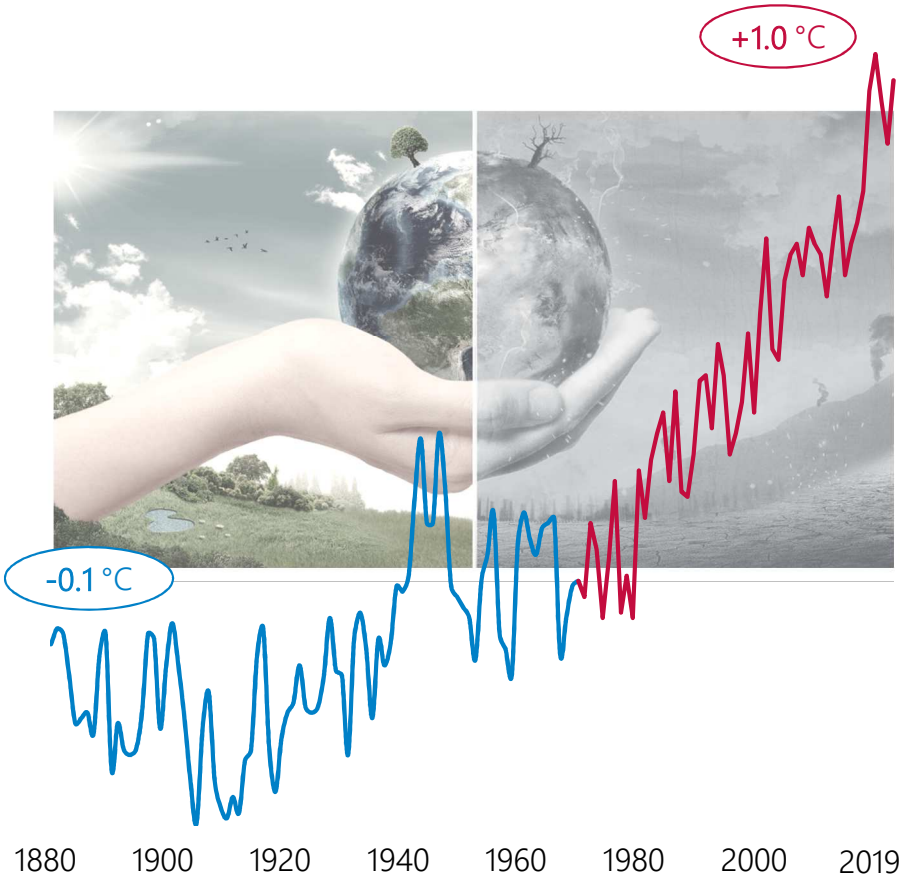
Driving the clean energy transition

January 2021

Escalating climate change forces governments to take drastic action

Global surface temperature anomalies

Land and ocean; temperature anomaly with respect to 20th century average



Global government action

Paris agreements

Limit global warming to a maximum of

1.5°C

by 2050

EU Green Deal

Achieve net

carbon-neutrality

by 2050

Climate Action Plan 2050

Reduce greenhouse gas emissions by

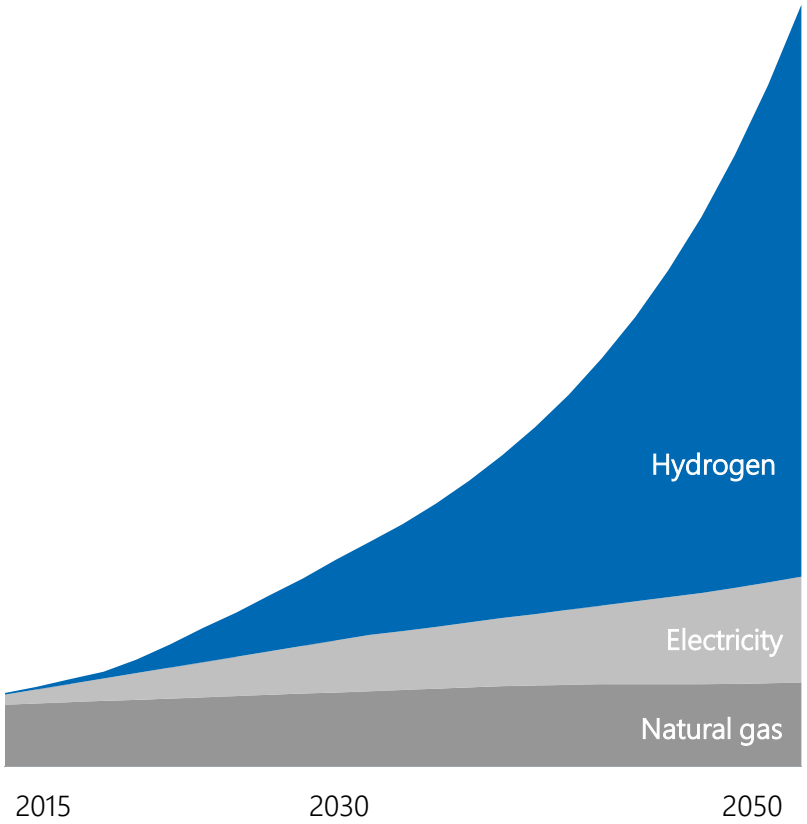
80-95%

by 2050

Source: NOAA National Centers for Environmental information

Clean energy transition requires unprecedented energy infrastructure investments

Planned energy infrastructure investments[1]



Key catalysts

Natural gas grid expansion

Expansion of natural gas infrastructure to compensate for coal and nuclear phase-out

Electricity highways

Realization of electricity highways to enable distribution of renewable wind and solar energy from the point of production to consumers

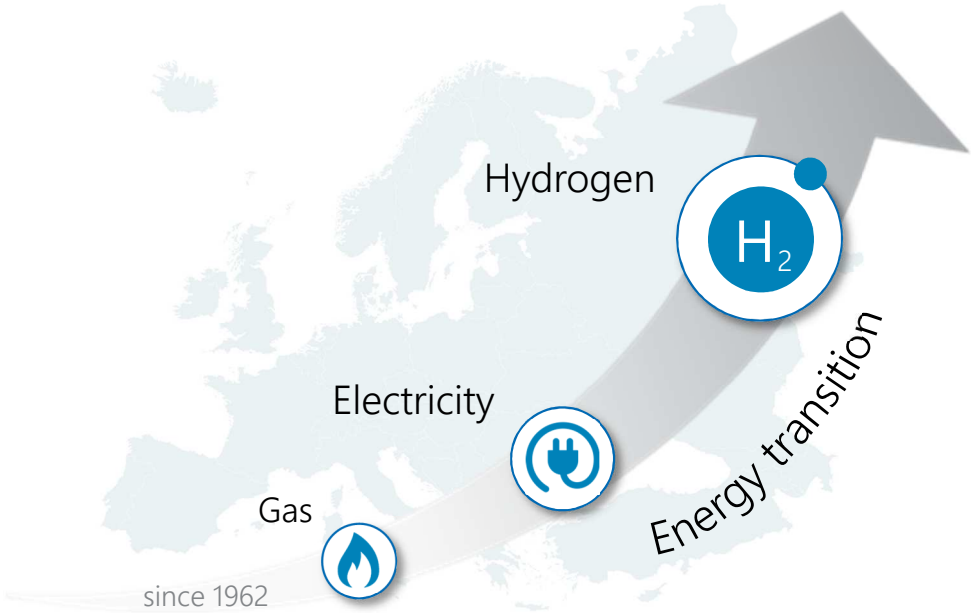
Green hydrogen ramp-up

The only long-term clean molecule that can replace the fossil molecule fuels needed in industry, mobility and heating

1) Schematic representation
Source: Management estimate based on NDP Gas and Electricity, Fraunhofer Institute

VORWERK plans, realizes and operates the energy infrastructure of the future

In highly attractive markets



With success

>€ 280 m
revenues

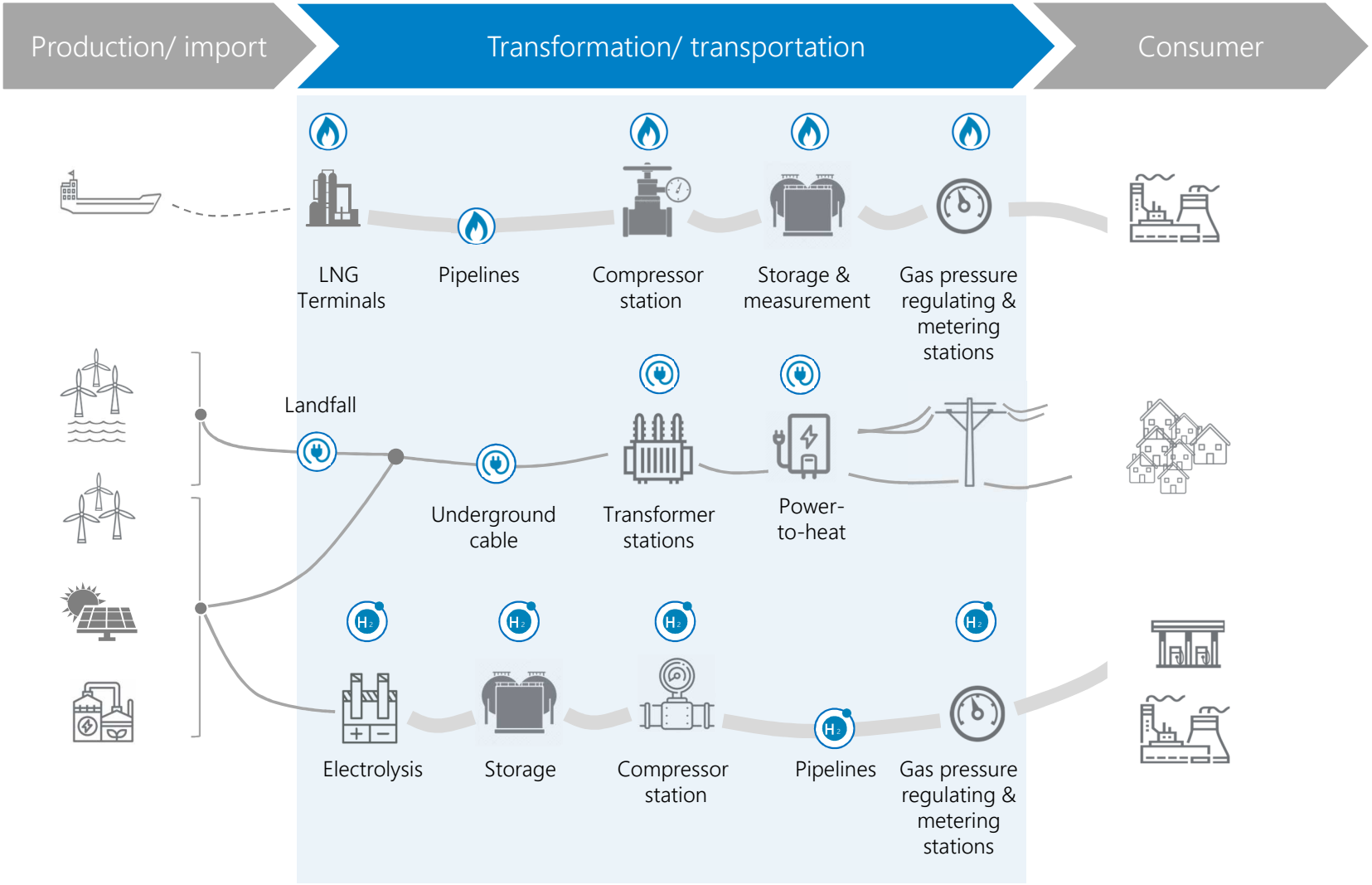
>1,250
employees

>14%
EBIT margin

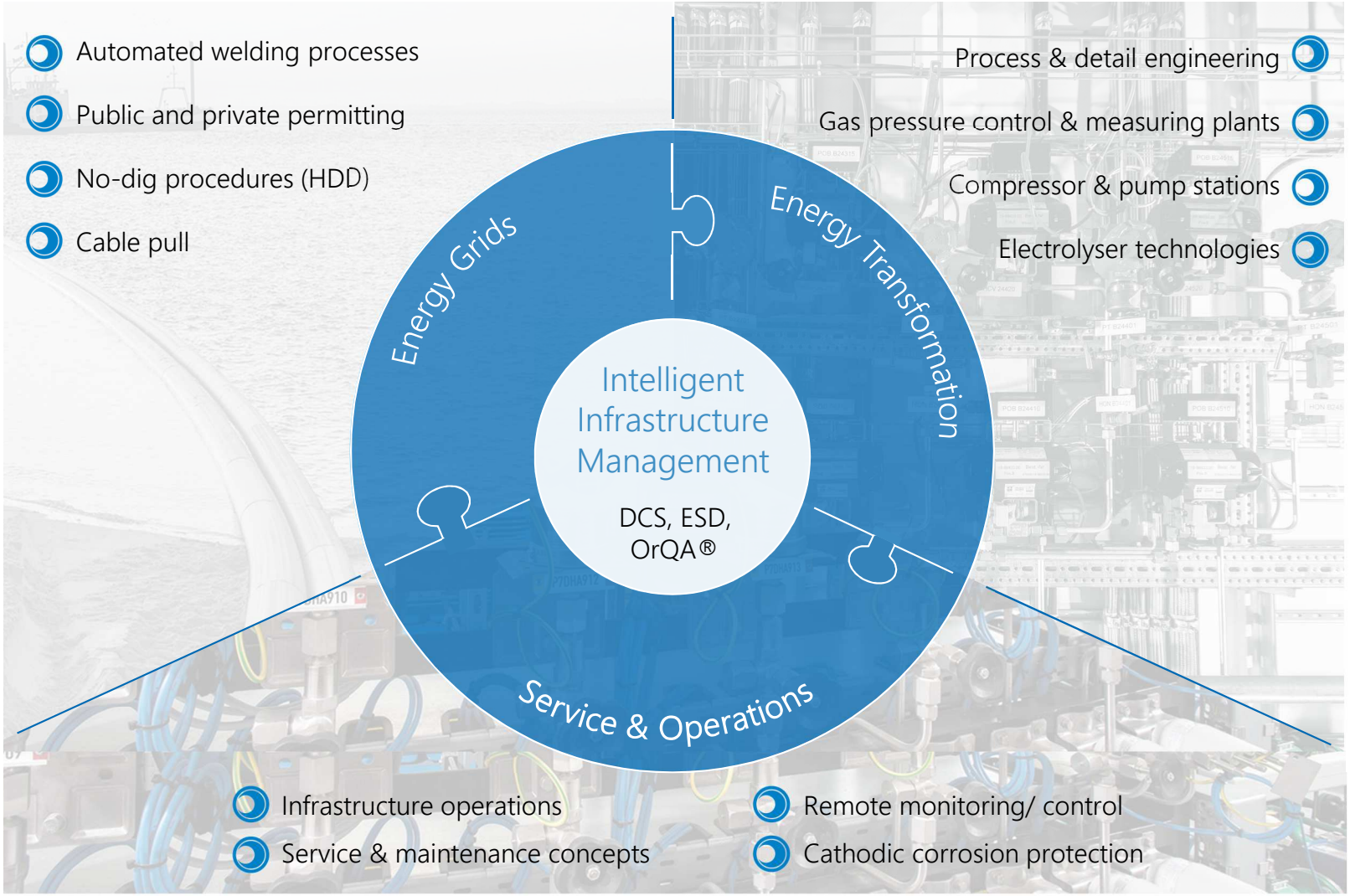
>14%
organic CAGR

Notes: Management estimates for 2020; CAGR based on 2014-2019

VORWERK is critical in transforming and delivering energy from producers to consumers



VORWERK's fully integrated service offering enables critical energy infrastructure



Key Investment Highlights

Climate change commands **billions in infrastructure investments** in VORWERK core end markets gas, electricity and hydrogen

50+ years of proprietary technology leadership in design, realization and operation of system critical energy infrastructure

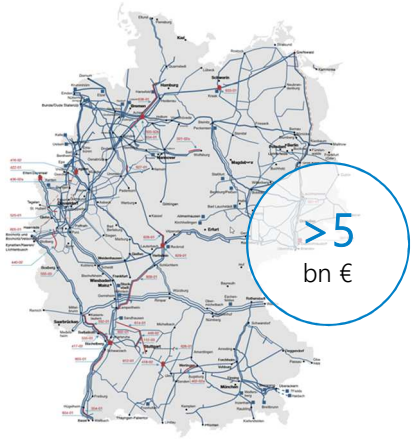
Key player in ramping up the European hydrogen infrastructure due to a unique combination of know-how and decades-long customer relations

Double-digit revenue growth with a stable **14% EBIT margin** as an ideal starting point to capitalize on significant **growth potential** ahead

Owner-managed business with an **ambitious strategy** to further accelerate profitable growth

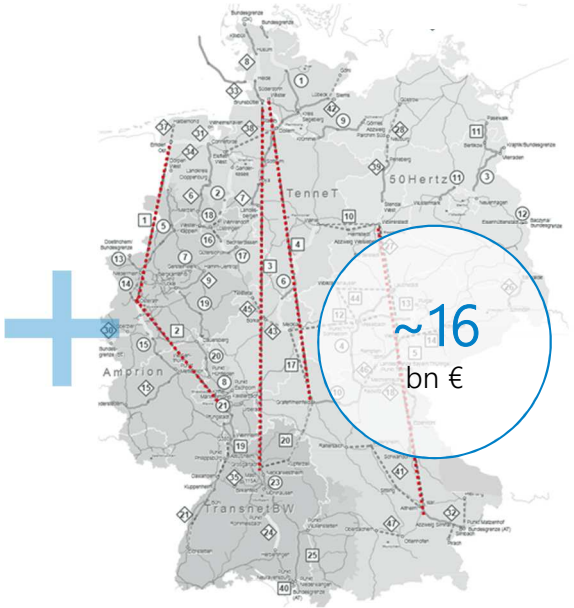
Clean energy transition commands unprecedented investments in energy infrastructure

Natural gas



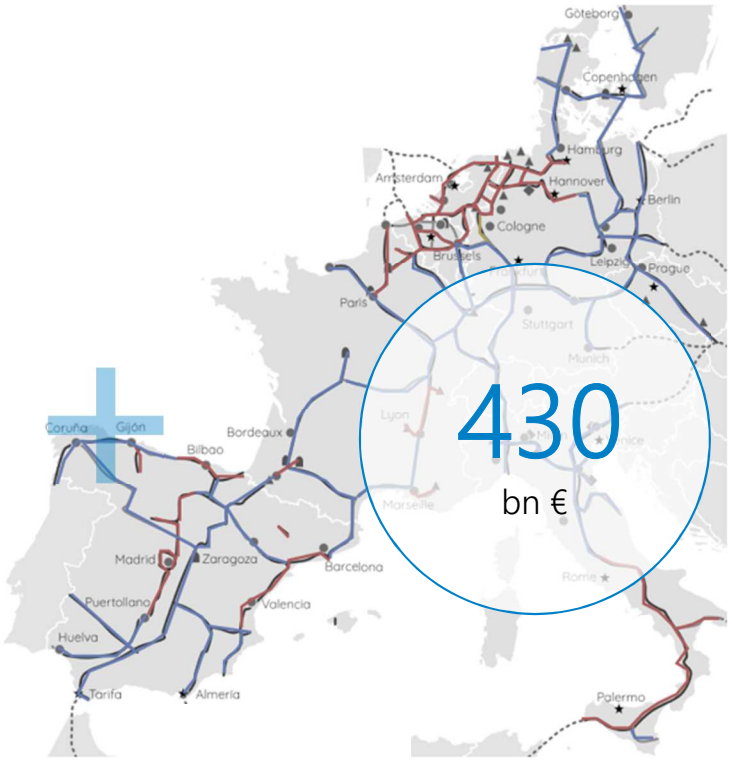
Planned investment
until 2026[1]

Electricity



Planned investment
in DC grid until 2026[2]

Hydrogen

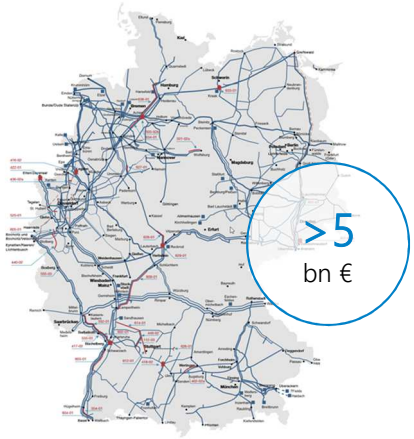


Planned investment
until 2030[3]

1) NDP investment volume 2020-2026; volume attributed to year of planned project completion
2) Total NDP volume of 61 bn €, thereof € 16 bn of investments into the DC grid which is primarily realized as underground cable
3) Planned cumulative investment volume up to 2030 based on the industry blueprint provided by the European Clean Hydrogen Alliance
Source: NDP Gas and Electricity; European Clean Hydrogen Alliance

VORWERK has a unique track-record and customer access in the gas market

Natural gas



Planned investment until 2026[1]

VORWERK track-record

>5 bn €

~35%
share of NDP projects 2012-2018 with VORWERK participation[2]

\+

Additional opportunities

- Single energy consumers (e.g. industrials)
- Grid upgrades
- Service & maintenance
- International projects (e.g. Baltic pipe)

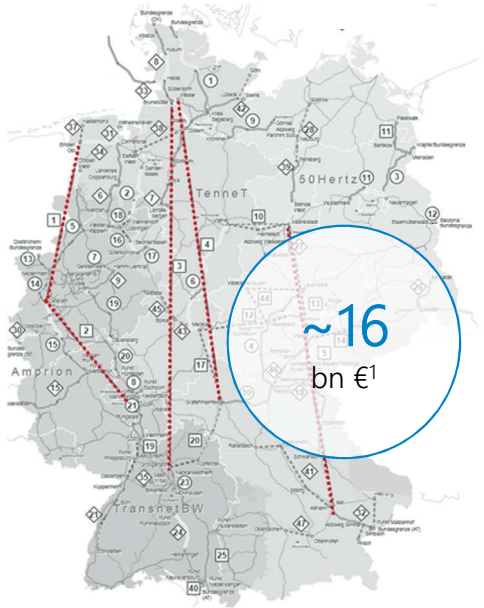
Top VORWERK Customers

	Cum. Revenues 2015-20		
GASCADE	142 m €		Gas transmission system operator
Open Grid Europe The Gas Wheel	135 m €		Largest gas transmission system operator
ontras Gastransport GmbH	80 m €		2nd largest gas transmission system operator
NETZGESELLSCHAFT BERLIN-BRANDENBURG	54 m €		Gas distribution network operator
Thyssengas	35 m €		Gas transmission system operator
gasunie	24 m €		Gas transmission system operator

1) NDP investment volume 2020-2026; volume attributed to year of planned completion
2) Based on all projects in gas network development plans (NDP) 2012-2018 > 2 m €
Source: NDP 2012-2018, NDP 2020-30 Gas (Draft); Company data

VORWERK is ideally positioned to benefit from planned electricity highways

Electricity



Planned investment in DC grid until 2026[1]

VORWERK track-record

~16 bn €[1]

~20% share of relevant NDP projects 2015-2020 based on total route length[2]

+

Additional opportunities

- Single energy consumers (e.g. industrials)
- Cable line upgrades
- Service & maintenance
- International projects

Top VORWERK Customers

	Cum. Revenues 2015-20		
TenneT	47 m €		Largest high-voltage network operator
Prysmian Group	42 m €		Cable & wire systems for energy & telecom
ABB	17 m €		Energy and automation technology group
NKT	9 m €		Full-service provider of cable solutions
innogy	7 m € [3]		Leading german utility company – now E.on
Nexans	3 m €		Full-service provider of cable solutions

1) Total NDP volume of 61 bn €, thereof € 16 bn of investments into the DC grid which is primarily realized as underground cable
2) Offshore NDP 2025, Version 2015
3) Includes natural gas related revenues
Source: NDP 2025 Electricity (Version 2015); Management estimates; Company data

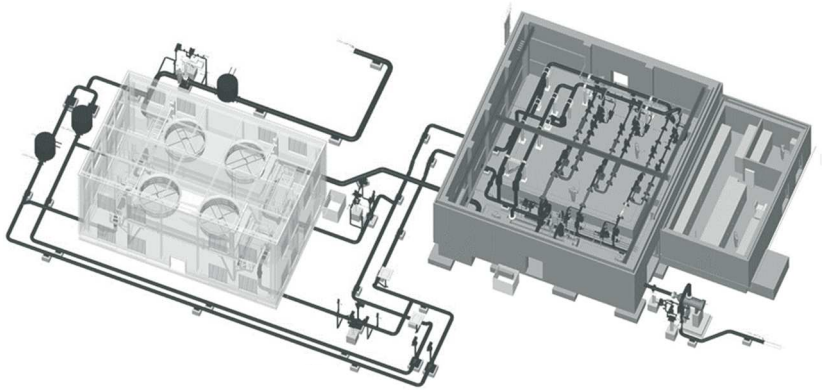
Leading in decarbonisation based on decades-long innovation track-record

Case study Gas: Nesselgrund

Planning, realization and operation of worldwide first CO_2 neutral gas pressure regulating & metering plant near Potsdam

Customer: ontras Gastransport GmbH

VORWERK project volume: 3 m €



Technology highlights

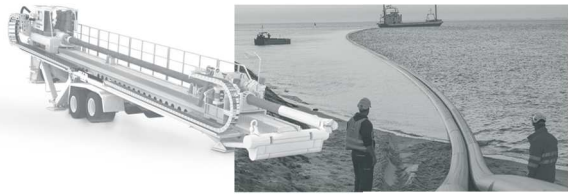
- Plant management (DCS, ESD)
- Heat exchangers & Vortex tube
- Flow metering (OrQA®)
- Gas analysis/ chromatography

Case study Electricity: DolWin 6

45 km onshore underground cable for transporting 900 MW green offshore wind electricity from landfall to converter station

Customer: TenneT Taking power further

VORWERK project volume: 20 m €



Technology highlights

- Airborne laser scanning
- Cable pulling, jointing & testing
- Landfall planning & realization
- HDD installation & drilling

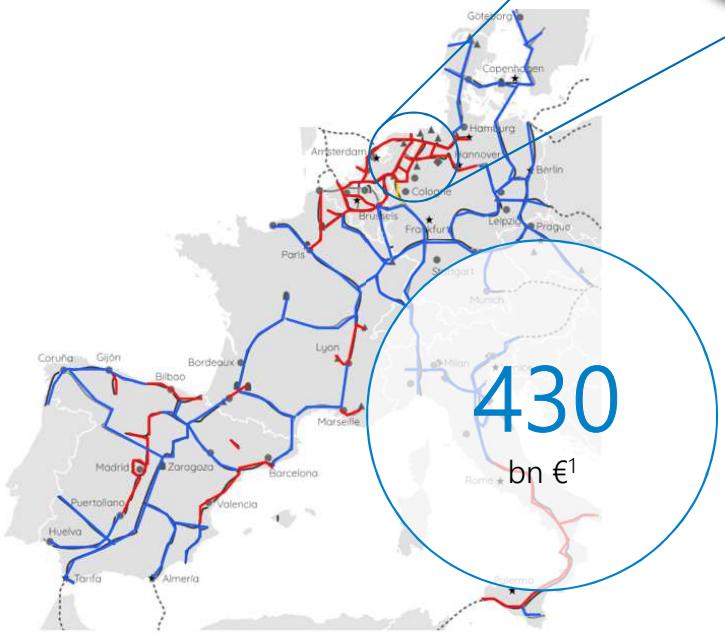
Source: Company data

VORWERK is already working on the nucleus of the European hydrogen backbone

Hydrogen

GETH2 Nukleus

2030 2050



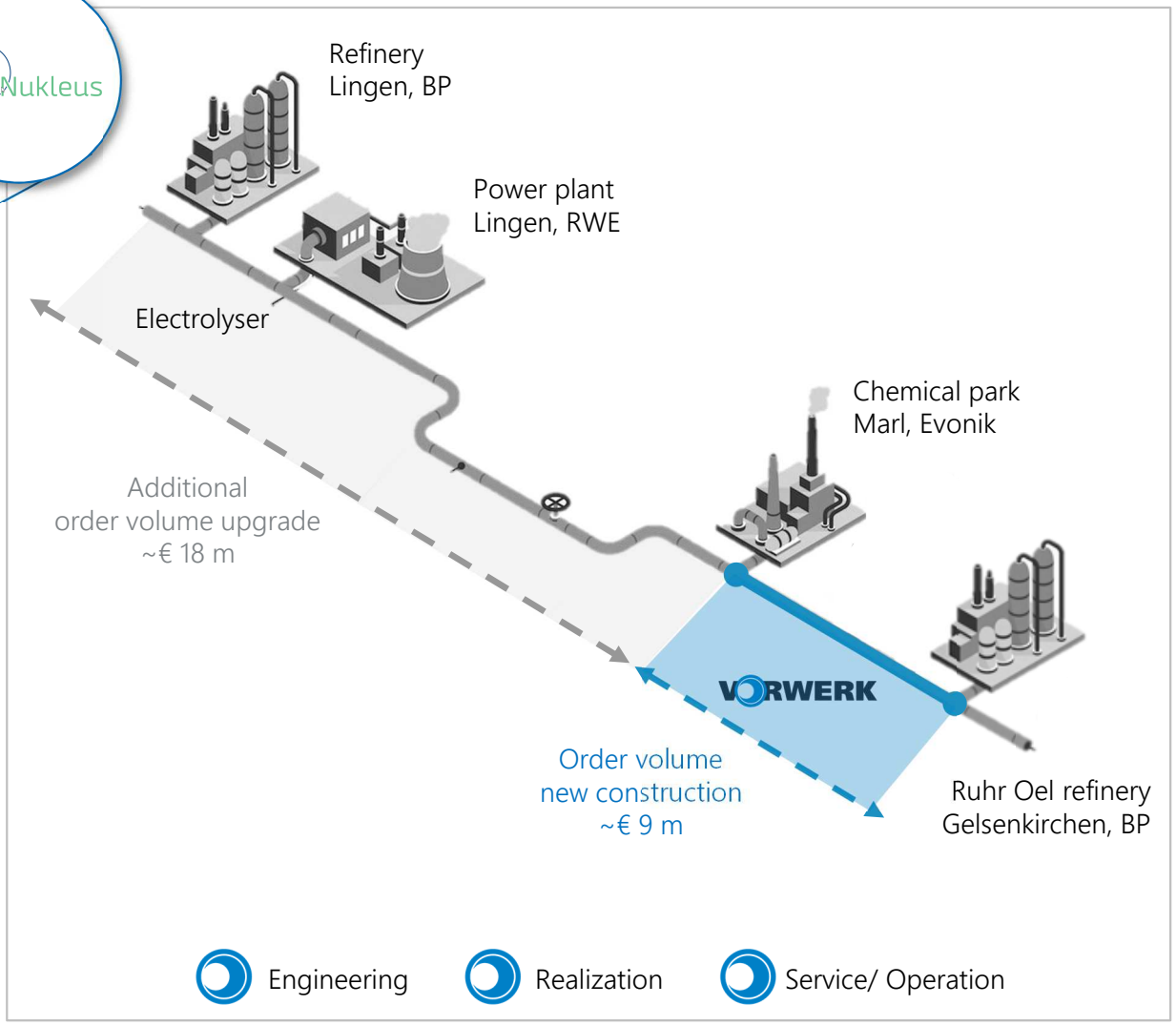
430
bn €[1]

European hydrogen backbone by

VORWERK customers

OGE · ontras · gasunie · FLUXYS

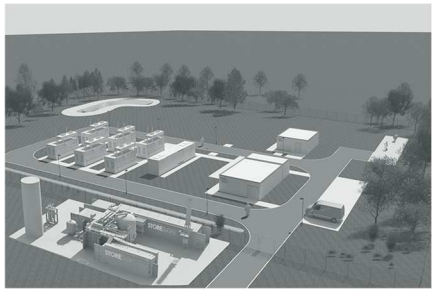
Top 10 VORWERK customers



1) Planned cumulative investment volume up to 2030 based on industry blueprint by the European Clean Hydrogen Alliance
Source: European Clean Hydrogen Alliance

VORWERK participated in the realization of the first German electrolyser pilot project

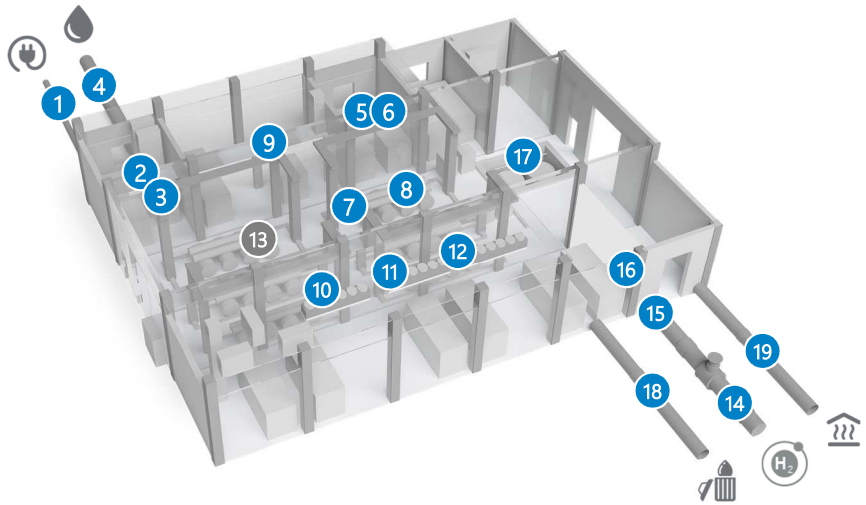
Pilot plant
Power-to-Gas Falkenhagen



"World's first demonstration plant for the storage of wind power in the natural gas grid"

- 2 MW performance
- 1.6 km H_2 pipeline
- Feed-in in the long-distance gas network of ONTRAS
- VORWERK project volume ~7 m €

VORWERK electrolysis competencies

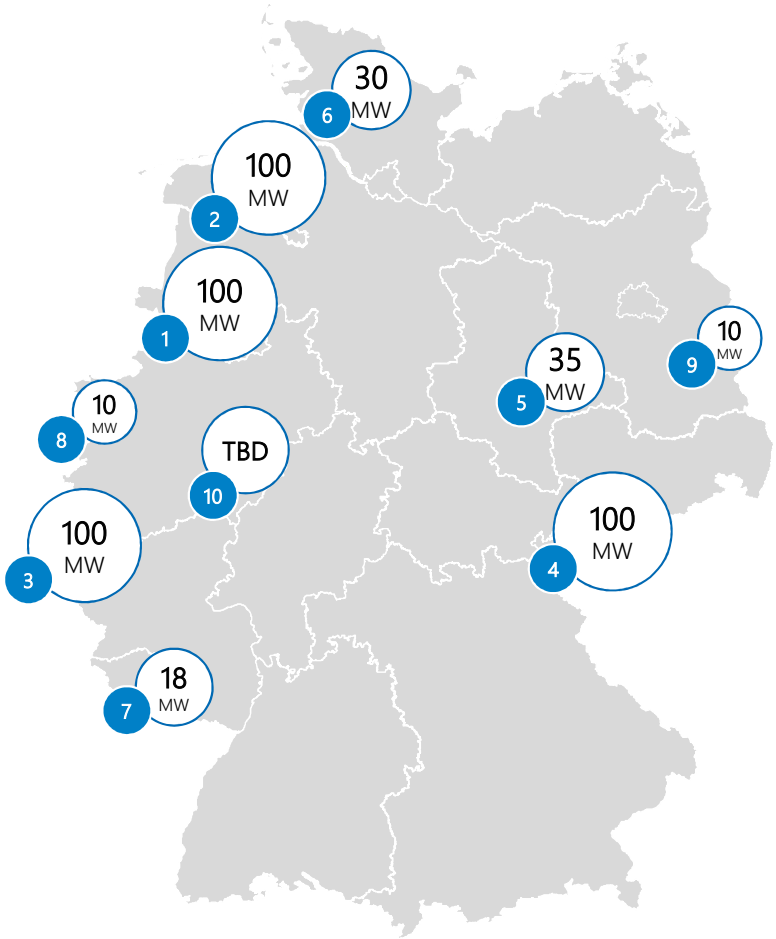


1. Undergr. cable / cable pull
2. Transformer design/ cabling
3. Flow metering
4. Water supply system
5. H_2 digital control system
6. H_2 emergency shutdown system
7. H_2 gas drying
8. H_2 gas separation
9. H_2 gas compression
10. Water treatment
11. Water compression
12. Heat extraction
13. Electrolysis stack (purchase part)
14. H_2 feed-in
15. H_2 measurement/ metering
16. H_2 gas analysis
17. H_2 storage
18. Waste water management
19. Heat distribution network

Source: Company data

VORWERK key customers are already planning for 500 MW of new electrolysis capacity

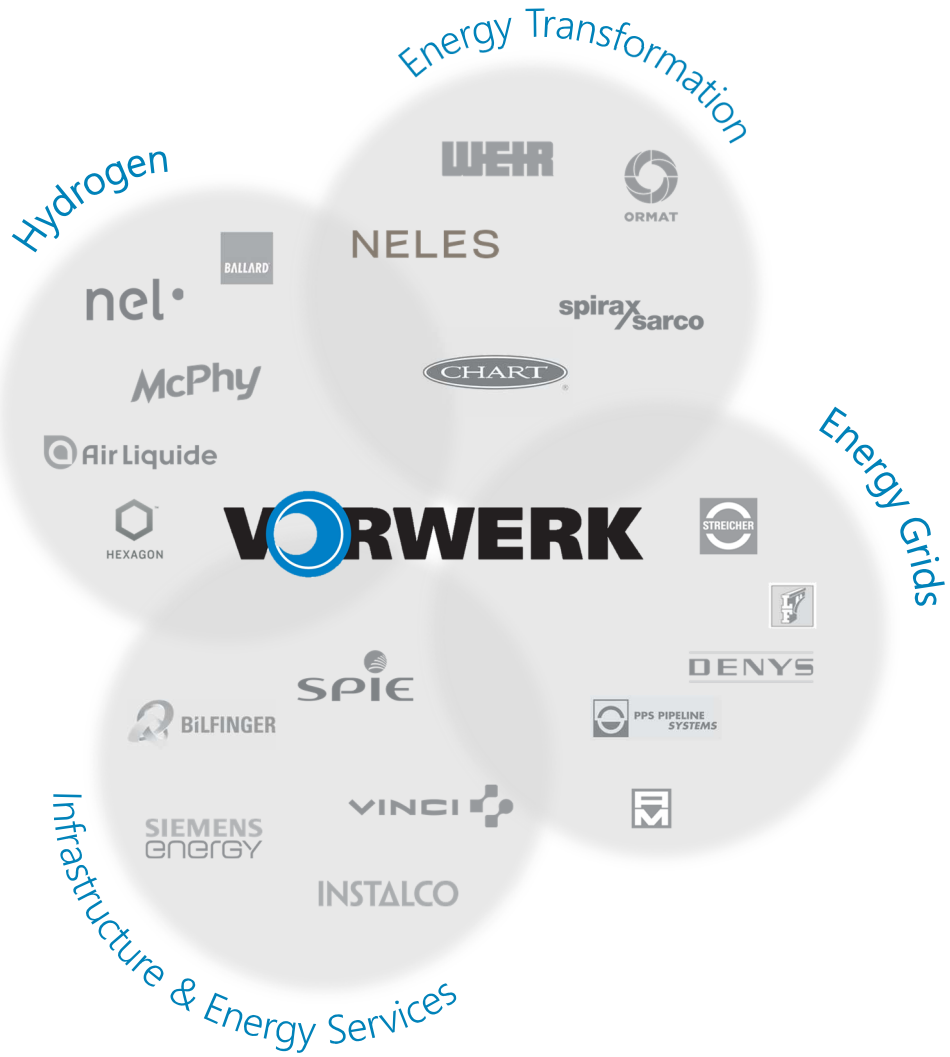
Select planned electrolyser projects



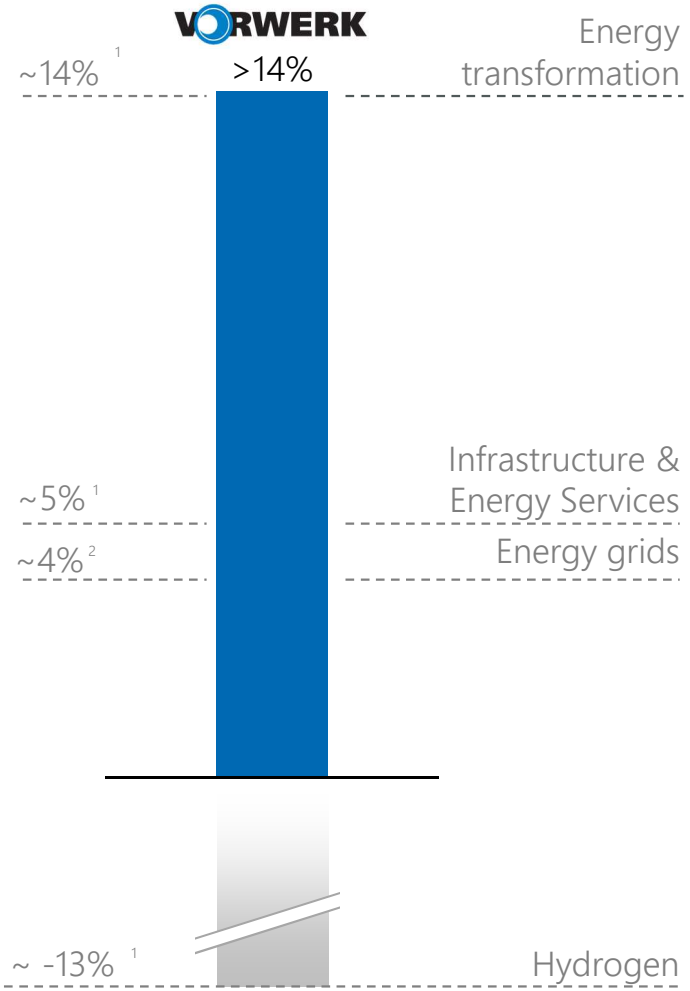
	Location	Plant size	Planned by
1	Lingen	100 MW	OGE, amprion
2	Diele	100 MW	gasunie, Thyssengas, TenneT
3	Wesseling	100 MW	Shell, ITM Power
4	Leuna	100 MW	SIEMENS, Linde, Fraunhofer
5	Bad Lauchstädt	35 MW	uniper, ontras Gastransport GmbH, VNG
6	Heide	30 MW	OGE, EDF, Thyssengas, Orsted
7	Fenne	18 MW	steag
8	Metelen	10 MW	WESTNETZ, innogy
9	Schw. Pumpe	10 MW	INDUSTRIEPARK Schwarze Pumpe
10	Essen	tbd	thyssenkrupp

Source: Strategieplattform Power to Gas

VORWERK in the midst of the universe of innovative energy players



EBIT margin comparison



1) Based on Bloomberg 2021 consensus forecast figures
2) Based on 2018A figures
Source: Company data; management estimates

VORWERK benefits from intact and sustainable market entry barriers

Customers & References

GASCADE, EWE, EVONIK, ontras Gastransport GmbH, Prysmian Group, Thyssengas, TenneT, amprion, BAYER, OGE, 50hertz, ABB, Stadtwerke Düsseldorf, SWH. EVH, NKT, e·on, MITNETZ, ExxonMobil, TRANSNET BW, Linde, steag, EDF, SIEMENS

Regulation & accreditation

ISO 9001:2015, ISO 50001:2018, DIN EN ISO 14001, PED, DVGW G 468-1, DVGW, DVGW G 493-1, ASME U, ASME PP, PQ VOB, RAL, TÜV NORD, FW 601, DVGW, TÜV NORD ISO 3834, TÜV NORD SCC, fkks Fachverband Kathodischer Korrosionsschutz e.V., DVGW G 493-2

VORWERK

Turnkey competence

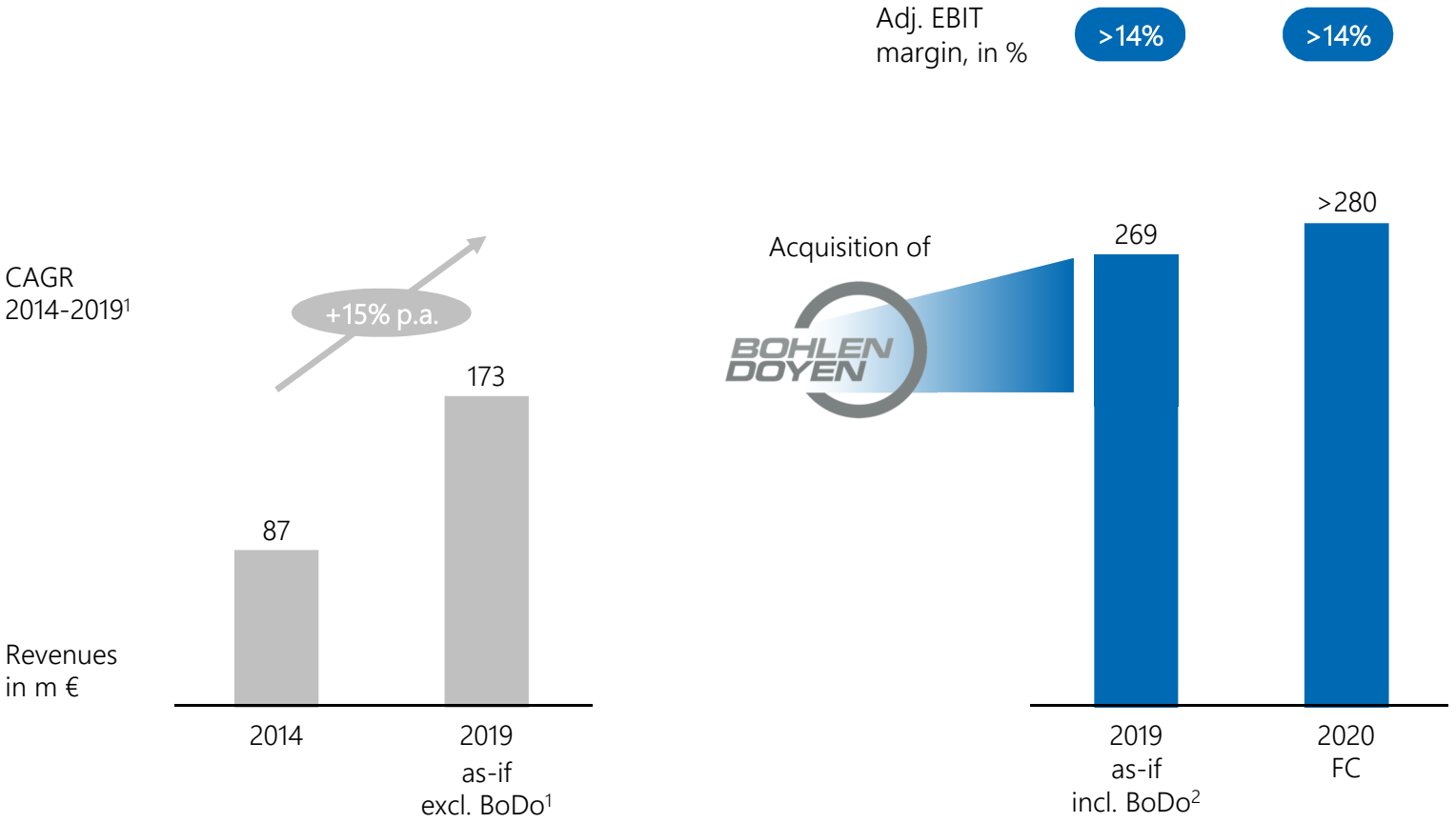
- Energy grids
- Energy transformation
- Service & Operation
- Intelligent Infrastructure Mgmt.

Technology & Patents

- OrQa® flow metering
- HDD drilling
- Cathodic anti-corrosion protection
- Carbon capture
- Heat management
- Knock-out drums
- Gas analysis
- + many more
- Heat exchangers

Source: VORWERK

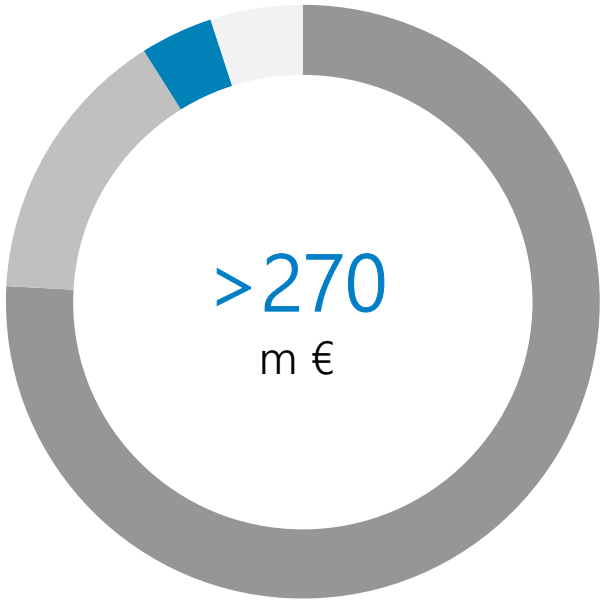
Dynamic growth track-record at 14 % EBIT margin



1) Presentation as if Bohlen & Doyen had not been acquired by VORWERK in 2019
2) Presentation as if Bohlen & Doyen had been part of the VORWERK group starting 1 Jan 2019; excl. discontinued operations with revenues amounting to ~€ 7.5 million
Source: VORWERK

Strong contracted orderbook further fuelled by additional project pipeline

Order backlog
in € m; forecast 31 December 2020



Gas Electricity Hydrogen Others

Project pipeline
not yet included in order backlog[1]

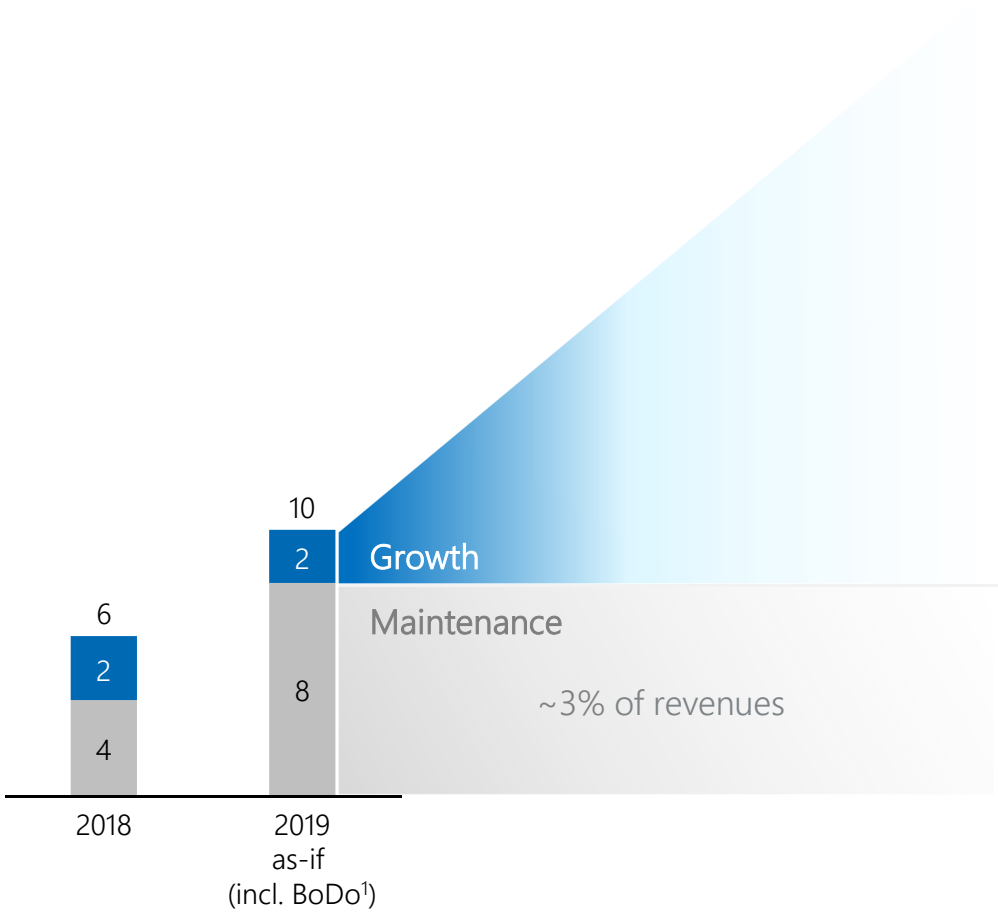
OGE new **compressor station** Legden	32 m €
CENAM Closed Loop **high-pressure test rig** Mexico	30 m €
TenneT requests from framework agreements **Südlink/Südostlink**	50-100 m € per lot
Wärme Hamburg long distance **heat pipeline** Südleitung	63 m €
OGE **hydrogen feed-in plant** Haren	3-5 m €
Magdeburg 1-5 MW **electrolyser**	5-17 m €

Gas Electricity Hydrogen Heat

1) Contract values are based on current estimates and may change during the award procedure
Source: VORWERK

Capital-light business model with attractive business opportunities

Capital expenditure 2018-2019
in € m



Investments

Technology & R&D
H_2 plant construction Wiesmoor

R&D CO_2 reduction in pipeline construction (cooperation Fraunhofer Institute)

European expansion
Hub Benelux

Hub Spain

Digitalisation
Integrated digital engineering solutions

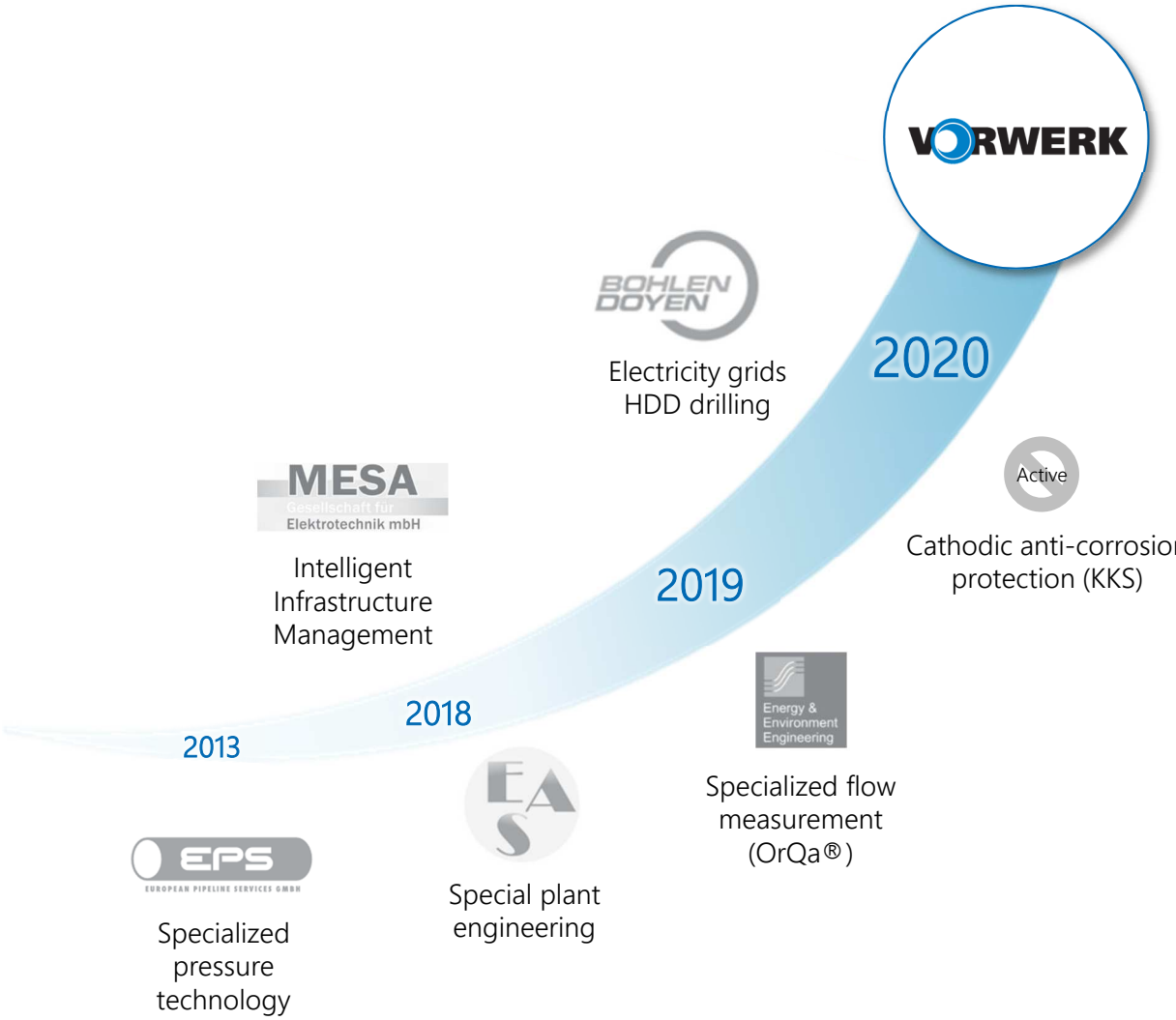
Geographic Information System

Machinery & Sites
State-of-the-art machinery

Site modernization

1) Presentation as if Bohlen & Doyen had been part of the VORWERK group starting 1 Jan 2019
Source: VORWERK

Proven M&A strategy as a key catalyst to further accelerate profitable growth



Specialized technologies

- Hydrogen
- Biogenic gases
- Horizontal direct drilling (HDD)

Employees & competencies

Smaller regional players with certified employees and/ or complimentary competencies

Regional footprint

- Benelux
- Spain

Source: VORWERK

VORWERK

European leader for turnkey energy solutions driving the clean energy transition

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