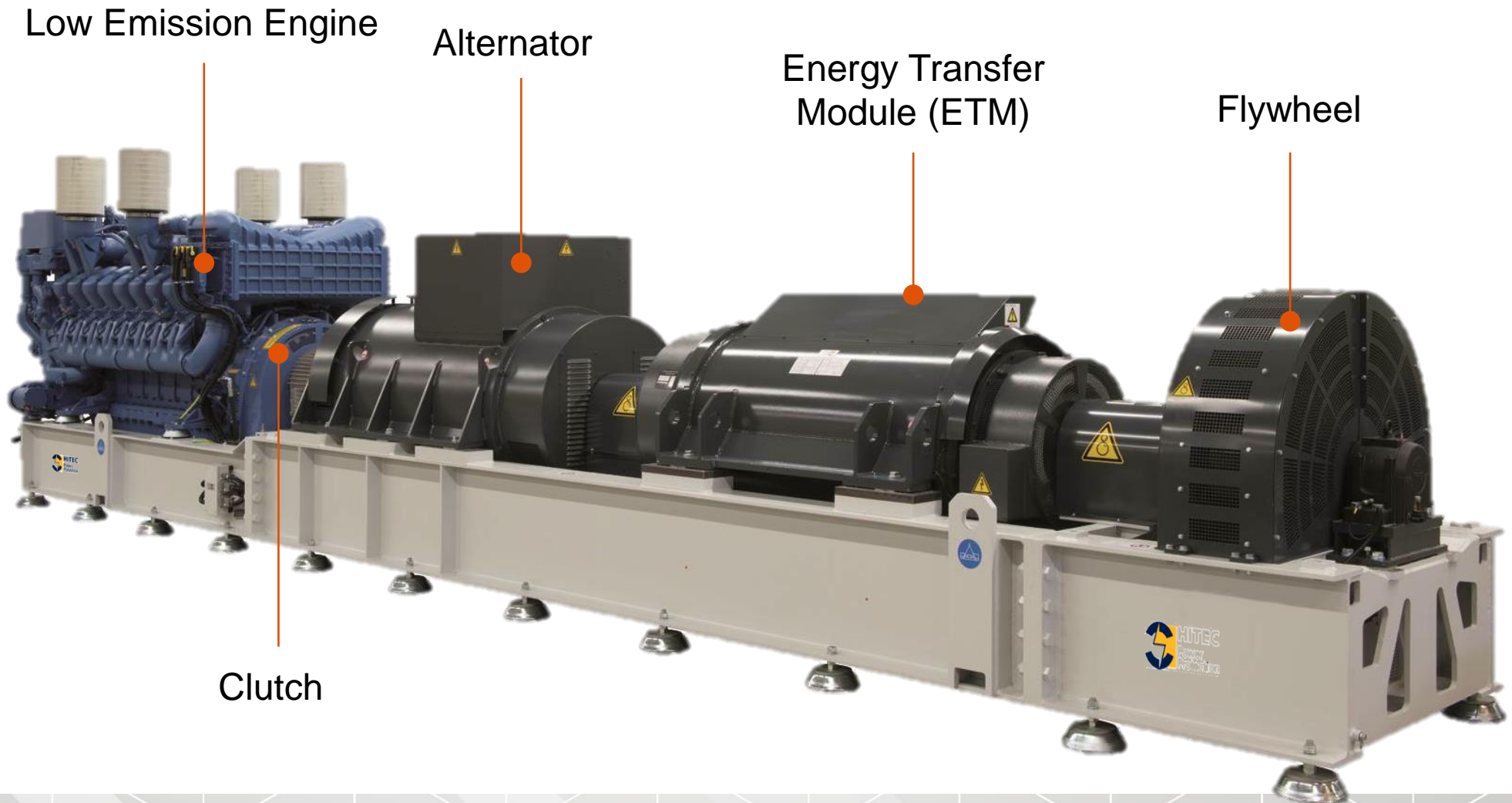




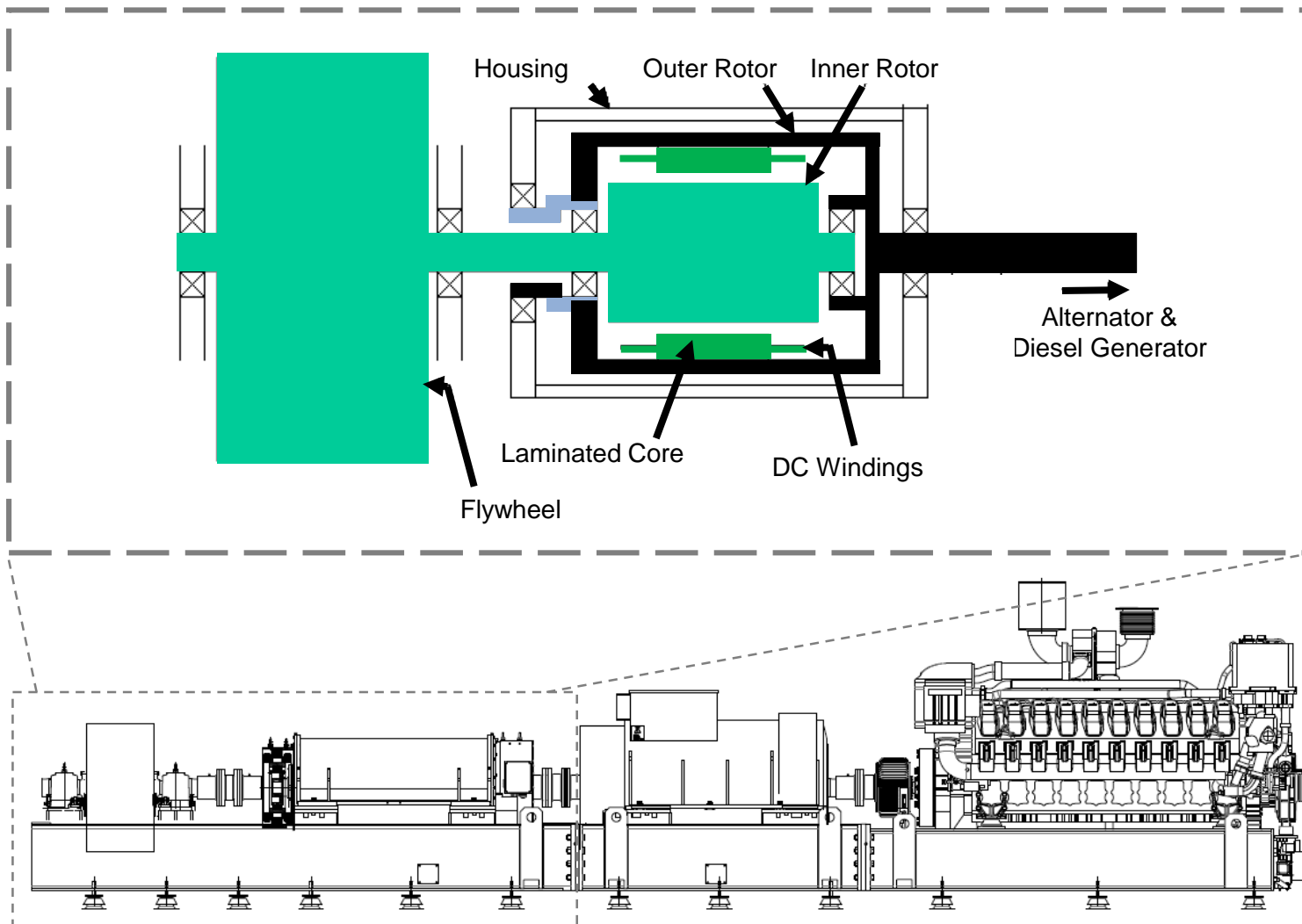
AS AN OUTAGE ELIMINATOR



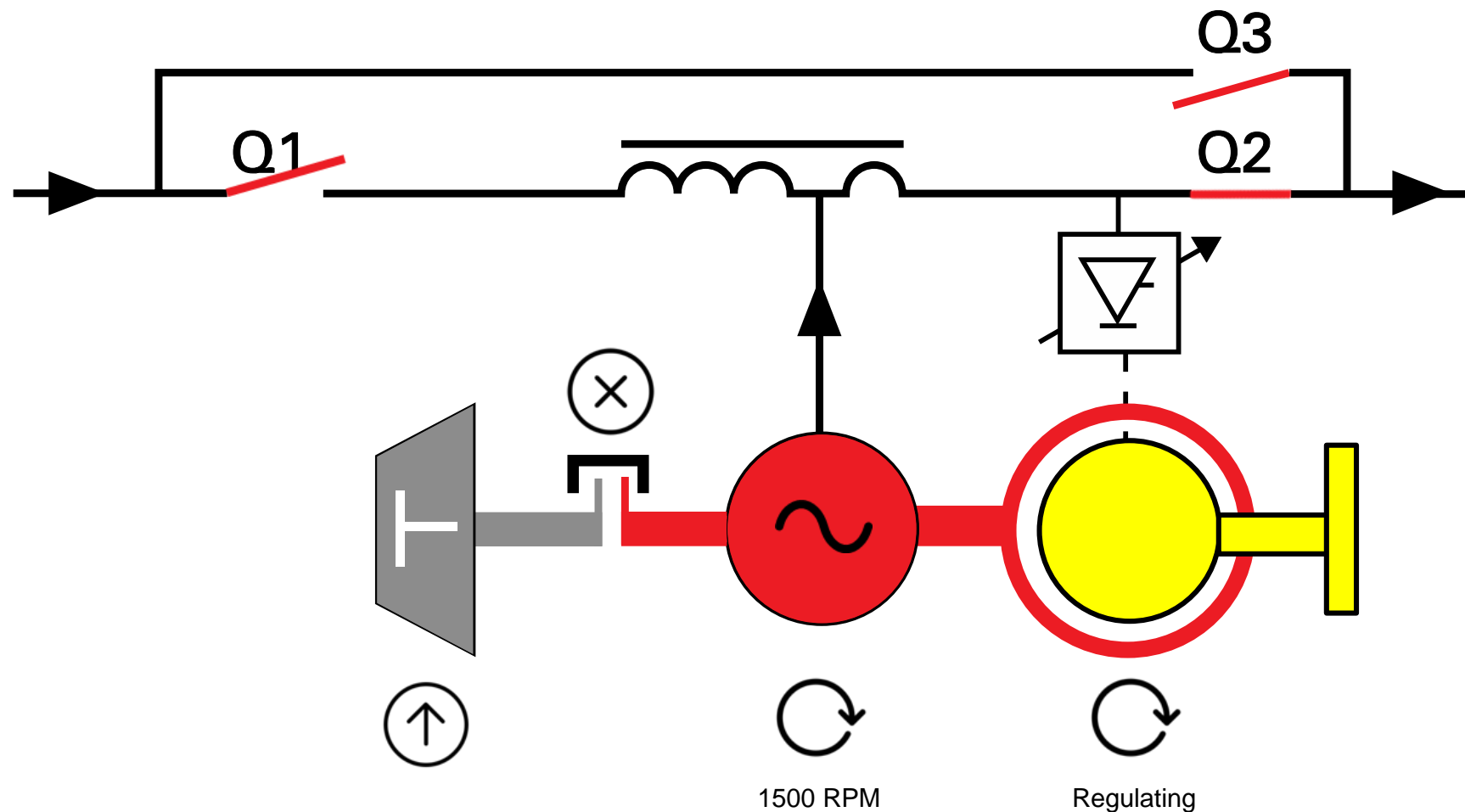
Power Module Components



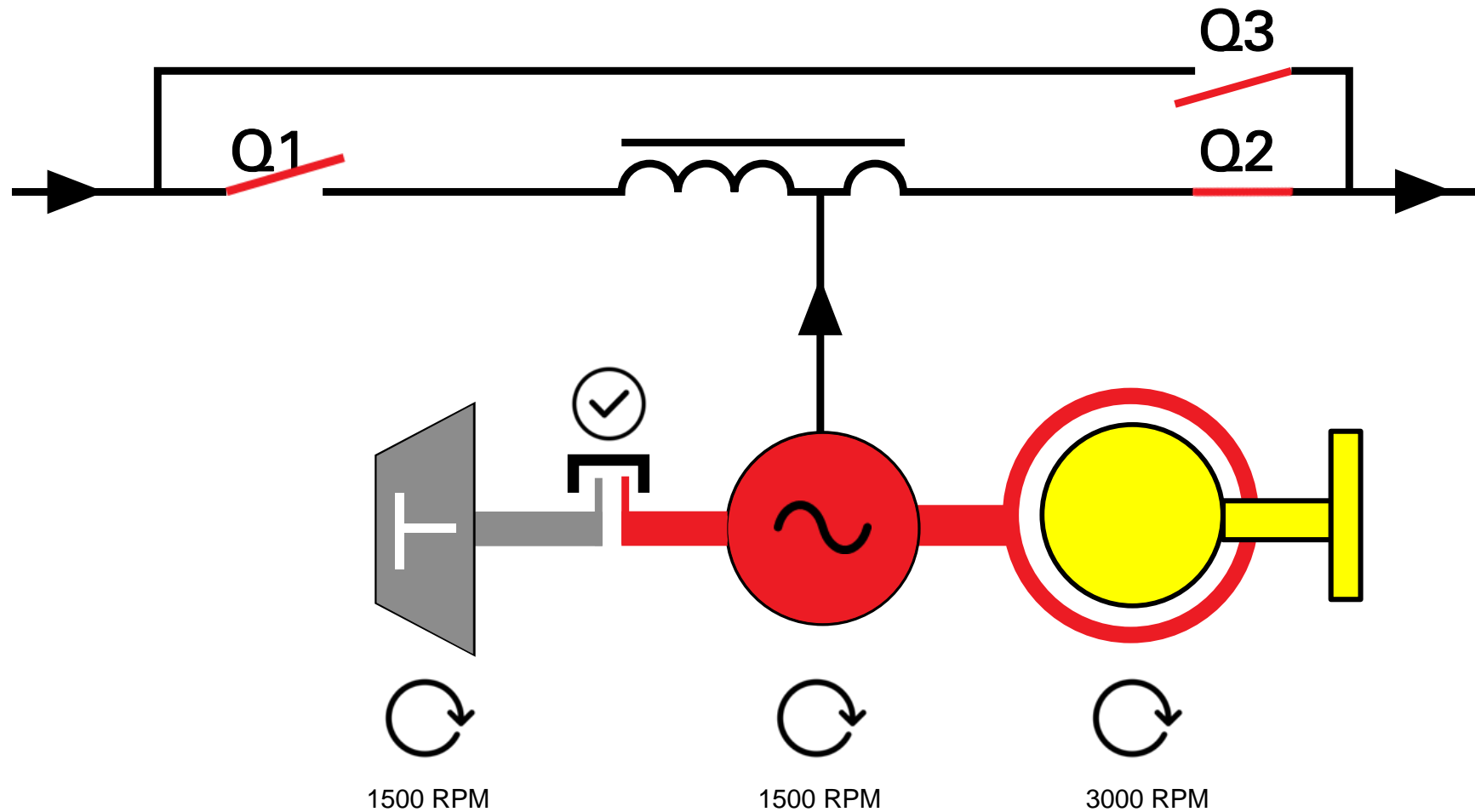
The UPS “Prime Mover”



UPS Mode (Ride Through mode)



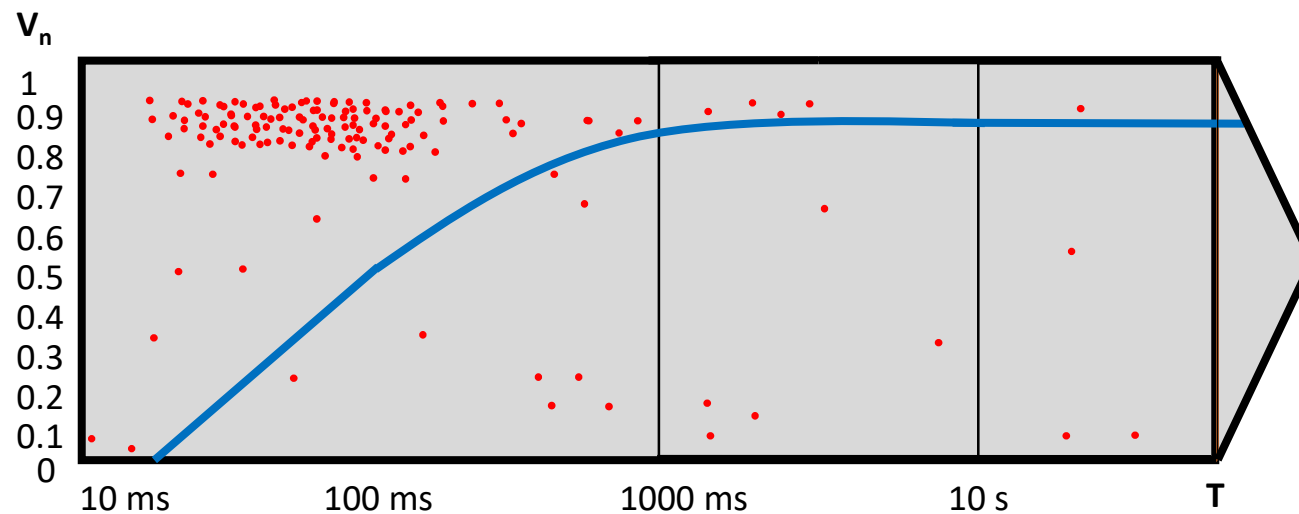
Diesel (Genset) Mode





KEY (DIESEL) ROTARY BENEFITS

MICROINTERRUPTIONS IN THE ITALIAN GRID



FREQCON UGS / U-UPS

HITEC R-UPS
Power Protection DR-UPS / E-RUPS

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is the Italian official dealer and engineering company for these products

Highly Efficient

100%



97%



100%



Battery

SSS



UPS

SSS



Air Conditioning

SSS

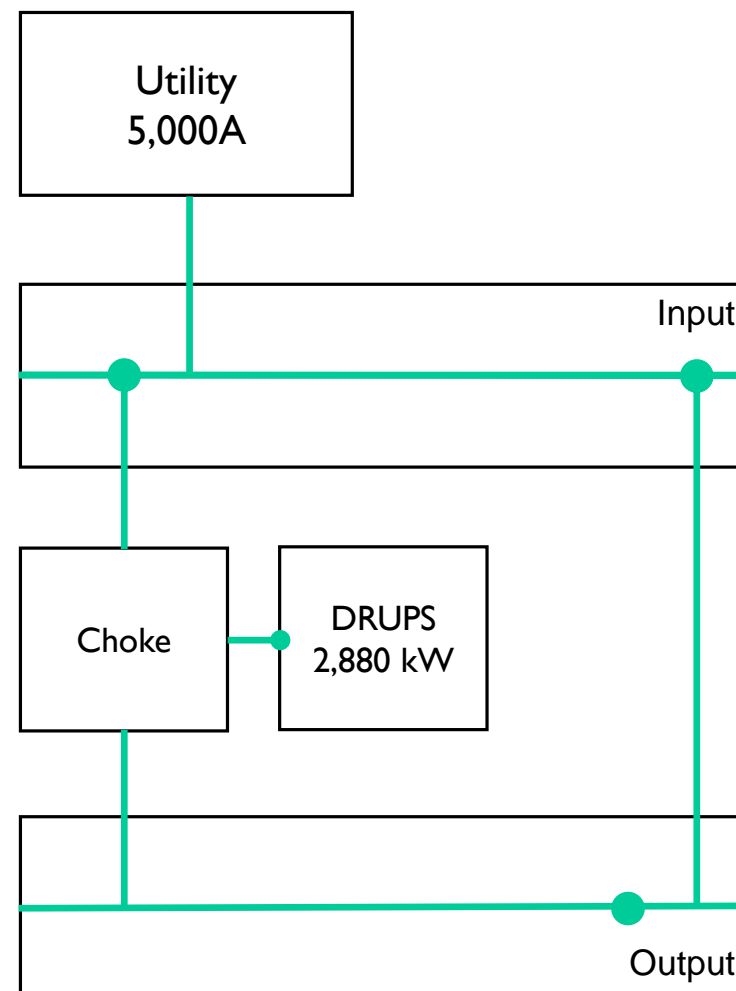
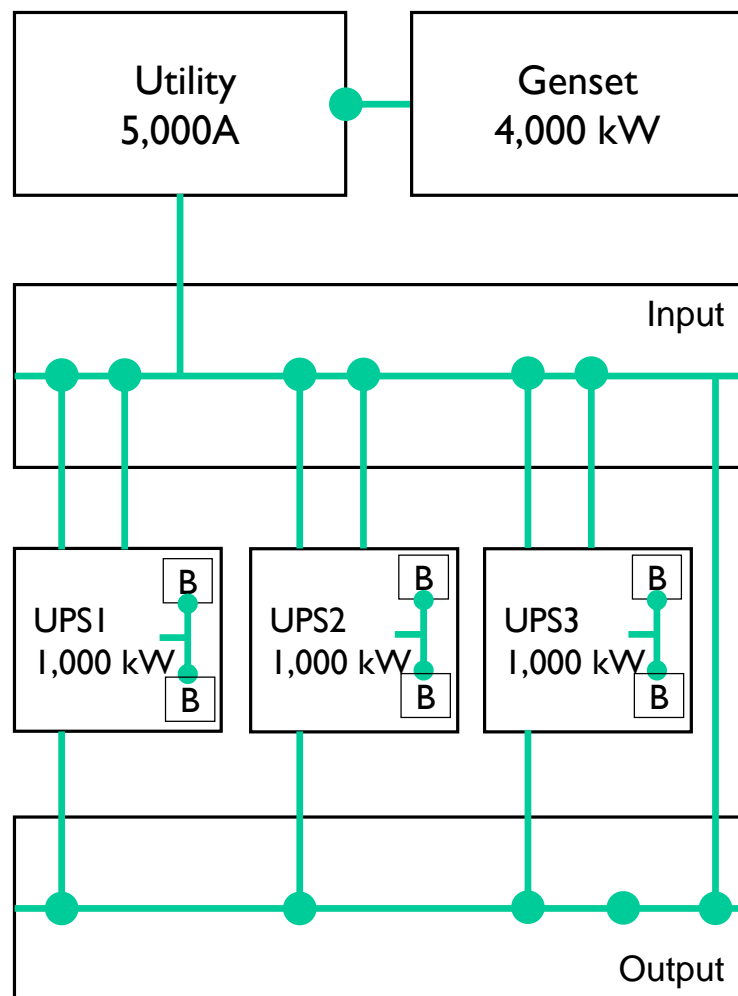


PFC

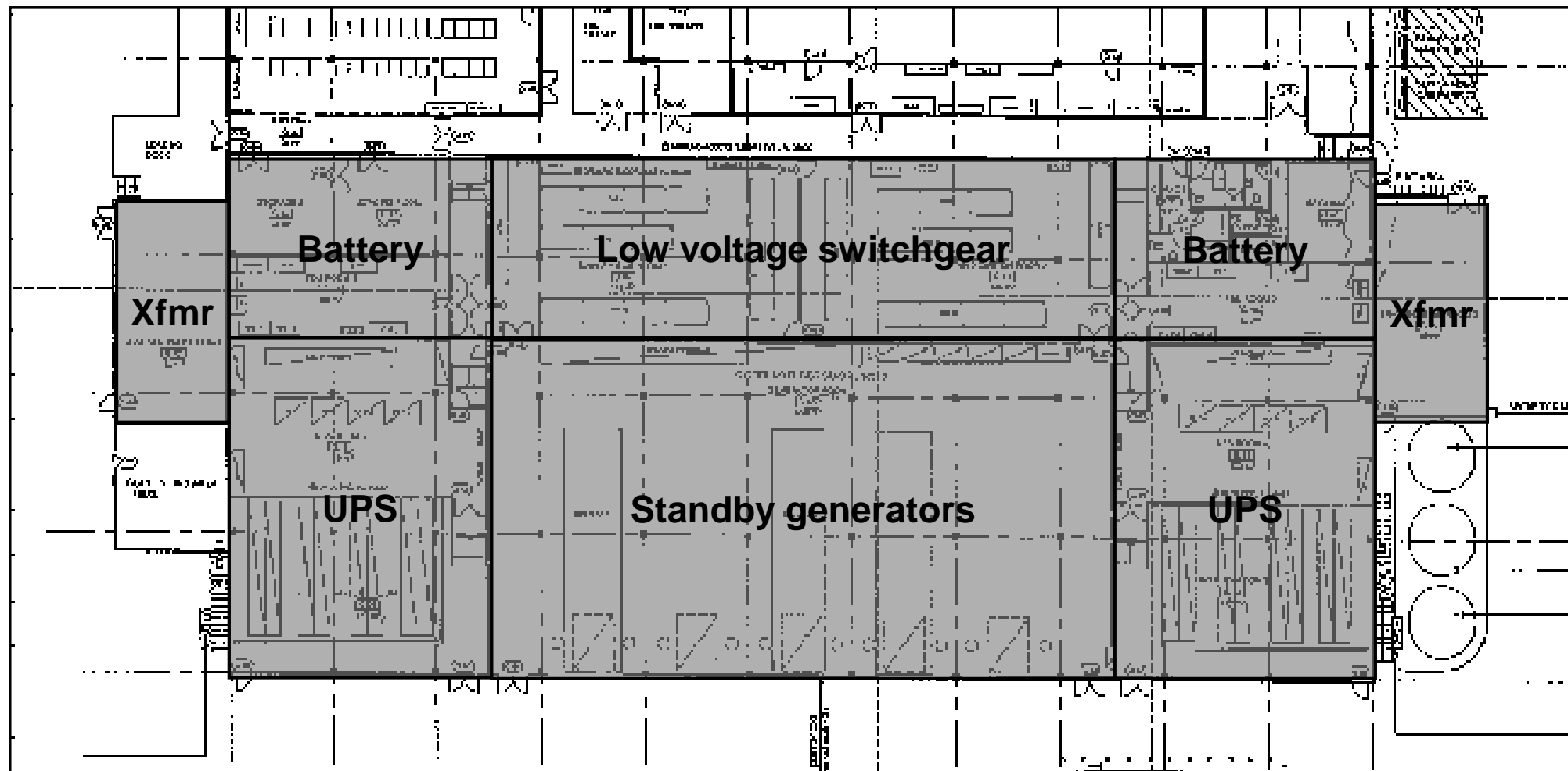
92%



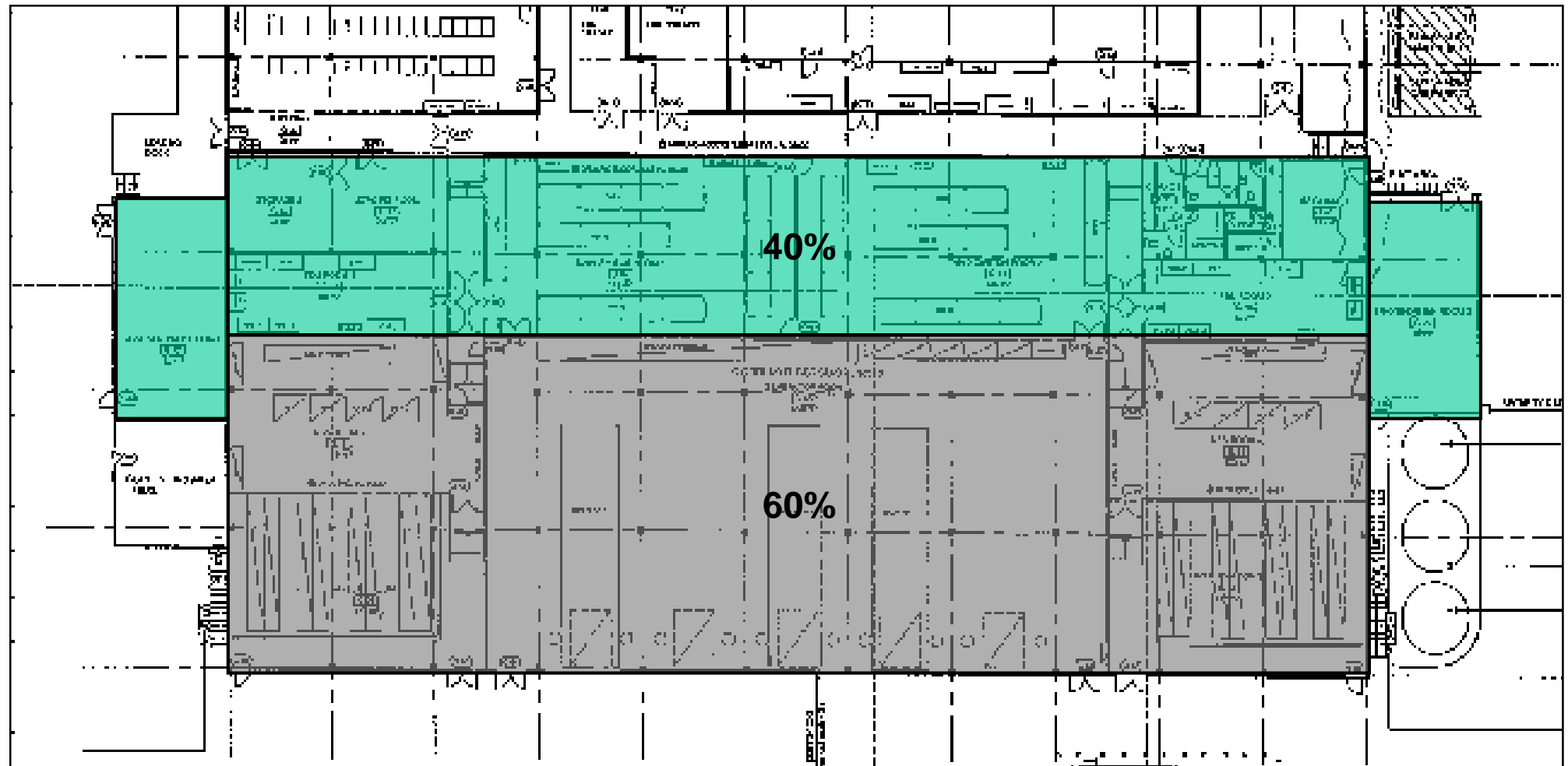
A simpler single-line diagram (60 Hz)



Space-Saving



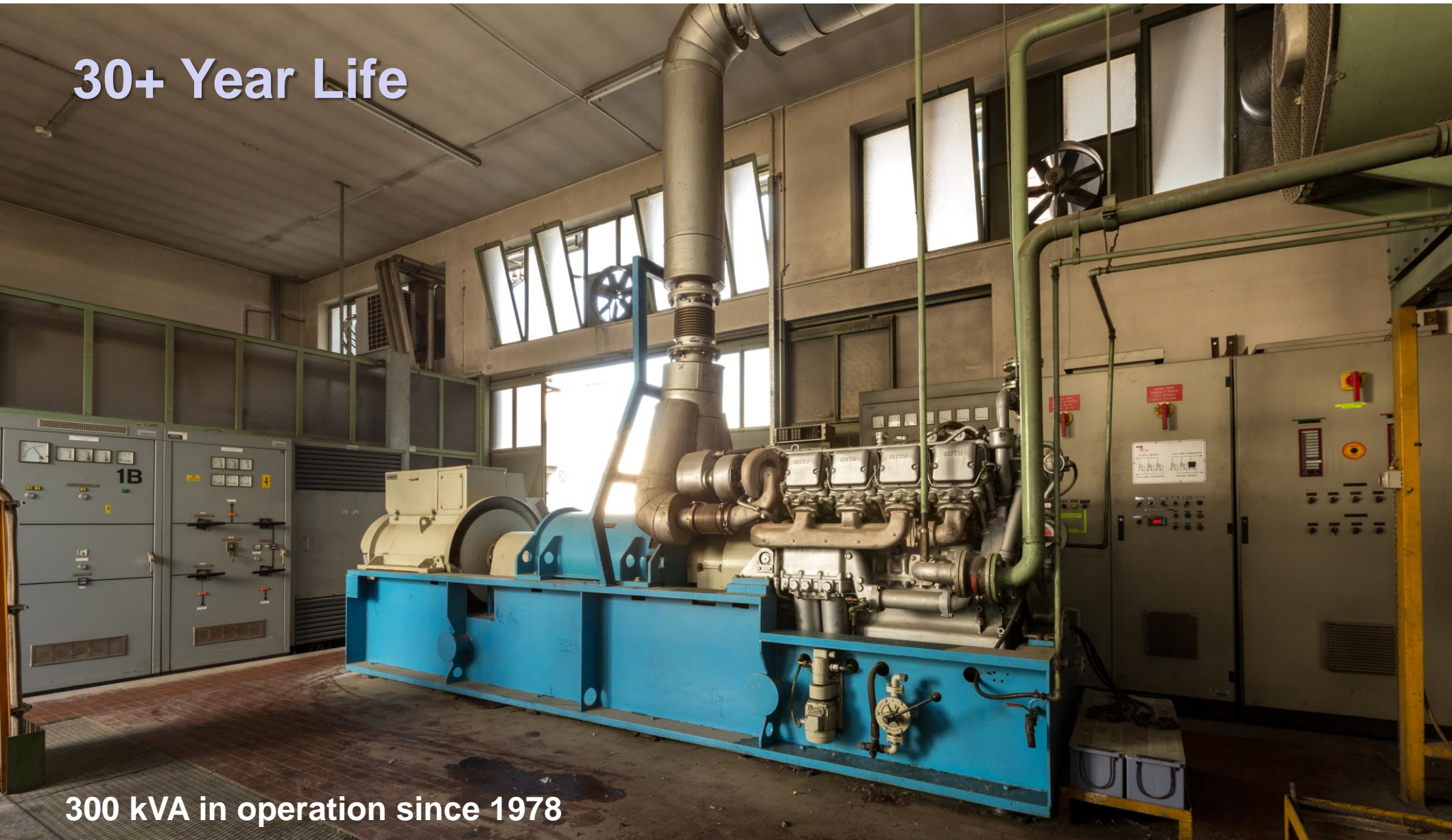
Space-Saving





International Workshop on Supercapacitors and Energy Storage

30+ Year Life



300 kVA in operation since 1978



TOTAL COST OF OWNERSHIP

CAPEX

Space, primary

Deduct for battery storage, additional switchgear, and room to house the mechanical equipment

Space, secondary

Real estate cost, lease cost, land cost, opportunity cost, building structure, construction of floors, walls, ceiling.

Support systems

Deduct for hydrogen and battery monitoring, louvers and dampers, fire suppression

Mechanical systems

deduct for HVAC, CW system, roof top condensers, ventilation, controls, and associated structural and roofing costs.

Electrical systems

Cost to upsize the generator and switchgear, depending on load.

OPEX

Efficiency

Minimum 2% (often more) gain in system efficiency; larger gains in <50%

Power for cooling

Operating cost for the mechanical system

Preventive maintenance

Deduct for maintaining monitoring systems and mechanical systems

Overhauls and major maintenance

Deduct for battery, capacitor & fan replacements vs bearing overhauls

Equipment longevity

UPS lifespan of 12-15 years vs. 25 – 30+ for DRUPS. UPS system requires complete replacement during lifecycle of DRUPS. Mechanical system lifecycle is 15 to 20 years, one replacement during DRUPS lifecycle.

Dynamic UPS vs. Static UPS

	DRUPS	SUPS
Single Line	Simple	Complex (Genset,ATS, UPS, batteries)
Energy Storage	Flywheel, fast recharge	Batteries, slow recharge
Reliability	High (less components)	Lower (more components)
HVAC	Only ventilation	Cooling and ventilation
Footprint	60%	100%
Efficiency	96-97%	94-95%
Lifetime (UPS)	25-30 years	10-12 years
Loads	IT and Mechanical loads	IT loads
Systems	LV and MV possible	LV only
Health&Safety	No chemical no fire	Chemical and Fire



HITEC, THE COMPANY



FACTS & FIGURES

Founded in

1894

Clients
supported

400+

Systems
sold

~ 2000

Official
partners

23

Power
secured

~ 3000 MVA

Countries
served

60

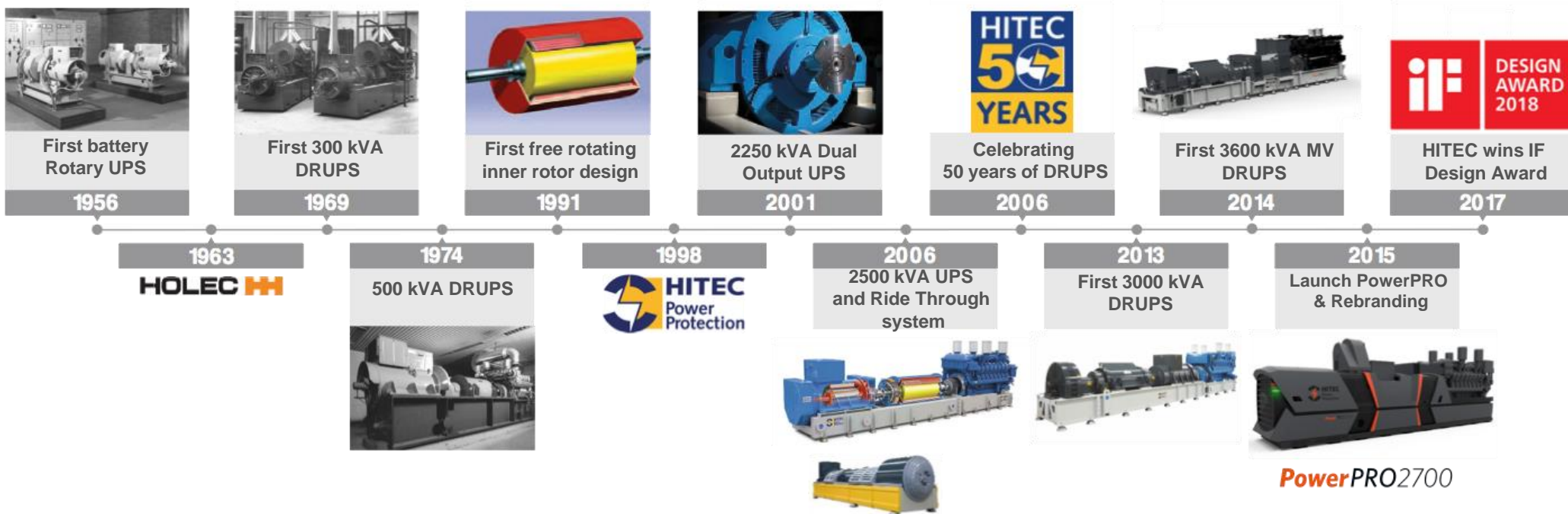
Regional
overhaul
facilities

3

Customer
support
centers

8

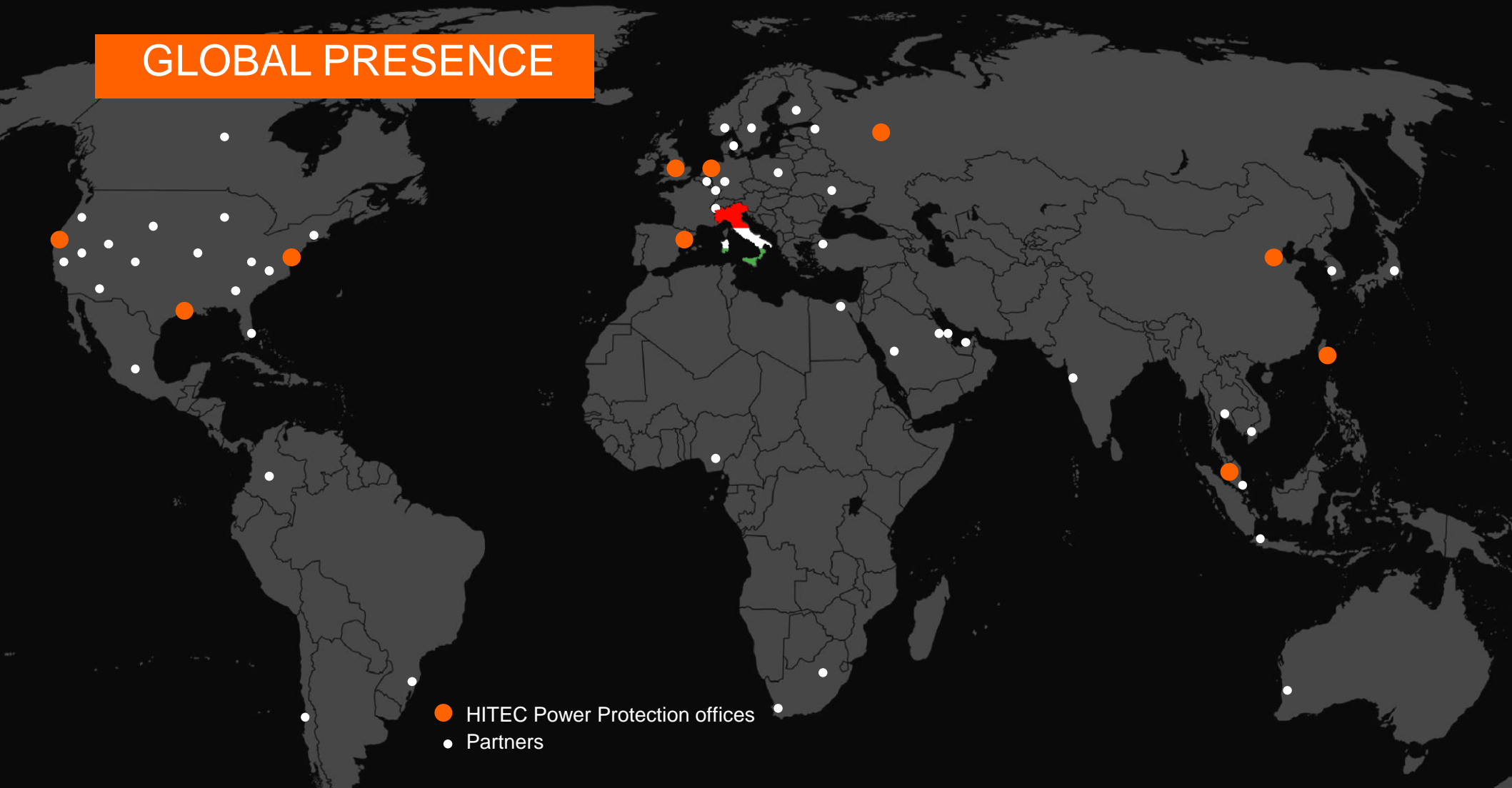
OUR PRODUCT DEVELOPMENT





International Workshop on Supercapacitors and Energy Storage

GLOBAL PRESENCE





International Workshop on Supercapacitors and Energy Storage

ATME, THE COMPANY



Company History

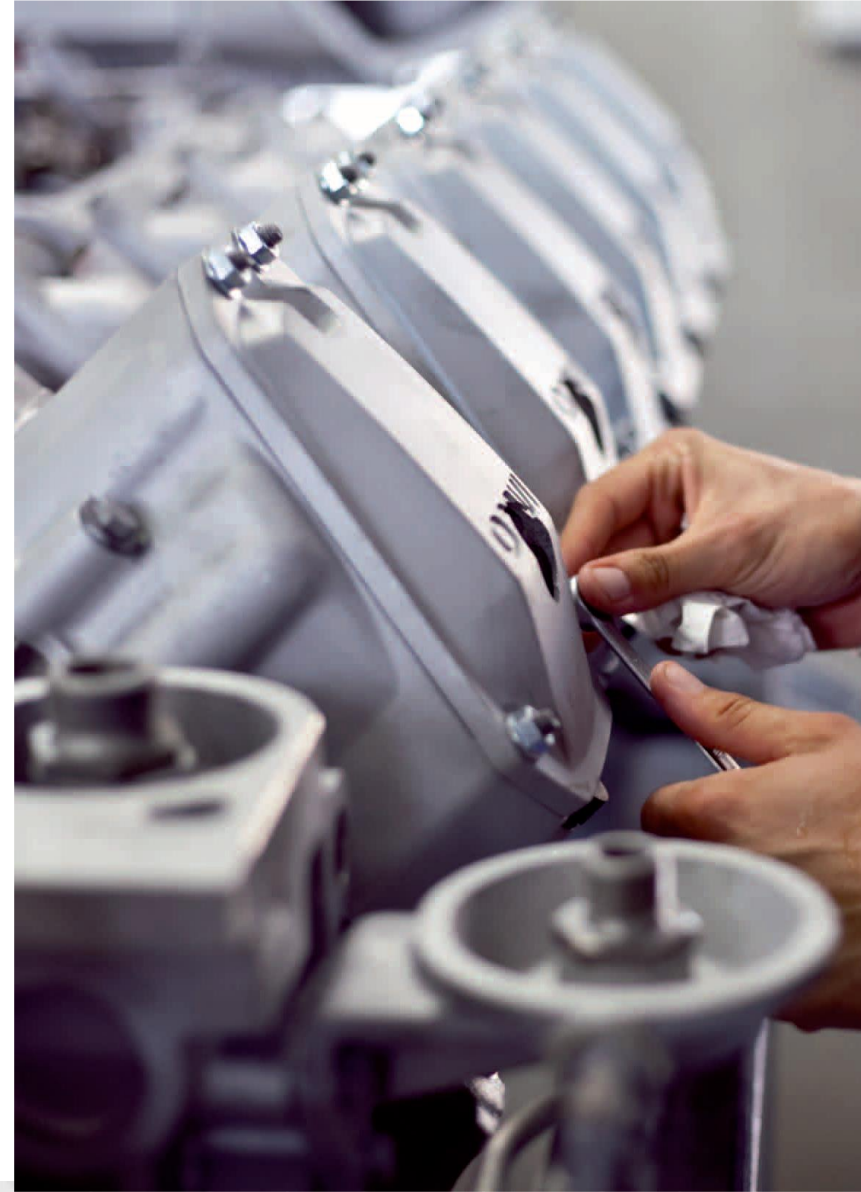
1995: founded as ATME Srl, an engineering company and dealer for the "**power generation**" division of Aifo - IVECO (today FPT- FIAT Powertrain). Specialised in turn key installation of power production equipment/plants, after sales service and spare parts

1998: from Power generation to Power Quality:
ATME becomes exclusive agent in Italy for HITEC Power Protection, the world's leading Dutch company in the Diesel Rotary UPS.

2008: ATME acquires the qualification of "Service Provider" for Italy of CGT-Cummins Generator Technologies for Stamford and AvK alternators (assistance pre / post sales technique and distribution center original spareparts)

2012: ATME becomes SpA, with a paid capital of 500,000 euro

2018: ATME becomes exclusive distributor in Italy for Freqcom





Products and Partners

Our products:

- "DRUPS" and "RUPS" rotary UPS - Hitec Power Protection
- Freqcon supercapacitor storage systems
- Cogeneration plants with natural gas or biogas
- Genuine CGT service and spare parts - Cummins Generator Technologies (Stamford and AvK)



Exclusive Distributor



Exclusive Distributor

Our services:

- design support:
 - feasibility studies;
 - energy balance;
 - system dimensioning and payback;
 - modeling of short-circuit behavior;
 - accredited TIER design for Uptime Institute certification
- turn key installation of power production equipment/plants;
- after-sales assistance (preventive maintenance contracts, predictive, availability, etc);

STAMFORD | AvK

Authorised Spare Parts & Service Dealer

Datacenter - Rome 6 x 2500 kVA





International Workshop on Supercapacitors and Energy Storage



ATME
Applicazioni Tecnologiche Motoristiche ed Elettriche

Hospital - Florence
3 x 2000kVA

ATME | EDUCATION ACADEMY
for Power Quality

ATME



International Workshop on Supercapacitors and Energy Storage

THANK YOU FOR YOUR TIME