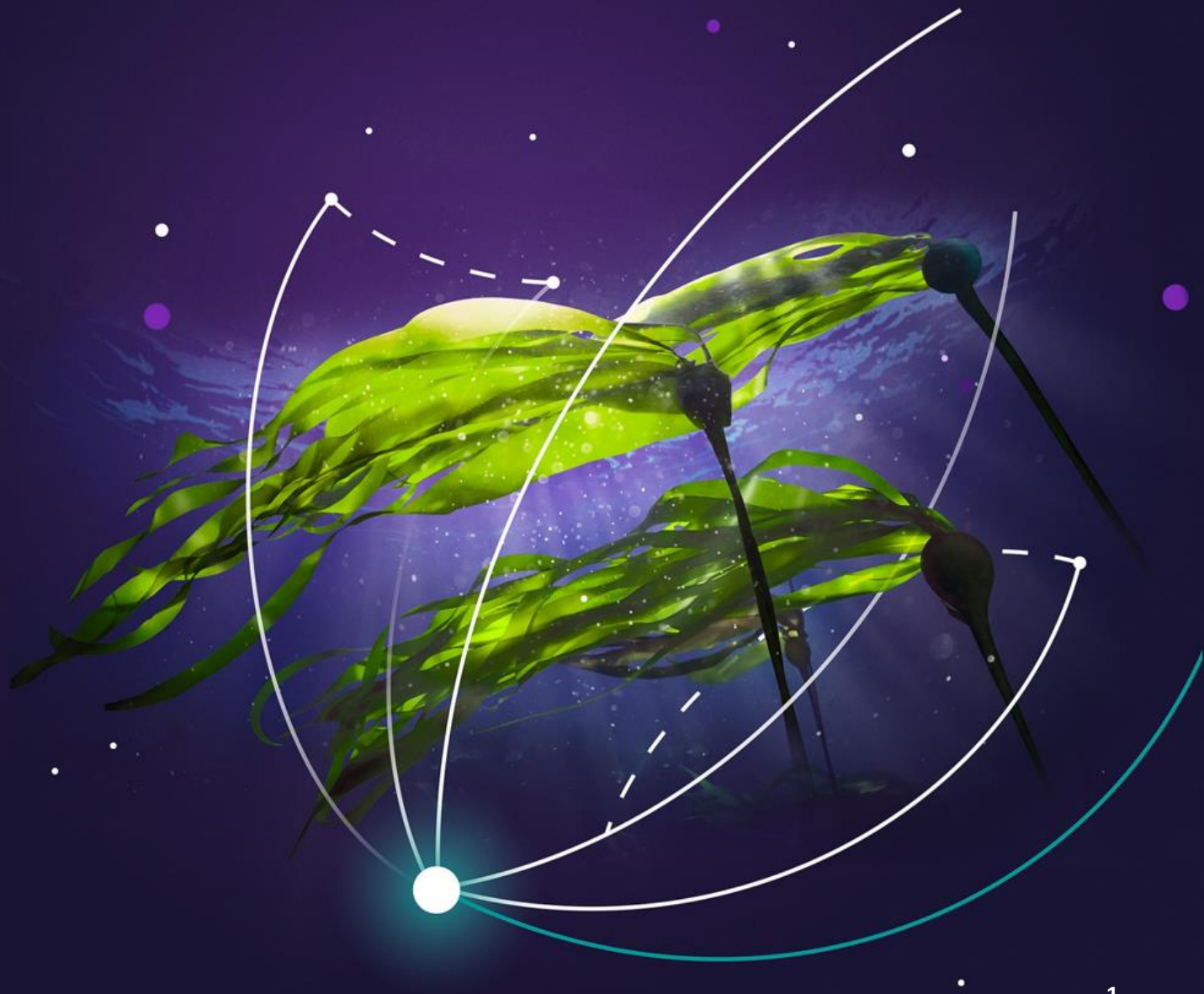
Hur säkerställer vi ett resilient energisystem

utan import av bränsle eller fossilbaserad el?



Åsa Lyckström, Hållbarhetschef Sverige

December 11, 2024

A successful energy transition requires balancing

affordability, reliability, and sustainability.

Resilience.

Siemens Energy is a

global leader in the energy business

~ 1/6

of global electricity generation is based on our technology

98,000

employees work as a team to energize society[1]

We are present in

> 90 countries

We invest around

€1bn annually in research and development

1 Number of employees as of June 30, 2024

Siemens Energy in Sweden

– Impacting the whole world

>1,000

Gas turbines delivered to 75 countries

14 billion

SEK in yearly revenue

>110 years

of turbine manufacturing

4000

staff

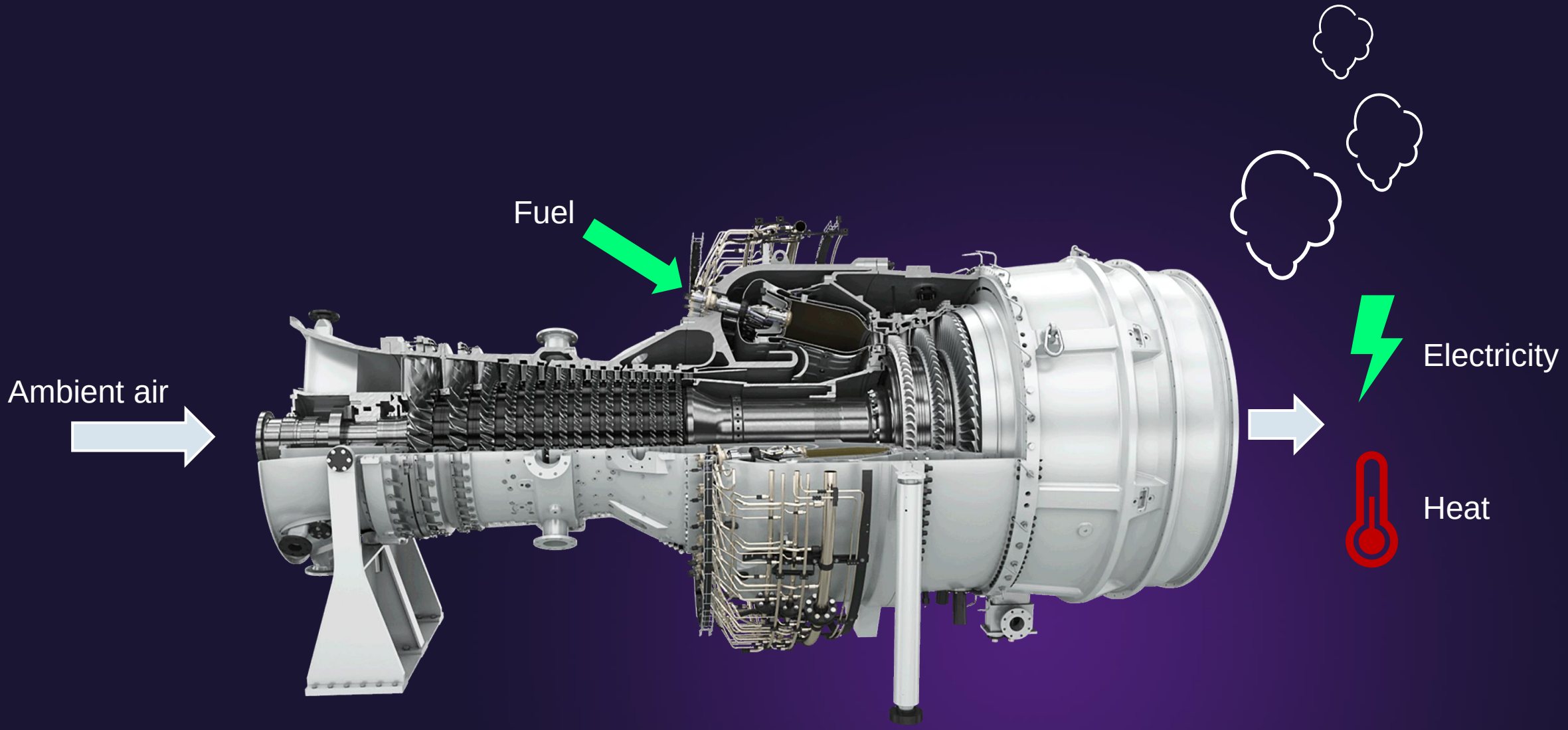
>200

professions

>85

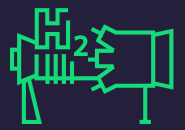
nationalities

Gas turbine – Working principle



Green fuels roadmap – Medium sized gas turbines

Acceleration through collaboration and partnership

	Current	Near term	Roadmap[6]
Gas phase	**H_2 40 – 75%** 	**H_2 100%** SGT-800 intro rating	**H_2 100%** More frames – improved performance
	Biogas		
	50% cracked ammonia[1] Co-firing with natural gas SGT-600/700/800		**Ammonia** Direct/cracked
			Methanol / Ethanol
Liquid phase	**Biodiesel** HVO100[2] / FT[4]		**FAME[3]** **SAF[5]**

1: Fully cracked (hydrogen/nitrogen mix)
2: HVO = Hydrogenated Vegetable Oil
3: FAME = Fatty Acid Methyl Ester (e.g. RME, SME)
4: Fischer-Tropsch diesel
5: Sustainable Aviation Fuel
6: Prioritization of roadmap depends on market demand

Sustainable energy from Sweden to the world

>1,000 gas turbines

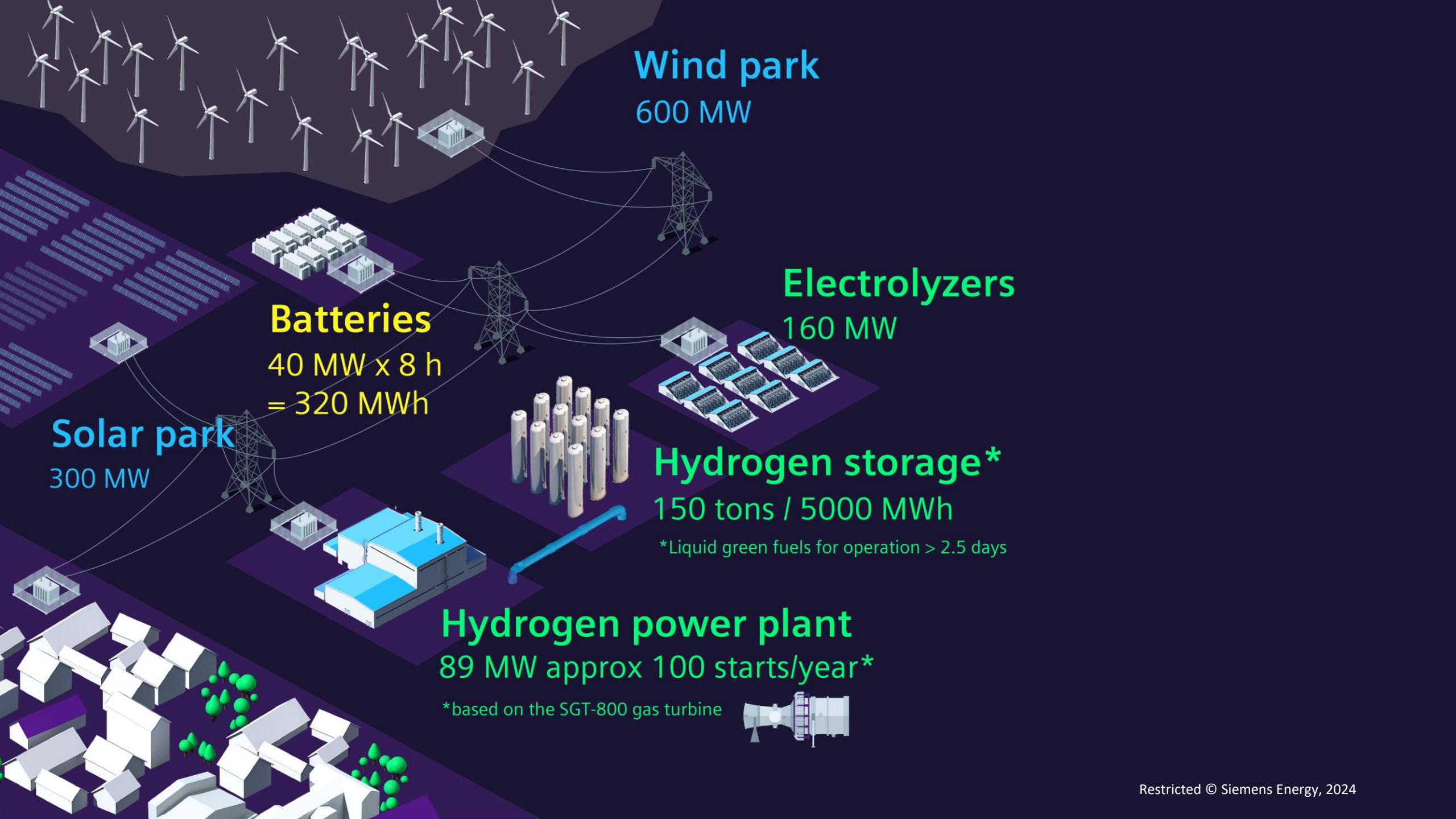
Since the start in 1913, the Finspång turbine business has delivered more than 1000 gas turbines, 2,300 steam turbines, 50 power plants, and 50 heat pumps to 115 countries

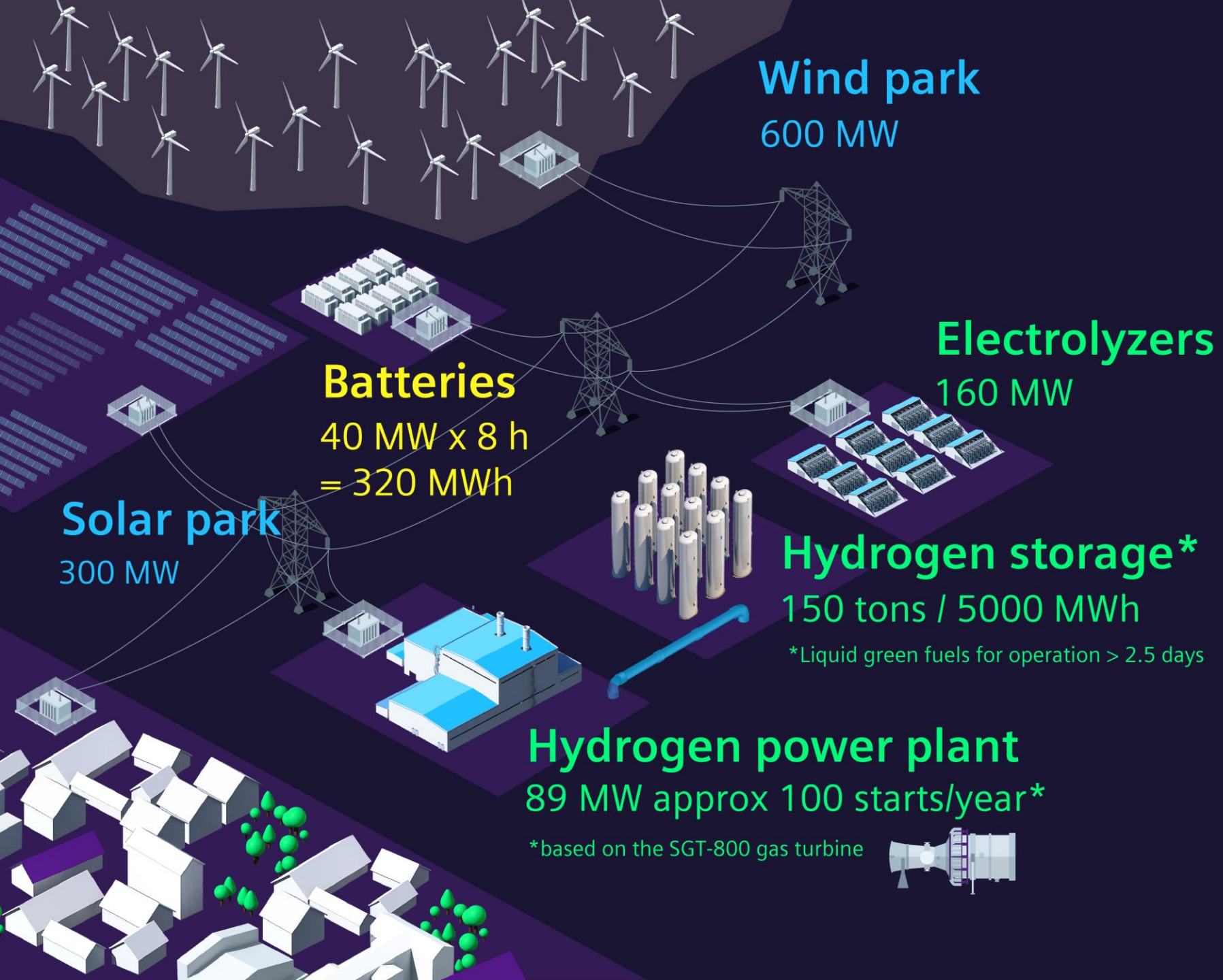
70% with service agreements

Total gas turbine power output of

>46 Gigawatts

How to build a **Net-Zero electricity system** for a city with 250,000 inhabitants





100%
fossil-free electricity

80%
direct wind and solar

15%
combined cycle hydrogen power plant

5%
battery

FörNUbart 24/7

Nätstödsstjänster

[Dagens teknik kan snabbt leverera fossilfri el i södra Sverige till låg kostnad - Svensk Vindenergi]

swedish wind energy association

OX2

SIEMENS energy

Wind
On- & offshore
8 500 + 7 000 MW

Batteries
1 400 MW

PV
12 000 MW

RewNOWable 24/7
SE3 and SE4

Electrolyzers
110 MW

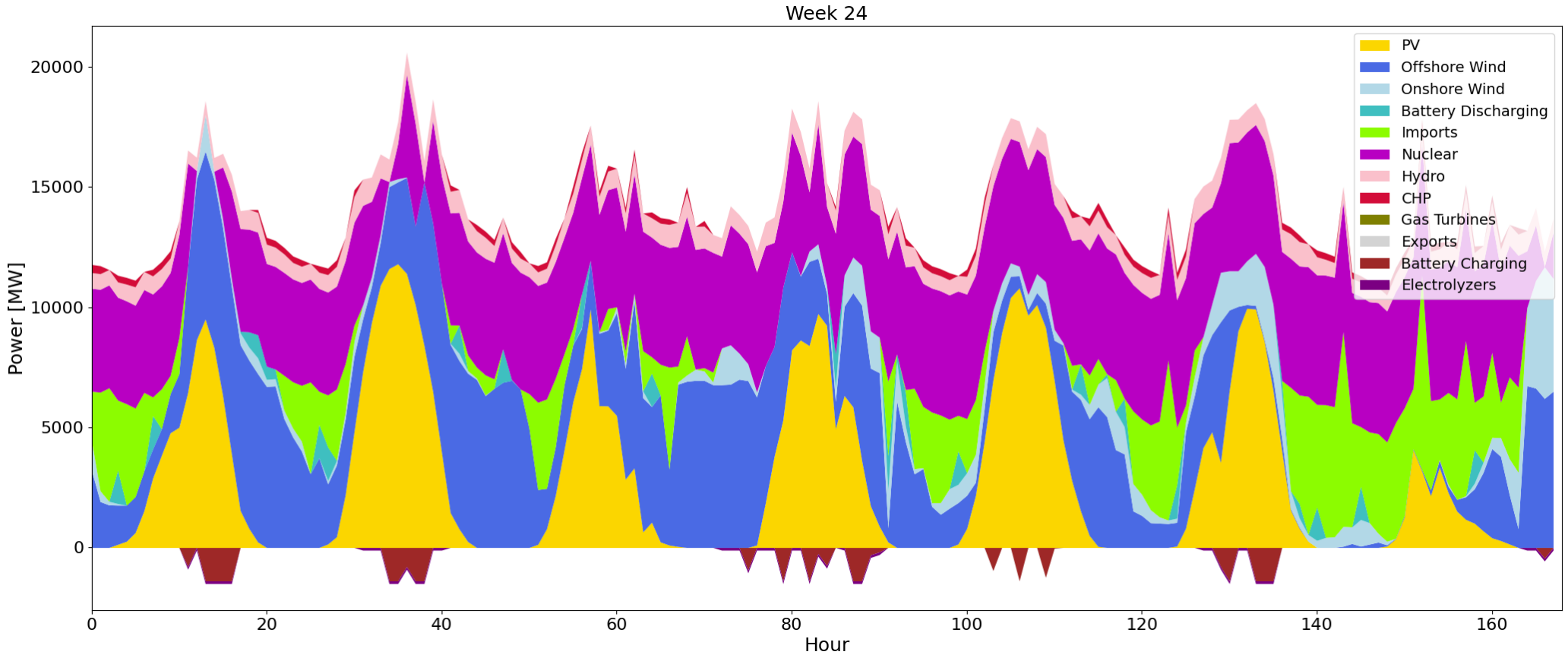
Methanol production
biogenic CO_2 + green H_2
33 000 tons / 182 500 MWh

SC Gas turbines
on green fuels
1 330 MW

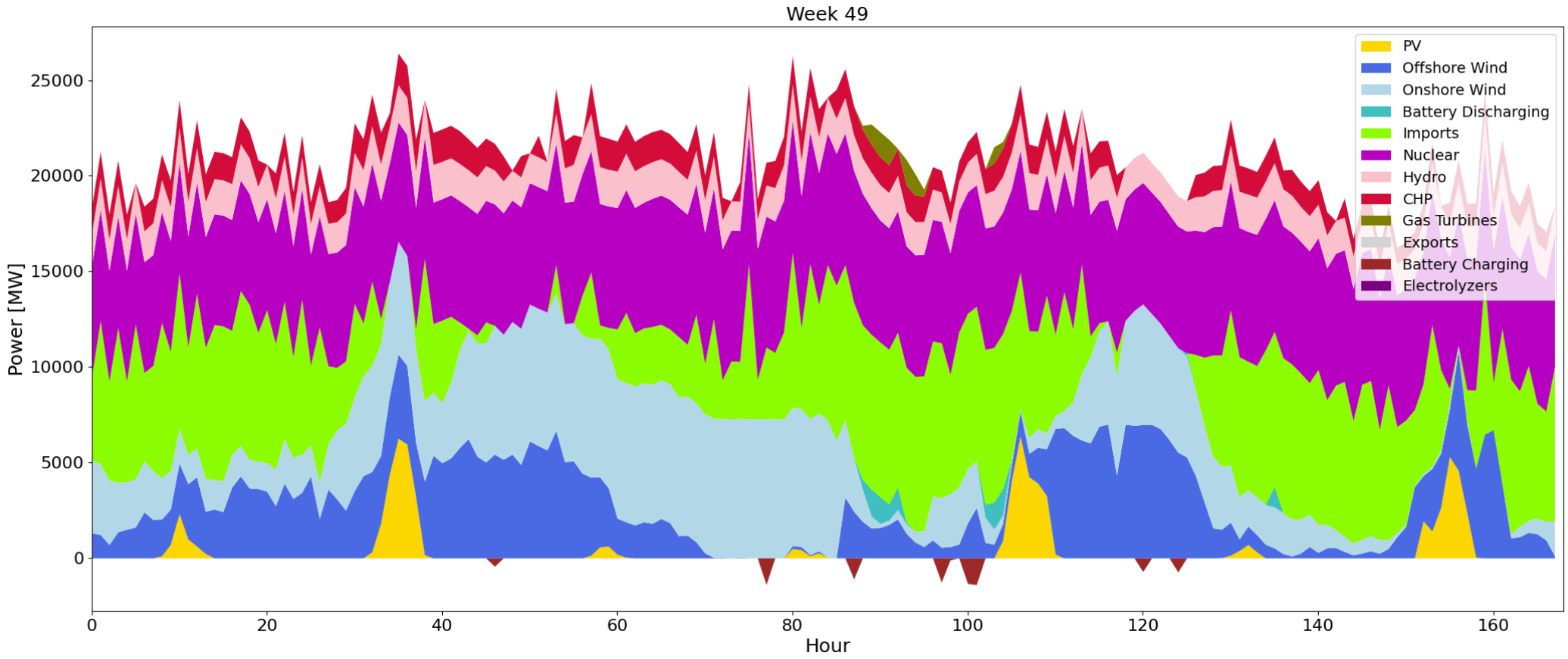
Total system
- **System cost 54 EUR/MWh***
- **Investment 44 billion EUR**

*over 40 years

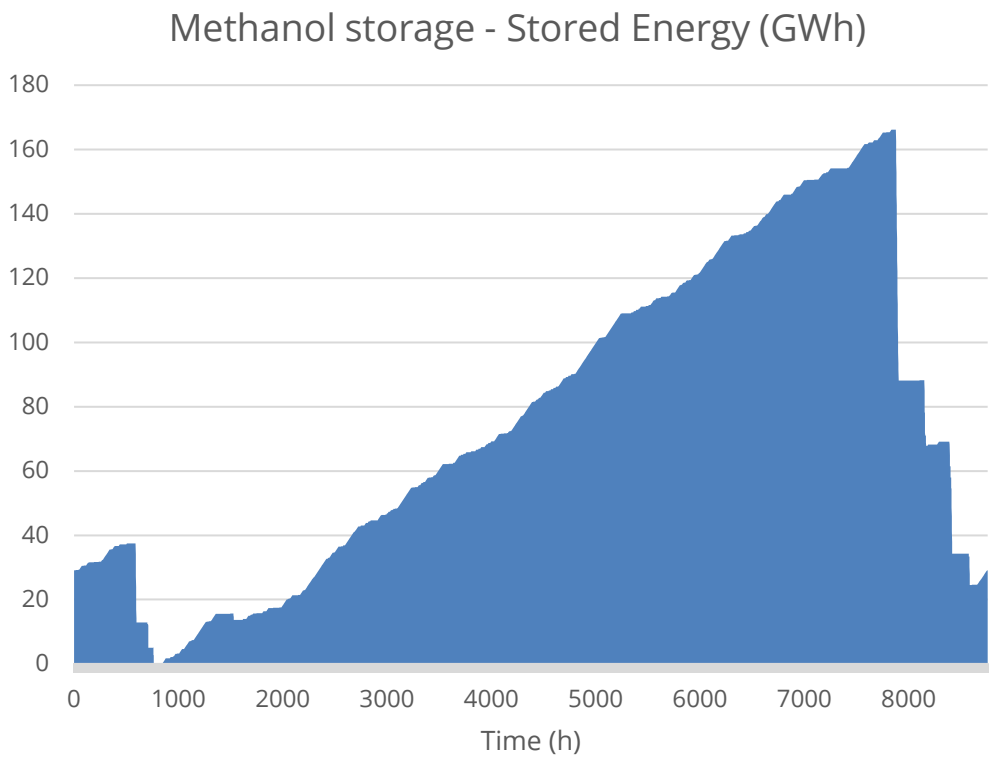
Power generation mix a week in June

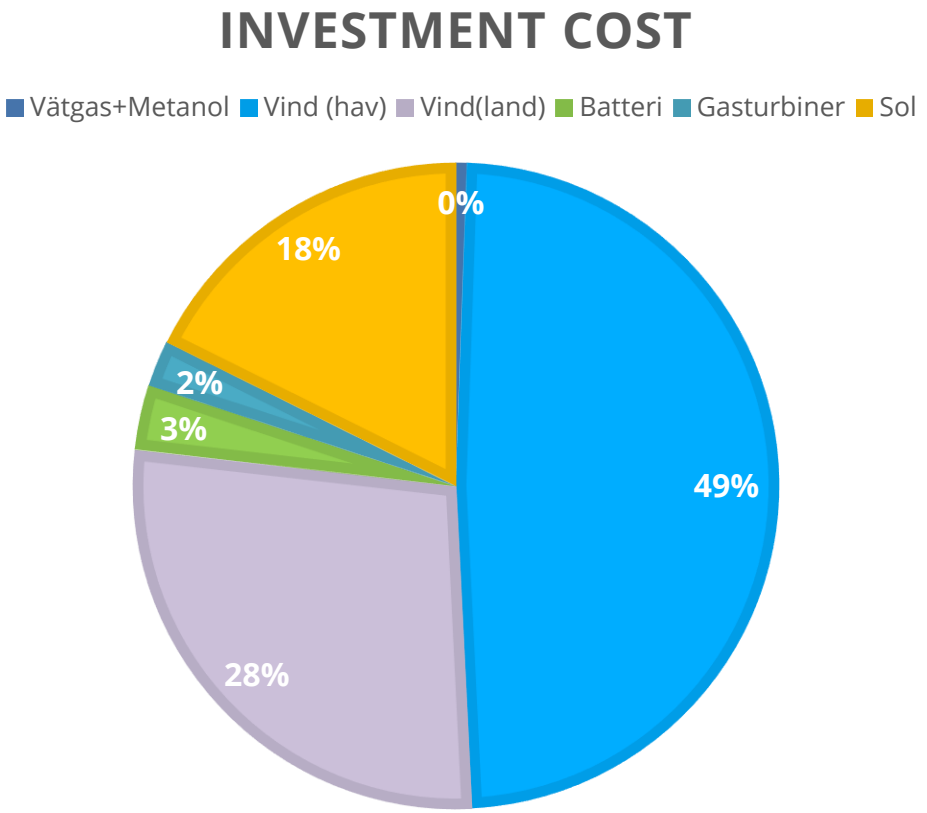


Power generation mix a week in December

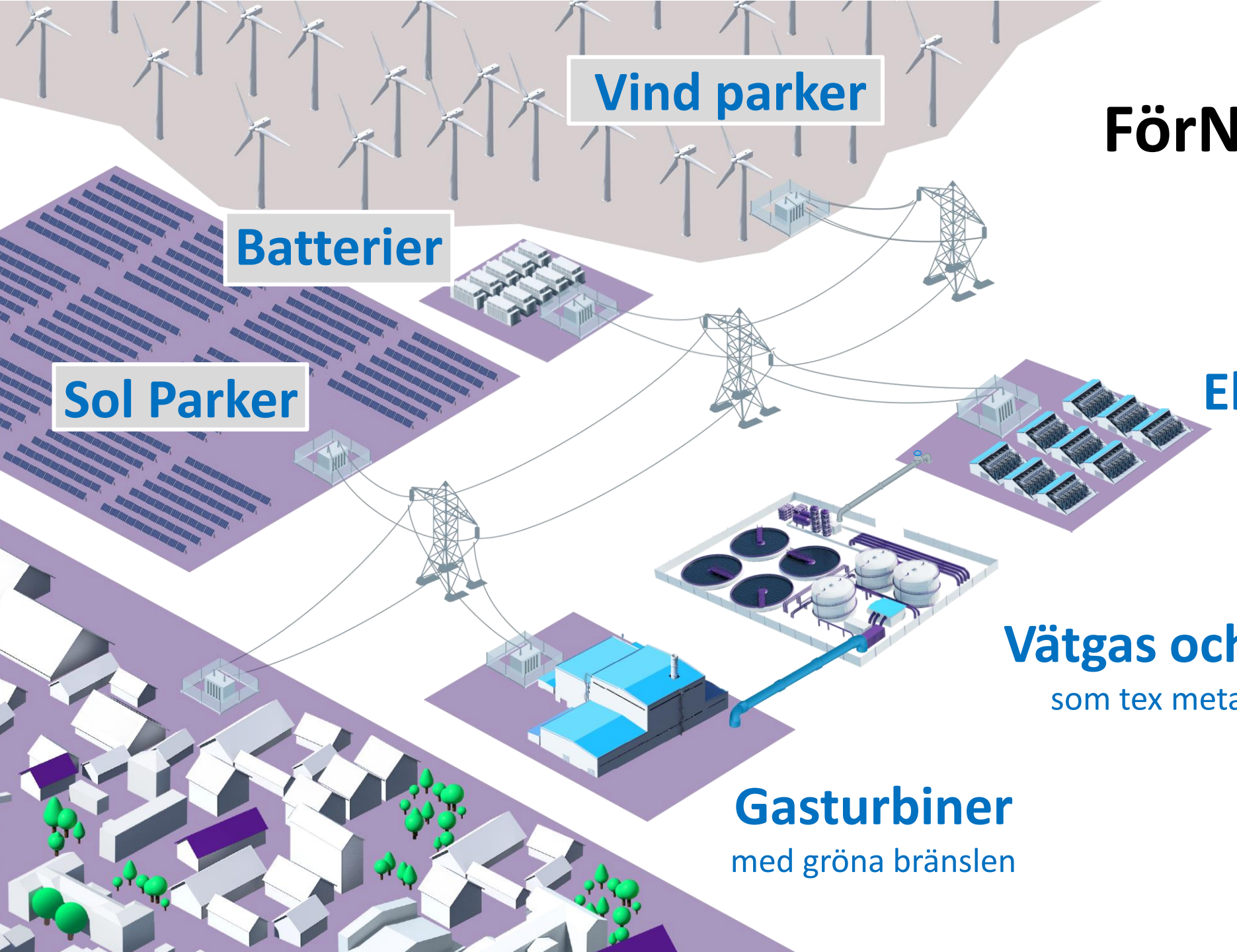


Selected study results





FörNUbart 24/7










We energize society