



# FUTURE

## Energy Savings with Microgrids - Be Flexible

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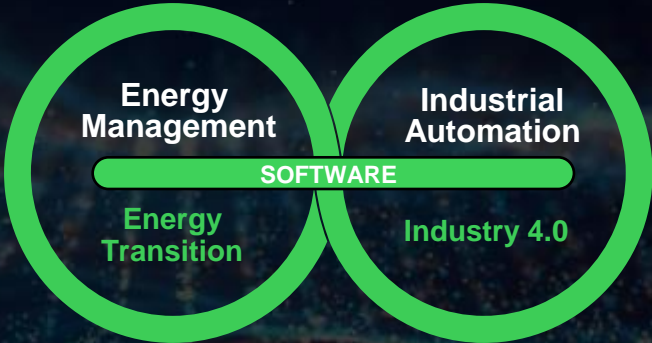
# Record Year: Well positioned for sustainable growth in coming years

€34bn

Group FY 2022 revenues

128k+

Employees in over 100 countries



Two Businesses



**BALANCED**

Revenues  
(by Group)

58%	24%	18%
PRODUCTS	SYSTEMS	SOFTWARE & SERVICES

End  
Markets

16%	37%	34%	13%
DATA CENTERS	BUILDINGS	INDUSTRY	INFRASTRUCTURE

Revenues  
(by Geography)

25%	32%	30%	13%
WESTERN EUROPE	NORTH AMERICA	ASIA PACIFIC	REST OF WORLD



# U.S. Power and Grid Market Trends

The Energy Transition is here!

1 **New Regulations & Gov't Funds** are driving investments in the **energy transition**

2 **Aged infrastructure, renewables, distribution system upgrades and modernization, DER, reliability, grid stability, resiliency and grid congestion** —all roll up into **distribution**

3 While COVID-19 may impact **kWh consumption** (hence generation), securing **grid resilience** and acceleration of **digital investment** remain a **high priority**, ensuring solid level of business

4 **Power grids are speeding up digitization** to adapt to the profound changes in the new energy landscape (renewables, resilience, EV, ...) : we already have a **unique position on “operate”**

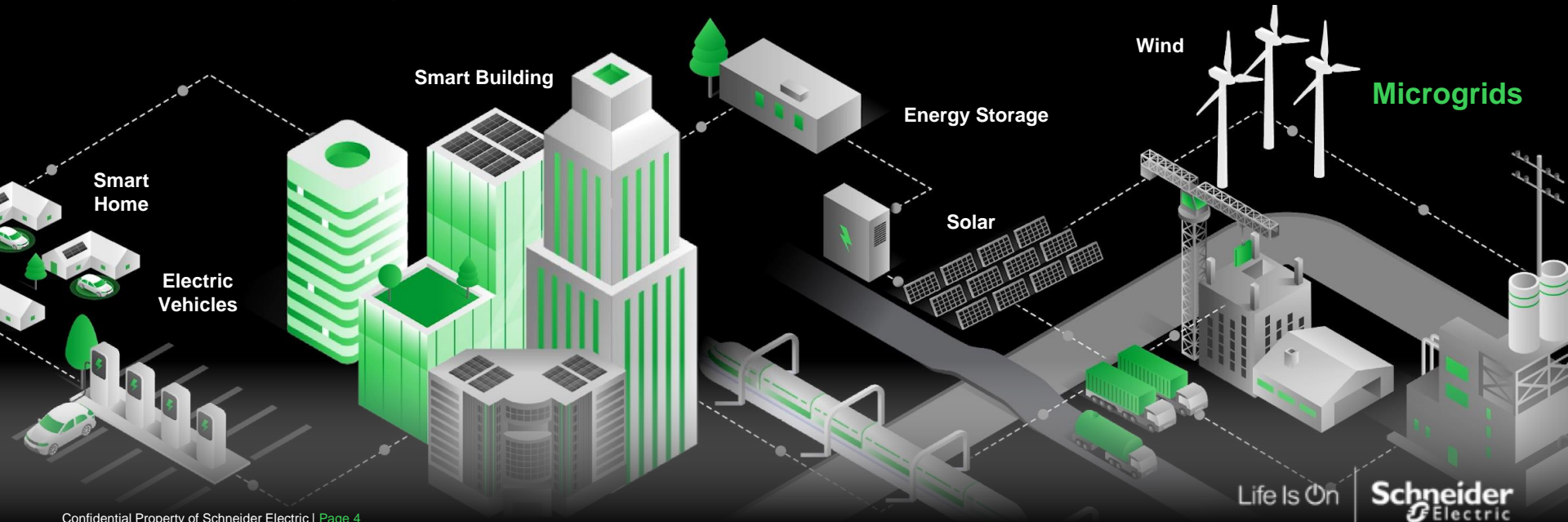
# Grids of the Future: The New Energy Landscape will be a far more **electric world**, enabled data from plant to plug

## Grid-connected Asset

Electrified Operations, Control, Reduce & Optimize energy management

## Smart Grid

VPP, aggregation, contract & demand management dispatch

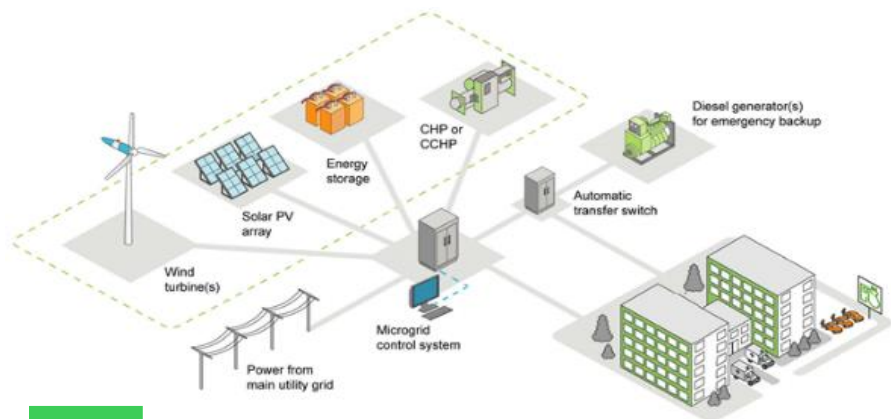


# Microgrids

Microgrids deliver integrated outcomes through specific use cases

Technology that enables the New Energy Landscape

A microgrid provides a decentralized, digitized & decarbonized alternative...



... delivering integrated outcomes



- A group of interconnected loads ...
- Microgrid<sup>1</sup> → ... and distributed energy resources within clearly defined electrical boundaries
- acting as a single controllable entity with respect to the grid

<sup>1</sup> US Department of Energy definition



# Evolution of Onsite Generation



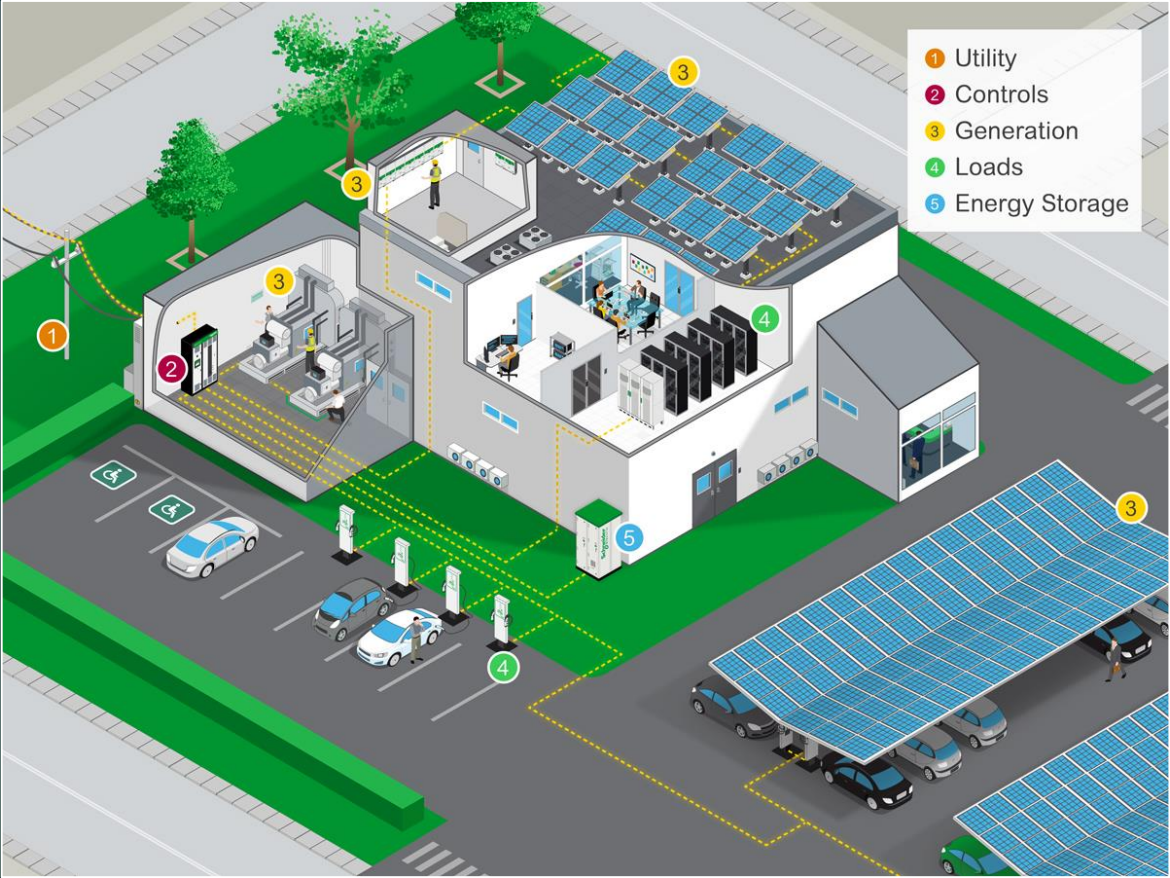
Cost savings  
and stability



Resilience and  
reliability



Sustainability

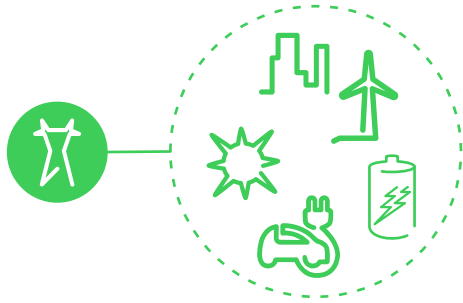


# Microgrids

## Types

### Optimize your electrical bill & sustainability footprint

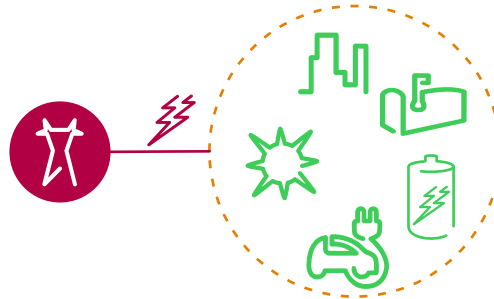
Grid + local generation + grid following storage



### Always Grid-tied (Non-Islandable)

### Manage blackouts while optimizing your electrical bill & sustainability footprint

Grid + Diesel/Gas &/or renewable generation + grid following/grid forming storage + load management



### Islandable

### “Power on” with efficient and future proof power systems

Diesel/Gas &/or renewable generation + storage + load management



### Off-grid

# Microgrid – Value Proposition



## 1. Maximizing Outcomes from DER thanks to advanced Controls



### Energy cost

*Artificial Intelligence solutions that select the cheapest & greenest available energy at a given time*



### Sustainability



### Resilience

*Advanced controls that ensure power stability whatever grid configuration*

## 2. De-risking Microgrid projects leveraging best in class consulting capabilities



### System design

*Consulting services that provides the best system sizing & tools according to today and tomorrow load profile*

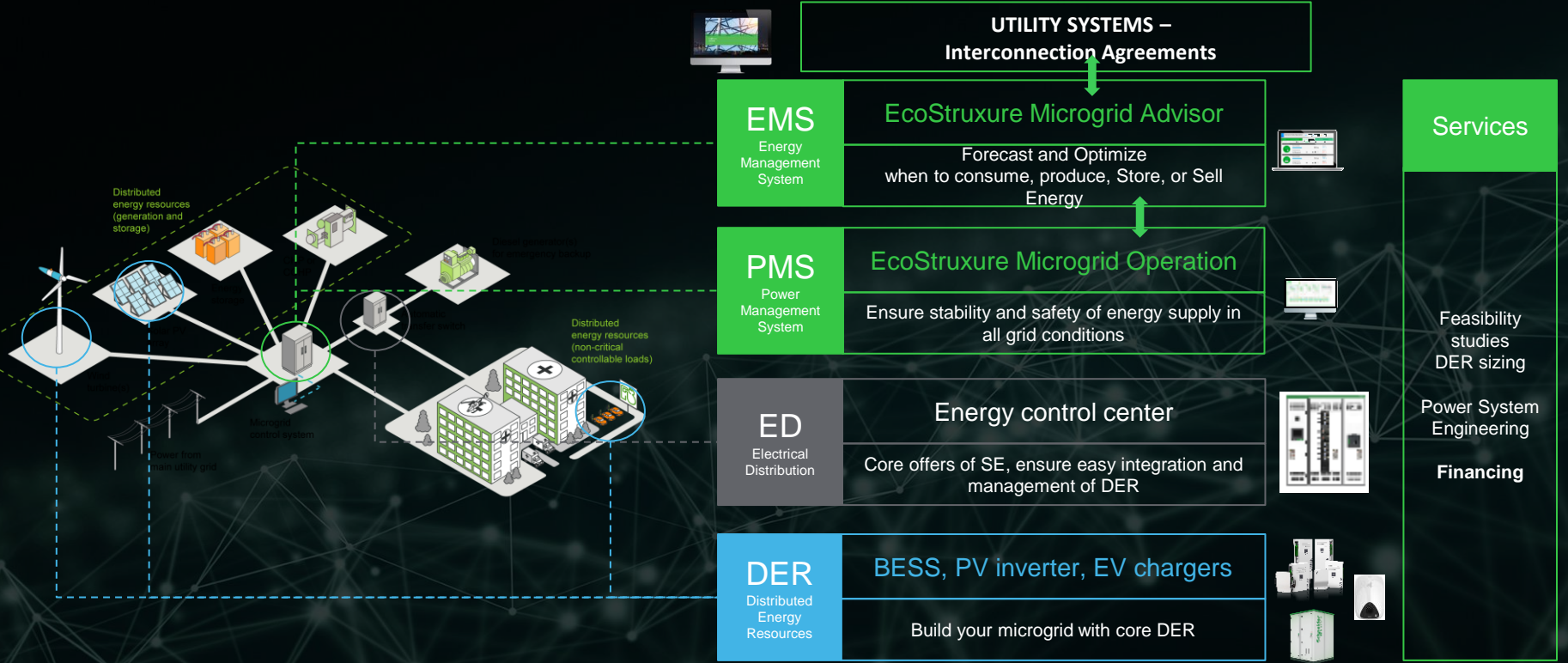


### Financing

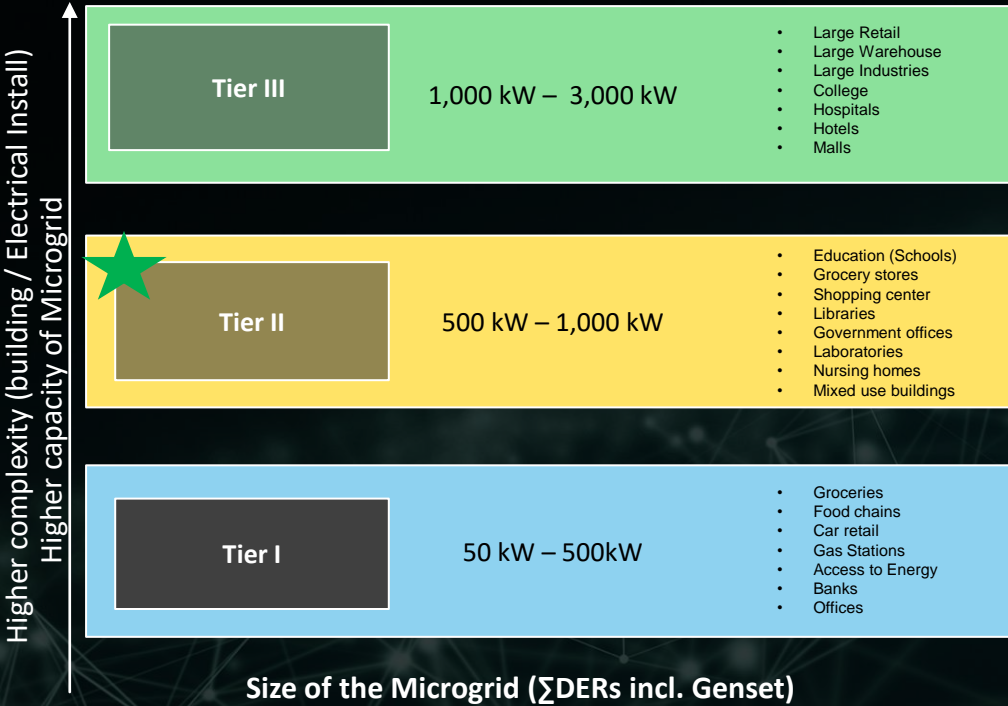
*Energy As a Service (Financial enablement) solutions that ensures outcomes from day1 w/o upfront invest*



# A unique set of technologies and services to de-risk microgrid project and maximize its outcomes



# Unlock business potential of Small and Medium CIB microgrid market leveraging partners



Customer Values

- Sustainability
- Cost Optimization
- Resilience

With Transactional MG, we enable

- EaaS
- Contractors
- Specifying engineers
- System integrators
- End users

# EcoStruxure Microgrid Flex architecture

Economic optimization + Sustainability + Resilience

Grid tied +  
Islandable

Islanded

Use Cases Supported	PV	BESS	Genset
Remote energy monitoring & forecasting	■	■	■
Tariff management ( Static)	■	■	--
Demand charge Reduction	■	■	--
Self consumption optimization	■	■	--
Export predictive optimization	■	■	--
Export real time optimization	■	■	
<b>Grid Connection Management</b> Grid outage detection Anchor resource: <ul style="list-style-type: none"> <li>• Genset Main BESS following</li> <li>• BESS main Genset following</li> </ul> Transition <ul style="list-style-type: none"> <li>• Grid to Genset – Open</li> <li>• Genset to Grid – Closed</li> <li>• Grid to BESS/BESS to Grid – Open</li> <li>• BESS to Genset/ Genset to BESS – Open</li> </ul> Genset optimization/ Backfeed protection BESS charging limitation	■	■	■
Load Shedding	■	■	■
Load Sharing (active Power)	■	■	■

(\*) Extension to 25 PV inverters by mid 2023 (TBC)

(\*\*) Several gensets possible with ad-hoc genset controller (DEIF AGC4...) and/or specific configurations



# Microgrids

Go to market approach for Cost Savings and Effectiveness



## Microgrid projects



## Configured “Microgrid In A Box”

### Unique

*Every project is unique*

### Customized

*Designed from scratch and customized as per the needs*

### Standard Architectures

*Tested Validated Documented Architectures*

### Simple tools

*size, quote, build, commission*

### Lead time ↑

*As every project is unique, it is difficult to do supply chain planning*

### Commissioning time ↑

*Designed in the office and tested in the field during installation and commissioning (Issues/ errors found during commissioning, delays the commissioning time)*

### Easy

*size, quote, build, commission*

### Lead time ↓

*shrinking design, integration, and deployment time*

### Commissioning time ↓

*Tested and validated architectures + documentation for step-by-step commissioning*

Life Is On

**Schneider**  
Electric

Life Is On

**Schneider**  
Electric