Wolftank-Adisa (WAH GY) | Utilities/Renewables

September 05, 2022

Solutions for the energy transformation process

Wolftank is a specialist in environmental protection services such as tank and soil remediation. At the same time, Wolftank plans and builds refueling stations for LNG and hydrogen. The market opportunities for Wolftank's environmental and industrial coating services are attractive. Conventional tanks and refueling stations are mostly aging but are expected to operate for quite some time. This will probably lead to future demand for maintenance, repair, refurbishment and eventually dismantling services. At the same time, the opportunities in the hydrogen market are appealing. According to IEA estimates, demand for hydrogen is expected to rise to over 500 Mt p.a. by 2050. These quantities will have to be distributed to a wide variety of applications in the future. Hydrogen with its low volumetric energy density differs significantly from most other fuels which has important consequences for storage, transport and application. With its rich know-how in the fields of process software, compression technology or temperature control, Wolftank is able to offer various solutions for the development of a hydrogen distribution infrastructure.

- We expect sales to increase by an average of 13% p.a. and EBITDA by an average of 20% between 2023 and 2025.
- The Environmental Services peers trade at 7x EV/EBITDA 2024e on average, the Engineering peers at 8.5x and the Renewables peers at 11.7x. The Hydrogen peers are not yet foreseeably profitable in the next few years. Therefore, a sales multiple is usually used here. They are currently trading at 4.5x EV/sales 2024e. Wolftank is trading at 9.2x EV/EBITDA 2024e and at 0.8x EV/sales 2024e.

Buy initiation of coverage

Price* EUR 16.35

Price target EUR 25.80

* XETRA trading price at the close of the previous day unless stated otherwise in the Disclosures

Market Cap (EUR m)[1]	72
Enterprise Value (EUR m)[1]	86
Free Float (%)[1]	49.0

Price (in EUR)[1]

Fundamentals (in EUR m)[1]	2019	2020	2021	2022e	2023e	2024e
Sales	52	35	45	70	82	95
EBITDA	5	0	2	5	7	8
EBIT	1	-2	-1	2	4	6
EPS adj. (EUR)	-0.03	-1.84	-0.67	0.10	0.40	0.69
DPS (EUR)	0.00	0.00	0.00	0.00	0.00	0.00
BVPS (EUR)	6.80	4.84	3.17	3.17	3.28	3.62
Net Debt incl. Provisions	14	20	11	14	9	3
Ratios[1]	**2019**	**2020**	**2021**	**2022e**	**2023e**	**2024e**
EV/EBITDA	3.0	108.4	60.4	16.5	12.3	9.1
EV/EBIT	10.4	-16.9	-67.6	37.2	19.9	12.9
P/E adj.	n.a.	-4.8	-26.8	163.7	41.2	23.7
Dividend yield (%)	n.a.	0.0	0.0	0.0	0.0	0.0
EBITDA margin (%)	8.9	0.8	3.4	7.4	7.9	8.6
EBIT margin (%)	2.5	-5.1	-3.0	3.3	4.9	6.1
Net debt/EBITDA	3.0	70.6	7.6	2.7	1.4	0.4
PBV	0.0	1.8	5.7	5.2	5.0	4.5

[1]Sources: Bloomberg, Metzler Research

Performance (in %)[1]	1m	3m	12m
Share	-2.1	-8.9	23.9
Rel. to SDAX	6.9	6.0	79.4

Sponsored Research

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Key Data

Company profile

CEO: Dr. Peter Werth CFO: Christian Pukljak COO: Dr. Matteo Ciarapica Innsbruck

The core competencies of the Wolftank Group include engineering, construction and operating services related to refueling facilities and the storage and transport of fuels.

Major shareholders

Management Board (13%), Dr. A. v. Aufschnaiter (7%), Eiffel Investment Group SA (8%), Paladin Asset Management (8%), MuM Industriebeteiligungen (15%)

Key figures

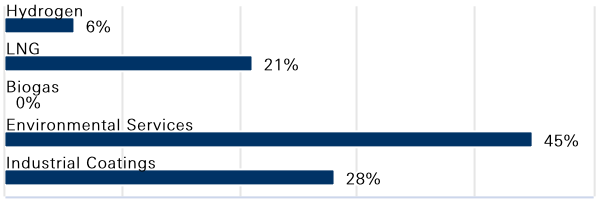
P&L (in EUR m)	2019	%	2020	%	2021	%	2022e	%	2023e	%	2024e	%
Sales	**52**	**16.3**	**35**	**-32.4**	**45**	**27.4**	**70**	**57.1**	**82**	**17.7**	**95**	**14.9**
EBITDA	**5**	**36.4**	**0**	**-93.9**	**2**	**436.3**	**5**	**246.1**	**7**	**26.0**	**8**	**24.9**
EBITDA margin (%)	8.9	17.2	0.8	-91.0	3.4	320.8	7.4	120.3	7.9	7.0	8.6	8.7
EBIT	**1**	**-20.5**	**-2**	**-236.5**	**-1**	**25.4**	**2**	**271.5**	**4**	**76.1**	**6**	**42.7**
EBIT margin (%)	2.5	-31.6	-5.1	-302.0	-3.0	41.5	3.3	209.2	4.9	49.6	6.1	24.2
Financial result	**-1**	**-3.0**	**-1**	**-30.9**	**-1**	**-35.8**	**-1**	**7.9**	**-1**	**0.0**	**-1**	**0.0**
EBT	**1**	**-41.1**	**-3**	**-648.9**	**-3**	**2.9**	**1**	**135.8**	**3**	**176.8**	**4**	**63.1**
Taxes	0	-3.4	-1	-218.5	0	127.7	0	49.8	1	205.9	1	66.5
Tax rate (%)	83.5	n.a.	18.0	n.a.	-5.1	n.a.	21.5	n.a.	23.7	n.a.	24.2	n.a.
Net income	0	-80.2	-2	n.m.	-3	-24.5	1	121.9	2	205.9	3	66.5
Minority interests	0	157.8	-0	-191.5	0	142.4	0	308.2	0	5.0	0	4.8
Net Income after minorities	**-0**	**-106.3**	**-2**	**n.m.**	**-3**	**-33.3**	**0**	**114.8**	**2**	**297.7**	**3**	**74.0**
Number of shares outstanding (m)	1	0.0	1	2.7	4	264.3	4	0.0	4	0.0	4	0.0
EPS adj. (EUR)	**-0.03**	**-106.3**	**-1.84**	**n.m.**	**-0.67**	**63.4**	**0.10**	**114.8**	**0.40**	**297.7**	**0.69**	**74.0**
DPS (EUR)	**0.00**	**n.a.**	**0.00**	**n.a.**	**0.00**	**n.a.**	**0.00**	**n.a.**	**0.00**	**n.a.**	**0.00**	**n.a.**
Dividend yield (%)	n.a.	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.

Cash Flow (in EUR m)	2019	%	2020	%	2021	%	2022e	%	2023e	%	2024e	%
Gross Cash Flow	**-1**	**-157.9**	**-0**	**94.7**	**5**	**n.m.**	**4**	**-26.7**	**4**	**25.2**	**6**	**26.4**
Increase in working capital	**0**	**n.a.**	**0**	**n.a.**	**0**	**n.a.**	**5**	**n.a.**	**-2**	**n.a.**	**-2**	**n.a.**
Capital expenditures	**2**	**105.9**	**1**	**-24.3**	**2**	**64.3**	**1**	**-47.8**	**2**	**25.0**	**2**	**13.3**
D+A/Capex (%)	177.5	n.a.	148.5	n.a.	123.7	n.a.	241.7	n.a.	166.7	n.a.	141.2	n.a.
Free cash flow (Metzler definition)	**-3**	**-379.0**	**-1**	**51.2**	**3**	**277.7**	**-3**	**-200.7**	**5**	**291.0**	**6**	**19.8**
Free cash flow yield (%)	n.a.	n.a.	-13.8	n.a.	3.3	n.a.	-3.6	n.a.	7.0	n.a.	8.3	n.a.
Dividend paid	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Free cash flow (post dividend)	**2**	**-32.1**	**-5**	**-382.4**	**11**	**321.9**	**-3**	**-124.7**	**5**	**291.0**	**6**	**19.8**

Balance sheet (in EUR m)	2019	%	2020	%	2021	%	2022e	%	2023e	%	2024e	%
Assets	**44**	**7.8**	**51**	**15.2**	**62**	**21.1**	**66**	**6.5**	**64**	**-3.5**	**61**	**-3.9**
Goodwill	**3**	**0.4**	**5**	**76.6**	**7**	**31.2**	**8**	**13.0**	**8**	**6.3**	**8**	**0.0**
Shareholders' equity	**8**	**164.1**	**8**	**-7.7**	**16**	**115.2**	**16**	**0.5**	**17**	**3.1**	**18**	**8.9**
Equity/total assets (%)	18.4	n.a.	14.7	n.a.	26.2	n.a.	24.7	n.a.	26.4	n.a.	30.0	n.a.
Net Debt incl. Provisions	**14**	**-4.0**	**20**	**43.7**	**11**	**-42.4**	**14**	**22.9**	**9**	**-35.6**	**3**	**-66.3**
thereof pension provisions	**0**	**n.a.**	**0**	**n.a.**	**0**	**n.a.**	**0**	**n.a.**	**0**	**n.a.**	**0**	**n.a.**
Gearing (%)	168.8	n.a.	262.9	n.a.	70.4	n.a.	86.1	n.a.	53.8	n.a.	16.7	n.a.
Net debt/EBITDA	3.0	n.a.	70.6	n.a.	7.6	n.a.	2.7	n.a.	1.4	n.a.	0.4	n.a.

Structure

Sales by segments 2021



Sources: Bloomberg, Metzler Research

Executive Summary

Growth opportunities in the 'traditional' business as well as in a hydrogen economy

Ready for the transformation process

With its product portfolio, Wolftank-Adisa ('Wolftank') provides solutions for the distribution infrastructure transition from fossil fuels to the hydrogen economy of the future almost seamlessly.

At present, the 'traditional' business still dominates Group sales

In 2021, Wolftank generated around three-quarters of its consolidated sales in the Environmental Services and Industrial Coating segments, which are also where the company's roots lie. About twenty percent of sales were generated by the refueling systems business, which has also been in operation for decades. Hydrogen activities accounted for 6%.

Growth opportunities in the 'traditional' business ...

In the next two decades, a further aging of existing tanks and refueling stations for conventional fuels should ensure a growing demand for maintenance, refurbishment and eventually dismantling. For the rehabilitation and maintenance of tanks and pipes, Wolftank offers self-developed solutions and products such as epoxy resins. Furthermore, Wolftank covers the complete value chain for soil and water remediation. For the deconstruction of a service station, Wolftank also offers complete solutions, i.e. the company dismantles the facilities, remediates any damage to soil or water, handles any necessary official procedures and finally hands over the 'green field' to the customer. Especially in Italy, Wolftank has a very strong position with a market share of over 50%. The company is also active in this field with own branches in Spain, Germany, Brazil, Austria, France and China.

...as well as in a hydrogen economy

The almost only demand for new refueling stations today is for LNG and hydrogen refueling. Wolftank has been selling engineering services, products and solutions for this for years. The company was involved in hydrogen concepts at a very early stage and has been involved in the planning of various hydrogen refueling stations in Europe, Asia and the USA since 2009. In the design and construction of service stations, the company has well-proven engineering know-how in automation, software and in the transport and storage of fuels, e.g., even under high pressures or extremely cold (cryogenic) temperatures. All of which is necessary for certified safe operation of a service station. With its compression and filling concepts, Wolftank can provide solutions for the distribution infrastructure of hydrogen.

Already presentable results for hydrogen distribution concepts

There are also presentable results here. In 2019, Wolftank supported the research institute of the University of Duisburg Center for Fuel Cell Technology ZBT in automating a hydrogen test field. Last year, Wolftank completed a hydrogen refueling station for buses in Bolzano. Wolftank was able to erect this with a net construction time of 9 weeks. Less than 10 minutes are required for refueling per bus at this facility.

To be able to take the next steps relevant partners are found

In the past 12 months, Wolftank has succeeded in agreeing cooperations with well-known groups to be able to develop application possibilities for its filling and tank transport solutions in the most structured and expeditious manner possible. These include the cooperation with a subsidiary of the Italian long-distance gas

network operator SNAM (goal: promotion of hydrogen mobility through the construction of refueling stations for cars, buses and trucks) or the Italian subsidiary of the Spanish LNG distributor Molgas (goal: construction of decentralized hydrogen and LNG refueling facilities). The Molgas cooperation also includes their activities in the DACH region. The 50% stake in Mares Srl, a subsidiary of Kuwait Petroleum Italia, which operates around 3,000 refueling stations in Italy under the Q8 brand, also appears promising. The company is run as a joint venture between the two owners. Mares' core business is the construction and servicing of traditional service stations and soil remediation. Now the business areas of Mares are to be combined with the know-how of the Wolftank Group as well as further developed and in the future will additionally include refueling facilities for renewable energies such as (bio)LNG or hydrogen.

Another field of application for Wolftank's technology and refueling know-how is the hydrogen supply of fuel cell power generators. In this field, Wolftank is working together with the German fuel cell specialist SFC Energy for the Italian telecommunications company TIM on a pilot project to set up a hydrogen emergency power supply system for telecommunications equipment. These systems are intended to replace previously used diesel generators. The tender for the order placement, which has a sales potential for Wolftank in the high double-digit million-euro range, is expected by the end of 2022.

Inquiries and pilot projects exist; however, implementation remains uncertain

Obviously, it is not easy to make reliable estimates, particularly with regard to the timing of sales, especially for the hydrogen market, which is still in its infancy. As a rough indication of the sales opportunities in the hydrogen sector for Wolftank, the volume of current inquiries for hydrogen solutions at the company (c. EUR 140m) as well as the magnitude of the potential TIM/SFC order (EUR70m e) can be used. To remain on the cautious side, we initially assume a total of EUR 27m in sales in this business area for the years 2022 to 2024.

Valuation: Wolftank's 'traditional' tank activities already justify large parts of the current valuation; opportunities from hydrogen activities do not yet seem adequately reflected

Our relative valuation includes a sum-of-the-parts approach. We compare the company's environmental services and industrial coatings businesses with its environmental services peers GFL Environment and Befesa. We compare Wolftank's alternative fuels (LNG) activities with Swedish SWECO (engineering consulting), US Clean Energy (design, building and operation of natural gas refueling stations) and German GEA (mechanical equipment, refrigeration).

Wolftank's hydrogen and biogas businesses are still in their infancy, but have the greatest growth potential. We compare the Biogas business to the renewables operators 7C Solarparken and Encavis. And the Hydrogen business to the Norwegian and French electrolyzer and hydrogen station manufacturers NEL ASA and MC-PHY Energy, and the German fuel cell specialist SFC Energy.

The Environmental Services peers trade at 7x EV/EBITDA 2024e on average, the Engineering peers at 8.5x and the Renewables peers at 11.7x. Most Hydrogen peers are not yet foreseeably profitable in the next few years. Therefore, a sales multiple is usually used here. They are currently trading at 4.5x EV/sales 2024e. Wolftank is trading at 9.2x EV/EBITDA 2024e and at 0.8x EV/sales 2024e.

Based on the results of our absolute (DCF) and relative valuations, the fair value of Wolftank is EUR 25.8 per share.

SWOT analysis

We see the greatest risks for Wolftank in the strong dependence on political (subsidy) decisions and course-setting and in the relatively small size of the company, which limits capacities and economies of scale. We see the greatest opportunities in the company's high technological competence, flexibility and solution orientation.

Strengths

With environmental services and industrial coatings, two core businesses in the portfolio that are growing profitably

Broad geographic footprint

High technological competence and experience also in storage and handling of high pressure or cryogenic fuels like hydrogen, CNG or liquid hydrogen

Weaknesses

In the past two years, the company has reported losses

In the areas of LNG, biogas and hydrogen, the company is highly dependent on political (subsidy) decisions and course settings

The balance sheet ratios are relatively weak

Due to inceasing number of customers from public sector, construction projects have significant longer approval periods

Relatively small company size limits capacity, financing and scaling potential

Opportunities

Full value chain with temporary life extension or decommissioning of fossil fuel tanks and filling stations and concepts for new alternative fuels

Conceptual pioneer in the construction and operation of filling stations for alternative fuels

Promising cooperations with partners with market power

Threats

Many parts and components are sourced from Asia; bottlenecks can delay projects

Delays in the transition phase from fossil fuels to alternatives may lead to customers' reluctance to invest

High dependence on technology and propulsion trends in the field of mobility

Risk of regional sales declines due to local market saturations

Source: Metzler Research

Investment Case

A well rounded product range

Wolftank is a specialist in environmental protection services such as tank, soil and building remediation. At the same time, Wolftank plans and builds distribution infrastructures for LNG and hydrogen.

The company's business is divided into five segments:

- Hydrogen
- LNG
- Biogas
- Industrial Coatings
- Environmental Services

Distribution of hydrogen: the new infrastructure is still in the making

The Net Zero commitment, to which by far the largest part of the world community has already committed itself, implies the almost complete abandonment of fossil fuels within the next 20 to 30 years. This means for all sectors, especially for industry, transport and buildings, electrification and where this is not possible the switch to CO2-free fuel. This will essentially be hydrogen.

Obviously, this creates in part completely new process chains around the production of hydrogen, e.g. with wind and solar plants to generate the required electricity and electrolysers to produce the hydrogen. But also around its distribution.

This is because hydrogen differs significantly from most other fuels and energy carriers, especially in terms of energy density, which has important consequences for the storage, transport and application of hydrogen.

Gravimetric energy density ...

Hydrogen is very light but has an extremely high gravimetric energy density. One kilogram of hydrogen contains an enormous amount of energy, making it an efficient and very lightweight energy carrier. The energy density of hydrogen is 33.3 kilowatt hours per kilogram, about three times that of oil or natural gas.

...vs. volumetric energy density

In return, the volumetric energy density of hydrogen is particularly low. In fact, per unit space, the energy content of hydrogen is much lower than that of most other fuels and energy carriers. Consequently, the storage or use of hydrogen at atmospheric pressure and temperature requires a considerable amount of space.

By compressing or liquefying hydrogen, the low volumetric energy density can be increased. This greatly facilitates the storage, transport and application of hydrogen.

The volumetric energy density of gaseous hydrogen at atmospheric pressure is 0.09 kg/m³. At a pressure of 350 bar, the volumetric energy density of gaseous hydrogen is 26.1 kg/m³. This increased pressure makes it possible to store considerably more gaseous hydrogen in the same space. The pressure of 350 bar is used in the tanks of trucks and busses carrying gaseous hydrogen, e.g. from Hyzon. A

loaded 55-ton truck needs about 50-70 kg of hydrogen to travel 500 to 600 km. At a pressure of 700 bar, the volumetric energy density of gaseous hydrogen is 42 kg/m³. At a temperature of -253 degrees, hydrogen becomes liquid and has a volumetric energy density of 71 kg/m³.

LNG as a transition technology

LNG, which allows less polluting combustion than traditional fuels, is often seen as a transitional technology on the road to the hydrogen economy.

Biogas

In the Biogas segment, newly established in 2022, the company intends to produce biogas or hydrogen and to sell it to its customers. The advantage of this strategic expansion of the business model is, on the one hand, that frequently expressed customer wishes can be met. On the other hand, it will generate regular recurring income from the customer base.

Maintenance and refurbishment: the old fossil fuel infrastructure will have to be operated for decades to come and then wound down

For the refurbishment and maintenance of tanks and pipes, Wolftank offers self-developed solutions and products such as epoxy resins. Furthermore, Wolftank covers the complete value chain for soil and water remediation. For the deconstruction of a service station, Wolftank also offers complete solutions, i.e. the company dismantles the facilities, remediates any damage to soil or water, handles any necessary official procedures and finally hands over the 'green field' to the customer.

Group sales dominated to date by Environmental Services and Industrial Coatings

In fiscal 2021, Environmental Services accounted for approximately 45% of Group sales, Industrial Coatings for approximately 28%, LNG for 21%, and Hydrogen for 6%.

Hydrogen

Hydrogen - solutions for transport, storage and distribution

In the hydrogen business area, one focus is on refueling systems and transportable hydrogen storage solutions. With its compression and filling concepts, Wolftank provides solutions for the distribution infrastructure of hydrogen.

Experienced engineering know-how in automation, software and storage of gases as core competence

The company contributes its many years of experience as a full-service provider (EPC) of conventional service stations as well as its proven engineering know-how in automation, software and in transport and storage of gases, e.g. also under cryogenic conditions, i.e. at extremely cold temperatures or under high pressure.

The main components and assemblies for hydrogen refueling stations, such as the HSF (Hydrogen Smart Fueller) hydrogen dispenser or the WSC container (mobile hydrogen refueling system), are sourced by Wolftank from the Austrian plant engineering specialist EDC, in which Wolftank has an equity interest (Wolftank holds 33%). Electronic control systems are sourced from Siemens, for example. Sensors and valves from Swagelock. Tanks, for example, from Furui or VRV. Compressors, for example, from Howden, Ventos, Cubogas or Atlas-Copco. And pumps, for example, from Vanzetti, or Cryostar.

Wolftank already has valuable experiences in hydrogen projects

Wolftank can already boast remarkable project achievements in the field of hydrogen distribution. For example, the company has been involved in the automation and electrical engineering design of more than 90 hydrogen refueling stations in Europe, Asia, and the U.S., and has been doing so since 2009. In 2019, Wolftank supported the research institute of the University of Duisburg Center for Fuel Cell Technology ZBT in the automation of a hydrogen test field. Last year, Wolftank completed a hydrogen refueling station for buses in Bolzano in a net construction time of nine weeks.

Besides filling concepts also transport concepts

In addition to (hydrogen) refueling station design, the company also offers solutions for the transport of hydrogen. With Wolftank's certified logistics container, hydrogen can be transported efficiently over short or medium distances. This container can transport approx. 320kg of hydrogen under 300 bar pressure.

In addition to decentralized transport, the company has the opportunity to upgrade existing gas infrastructure, i.e. pipelines previously used for the distribution of conventional gas. This is done using a special coating technology that helps reduce friction and hydrogen corrosion of the pipes.

In the past 12 months, Wolftank has succeeded in agreeing cooperations with several well-known large corporations to develop potential applications for its filling and tank transport solutions in the most structured and expeditious manner possible. These include the cooperation with a subsidiary of the Italian long-distance gas network operator SNAM, the Italian subsidiary (incl. DACH region) of the Spanish LNG distributor Molgas or with Kuwait Petroleum Italia (Q8 station network).

Cooperations should provide opportunities of further growth and diverse application areas for Wolftank's hydrogen solutions

Date	Company	Description	Type	Reasoning	Product / Service
Jun-22	Molgas Energie Italia S.r.l.	Company in the energy services sector distributing liquefied natural gas (LNG)	Cooperation	• Construction of LNG and Hydrogen refueling stations • Regional focus: Italy and DACH region	• H2 refueling station technology • LNG technology • Know-how in constructing refueling stations (EPC)
Apr-22	Telecom Italia S.p.A. (TIM)	Italian company in the telecomunications sector, leading provider of telephony and internet service in Italy	Cooperation	Pilot project with subsequent call for tenders: • Development, supply and installation of zero-emission hydrogen emergency power generators in Trento, IT • Collaboration with SFC Energy AG, supplier of hydrogen and methanol fuel cells	• Wolftank Smart-Cartridge (hydrogen supply for hydrogen fuel cell systems) • Large-scale H2 supply management
Mar-22	SFC Energy AG	Leading supplier of hydrogen and mehtanol fuel cells for stationary and mobile hybrid power solutions	Cooperation	• Development, supply and installation of zero-emission hydrogen emergency power generators for critical infrastructure in Italy and Austria	• Wolftank Smart-Cartridge (hydrogen tank for supplying fuel cell systems)
Dec-21	Mares S.r.l.	Company focused on traditional service stations, turnkey environmental services and major redevelopment projects	M&A (50% stake, full consolidation; JV: Wolftank and Kuwait Petroleum S.p.A)	• Mares' operation comprises a network of ~3,000 service stations under "Q8" brand • Potenial for synergy across major segments: environmental services and resconstructing of existing service stations towards alternative fuels	• H2/LNG technology • Environmental Services
Nov-21	APEX Energy Teterow GmbH	German Company specialized in commercial hydrogen plants	Cooperation	• Interdisciplinary technology transfer regarding hydrogen solutions for mobility and decentralized energy supply of industrials & residentials • Focus: H2 refueling stations for commercial vehicles and buses	• H2 technology
Jul-21	EDC-Anlagen-technik GmbH	Manufacturer of complete system solutions, components and software solutions in the field of hydrogen refueling stations	M&A (33,3% stake, full consolidation)	• Expanding and intensifying the business relationsship • Vertical integration of the supplier of hydrogen components and complete refueling station solutions	• H2 technology
Apr-21	Snam S.p.A. (Snam4Mobility)	Subsidiary of the Snam Group, an Italian gas supplier	Cooperation	• Support of hydrogen mobility by construction of hydrogen refueling stations in Italy • Cooperation extended regarding regional focus to Germany • Technology transfer	• H2 technology • LNG technology

Sources: Wolftank, Metzler Research

Another field of application for Wolftank's technology and refueling know-how is the fuel supply of power generators. In this field, Wolftank is working together with the German fuel cell specialist SFC Energy for the Italian telecommunications company TIM on a pilot project for the installation of a hydrogen emergency power supply system for telecommunications equipment. These systems are intended to replace diesel generators previously used at control centers. A pilot order was initially acquired for this project. TIM is expected to issue a call for tenders for the retrofitting of around 3,500 control centers before the end of 2022.

Hydrogen - the market environment

A huge hydrogen market will emerge

The market opportunities for hydrogen are huge. The Net Zero commitment, to which by far the largest part of the global community has already committed itself, implies the almost complete abandonment of fossil fuels within the next 20 to 30 years. This means electrification for all sectors, but especially for industry, transport and buildings, and where this is not possible, a switch to CO2-free fuels. This will essentially be hydrogen. In addition, hydrogen will be used as an energy transport and storage medium as well as a substitute raw material for natural gas. Obviously, this will create completely new process chains around the production of hydrogen with wind and solar plants to generate the required electricity and electrolysers to produce the hydrogen but also around its distribution. For which Wolftank offers concepts and turnkey solutions.

We delve into what Net Zero means for Germany, for example, the market research forecasts for global hydrogen

To classify the topic of hydrogen, we first break down the Net Zero target using Germany as an example, showing what it means in terms of electricity demand or required storage capacities - e.g. in the form of hydrogen. We then show forecasts for the development of the expected global demand for hydrogen over the next

demand development and the current trends in alternative drive systems for motor vehicles.

three decades and the distribution by sector. Finally, we shed light on current trends in alternative vehicle drives, also with regard to Wolftank's expertise in the field of refueling stations.

Net Zero in figures using Germany as an example

The connection between the emission of greenhouse gases such as CO2 or methane and global warming is scientifically proven. At the 21st UN Climate Change Conference in 2015 (COP 21), almost all the countries of the world signed the so-called Paris Agreement, in which they pledged to limit the increase in global warming caused by the greenhouse effect to well below two degrees Celsius. Calculated from the beginning of industrialization until the year 2100. The average value for the years 1850 to 1900 is used as the pre-industrial value.

However, according to the Intergovernmental Panel on Climate Change (IPCC), limiting the increase to 1.5 degrees is necessary to prevent worse consequences. And: In order to reach the 1.5-degree target, humans would have to neutralize their influence on the global climate by 2050 at the latest.

Climate neutrality is thus the state that Net Zero programs are supposed to make possible. Emissions that are still occurring are to be offset by the removal of carbon dioxide to the same extent. The result is that the carbon footprint is zero on balance, i.e. net zero.

In recent years, the number of governments striving to reduce their greenhouse gas emissions to zero has continued to grow. To date, net-zero pledges cover about 90% of global GDP and 85% of the world's population.

Germany is even aiming to achieve this target by 2045.

As mentioned, Net Zero means that no more greenhouse gases are released into the atmosphere or their emissions are fully compensated. In a Net Zero world, the entire energy demand, which is currently still predominantly covered by fossil fuels, must be generated almost entirely from renewable sources. So not just today's electricity demand, but all oil, coal and gas combustion.

For Germany, the net-zero target means a quadrupling of green energy generation capacity

In our study 'Net Zero - ambitious but doable' of 1 July 2021, we used the example of Germany to determine the renewable capacity required to almost completely replace fossil fuels, as is necessary to achieve the net zero target. For a simple extrapolation to the global level, it can be assumed that Germany accounts for about 2.5 % of the world's energy demand, which means that worldwide, about 40 times the capacities we have determined for Germany need to be built.

The connection to the topic of hydrogen is primarily that the generation of 'green' electricity is relatively unsteady, decentralized and often not synchronized with consumption and therefore has to be stored and transported.

Our analysis is based in part on data from our scientific cooperation partner, the Fraunhofer Institute in Munich.

In our calculations, we have already taken into account a significant reduction in energy demand of around 30% through energy-saving measures in all sectors, as targeted by the EU and the German government.

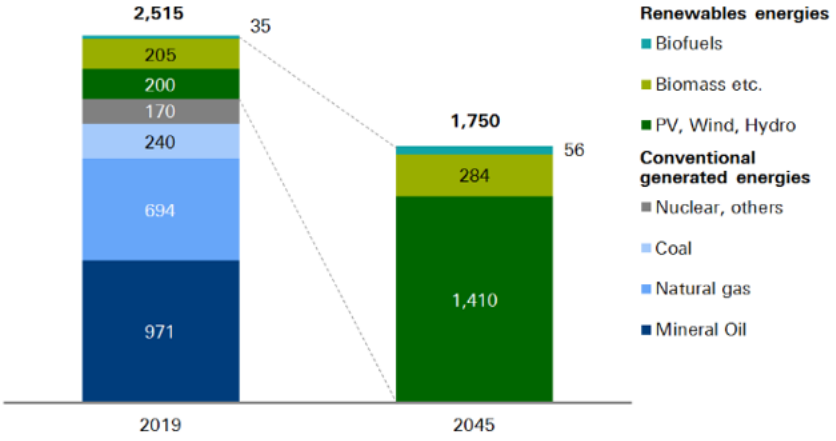
Even then, this transition would require a quadrupling of green energy generation capacity in Germany.

PV and wind power capacities will increase about sixfold

The expansion of renewable energy sources will mainly take place in photovoltaics and wind energy, whose capacities will increase about six-fold. For Germany, this means an addition of 630 GW of PV and wind power capacity in the next 24 years, i.e. around 26 GW per year (2020: 6.5 GW).

Total energy consumption will decrease; the share of renewable energy will increase to 100%

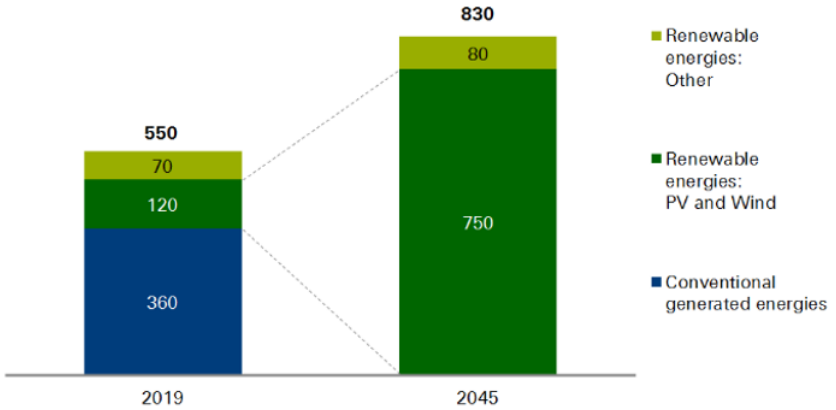
in TWh



Sources: Umweltbundesamt, Fraunhofer ISE, Metzler Research

Total renewable capacity must be quadrupled

Generation capacities in Germany in GW



Sources: Fraunhofer ISE, Metzler Research

Hydrogen will play an important role

Around one third of the energy supply in 2045 will be stored and made available (for transport or as a green fuel) in the form of green hydrogen. The rest will be

consumed directly as green electricity or stored via electrochemical storage (batteries), thermal storage (hot water storage) or mechanical energy storage (pumped storage power plants, compressed air storage, flywheel storage, etc.).

The conventional energy sources to be replaced consist mainly of directly burned oil and gas in the transport and building sectors.

In the transport sector in particular, little has been done to avoid CO2 for many years.

Little progress on CO2 reduction in the transport sector in Germany

Field of action	1990 (in million tonnes of CO_2 equivalents)	2014 (in million tonnes of CO_2 equivalents)	2030 (in million tonnes of CO_2 equivalents)	2030 (reduction in % compared to 1990)
Energy sector	466	358	175–183	62–61 %
Buildings	209	119	70–72	67–66 %
Transport	163	160	95–98	42–40 %
Industry	283	181	140–143	51–49 %
Agriculture	88	72	58–61	34–31 %
Subtotal	**1209**	**890**	**538–557**	**56–54 %**
Other	39	12	5	87 %
Total	**1248**	**902**	**543–562**	**56–55 %**

Sources: Federal Ministry of the Environment, Nature Conservation, Building and Nuclear Safety

For this reason, this sector has been given the highest priority for the use of hydrogen in the German government's national hydrogen strategy, along with the industrial sector.

The strategy paper lists measures such as:

- Market activation to support investments in hydrogen vehicles (light and heavy trucks/commercial vehicles, buses, trains, inland and coastal shipping, passenger cars in fleet applications).
- The coordinated development of a needs-based refueling infrastructure to supply vehicles also in heavy road freight transport, public transport and local rail passenger transport will be promoted. The Energy and Climate Fund (EKF) contains EUR 3.4 bn in grants for the construction of refueling and charging infrastructure for all alternative technologies until 2023.
- Targeted implementation of the Clean Vehicles Directive (CVD) to support zero-emission vehicles in municipal transport.
- Exchange on the prospects for hydrogen technologies in logistics in the "Innovation Program Logistics".

Hydrogen - demand will grow strongly

As already mentioned above, green hydrogen plays an important role for countries and industries that want to achieve their net-zero emissions targets by 2050. Countries that have published a national hydrogen strategy account for about 50% of global GDP.

The clear advantage of green hydrogen produced by electrolysis is that there are no direct carbon dioxide emissions from either its production or combustion.

Hydrogen can be used to produce synthetic fuel for mobility purposes or to generate electricity in fuel cells. It can be used - instead of oil - to obtain raw materials for the chemical industry. In other words, hydrogen can be used to do virtually everything for which oil, coal and natural gas were previously used - without releasing CO2.

In addition, hydrogen can serve as a storage medium for fluctuating renewable energy sources. Unlike batteries, which gradually discharge, hydrogen is also suitable for long-term (pressure) storage without major energy loss.

Hydrogen is virtually everywhere, accounting for an estimated 75% of the mass of the entire universe.

However, it only occurs in bound form, as a component of larger chemical compounds such as water, acids, hydrocarbons and other organic compounds.

Hydrogen must be produced with additional energy input

Hydrogen must be produced with an additional energy input and is thus a secondary energy carrier, comparable to electricity or heat; consequently, it does not count as a primary energy.

All types of fossil and non-fossil primary energy carriers can be used to produce hydrogen, i.e., for example, coal, oil, natural gas, solar energy, wind power or hydropower. Conventional processes split natural gas or crude oil into hydrogen and CO2 with the addition of heat. This hydrogen is called ‘gray’ when the CO2 is released unused into the atmosphere (about 10 tons per ton of hydrogen). If the goal is CO2 avoidance, this process is not an option. If the CO2 produced is captured and not released into the atmosphere, it is referred to as 'blue' hydrogen. The CO2 can, for example, be stored underground or further processed as a raw material. Blue hydrogen is already referred to as 'clean'. Green' hydrogen is produced by water electrolysis using electricity from renewable sources. This manufacturing process does not produce any direct carbon dioxide emissions.

Hydrogen is already a large market - so far still mainly in fertilizer production and refineries

According to IEA, up to now, about 60% of the worldwide demand for hydrogen of 87 Mt by 2020 has been in the chemical industry, especially in the production of ammonia (NH3).

Ammonia is a chemical substance that is mainly used for the production of fertilizers. Ammonia is formed from the elements hydrogen and nitrogen in an equilibrium reaction.

Around 40% is used by refineries, mainly in cracking. Cracking is a material conversion process which, for example, is used in petroleum refining to split long-chain hydrocarbons (heavy fuel oil) into short-chain hydrocarbons (gasoline, diesel,

light fuel oil). During hydrocracking, large quantities of hydrogen are added to the process.

Up to now, the production of this (gray) hydrogen has been carried out almost entirely using fossil primary energy.

IEA expects hydrogen demand to reach 528 Mt by 2050

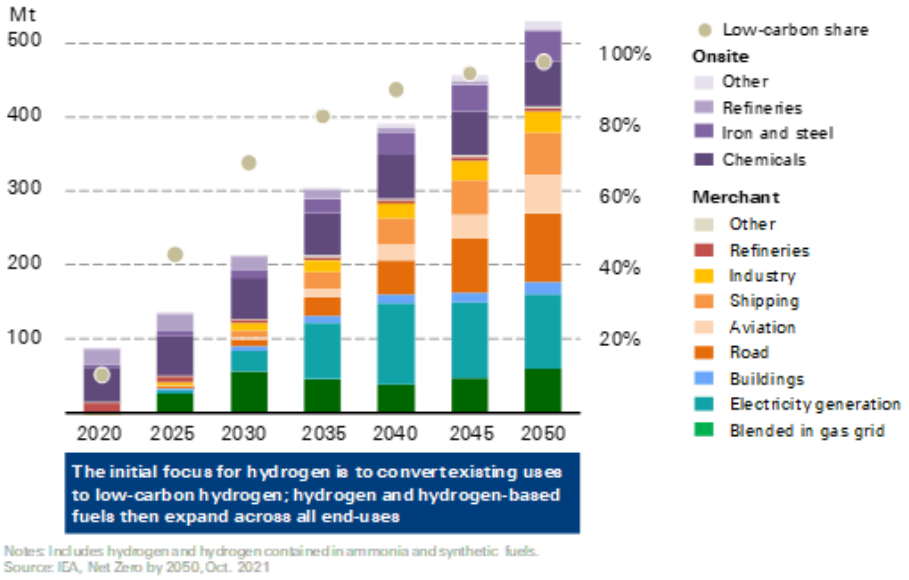
IEA expects that global hydrogen consumption will increase from less than 90 million tons in 2020 to more than 200 million tons in 2030 and some 528 million tons in 2050; the share of clean hydrogen increases from 10% in 2020 to 70% in 2030 and to 98% in 2050. About half of the clean hydrogen produced globally in 2030 comes from electrolysis and the remainder from coal and natural gas with CCUS (Carbon capture, utilisation and storage), with this ratio varying widely by region.

Around 1/3 of global hydrogen demand will be in the transport sector

IEA expects that in the transportation sector, hydrogen supplies about one-third of truck fuel consumption in 2050, more than 60% of total marine fuel consumption will also be met by hydrogen-based fuels.

Of the 528 million tons of hydrogen produced in 2050, about 25% will be used in industrial plants (including refineries), with the remainder being commercial hydrogen (hydrogen produced by one company to sell to others).

Global hydrogen and hydrogen-based fuel use in IEA's net zero emissions scenario



Notes: Includes hydrogen and hydrogen contained in ammonia and synthetic fuels.
Source: IEA, Net Zero by 2050, Oct. 2021

Hydrogen drive for motor vehicles

Passenger cars - the decision in favor of battery technology seems to have already been made

The topic of alternative, i.e. zero-emission, drive systems for vehicles has occupied researchers and manufacturers for many years. Among the most discussed technologies are:

- Purely battery-powered electric vehicles (PEV - direct use of electricity),
- Plug-in hybrid vehicles (PHEV - combination of a battery and an electric motor with a fuel tank and an internal combustion engine),
- Fuel cell electric vehicles (FCEV - use of a fuel cell to convert hydrogen into electricity) and
- Internal combustion engine vehicles based on synthetic fuels or hydrogen (ICEV - burning biofuels or hydrogen).

For a long time, the development of battery concepts and hydrogen concepts seemed to be neck-and-neck in the passenger cars sector.

Meanwhile, observable figures for the passenger car market reflect a clear (at least preliminary) result: At the beginning of 2021, there were about 25,000 hydrogen fuel cell cars on the roads worldwide, and more than 90 percent of these vehicles are in just four countries: South Korea, the U.S., China and Japan. Currently, there are only two fuel cell passenger car models in mass production worldwide: the Hyundai Nexo and the Toyota Mirai. Around 540 hydrogen refueling stations are in operation worldwide.

By contrast, there are currently around fifteen million battery-powered electric and plug-in hybrid vehicles on the world's roads. Almost all manufacturers now offer such vehicles, and more than 400 different models are available worldwide. Battery electric vehicles draw their power from the electricity grid (capacity problems may arise here, however). For users who do not have charging facilities at home and for long-distance journeys, charging at publicly accessible charging stations is essential. In 2020, around 1.3 million public charging stations were in operation worldwide, of which around a quarter were fast-charging stations (with a capacity of at least 22 kW).

Trucks - there is much to be said for hydrogen propulsion

What seems to be already decided for passenger cars, namely that battery technology is likely to prevail, does not yet seem to have been decided for heavy goods vehicles. And the pressure to develop a viable and sustainable concept is high. The number of trucks is significantly smaller than the vast number of passenger cars. But they drive significantly longer distances on average and use more fuel in the process. For example, with 41 million metric tons of CO2 emissions (2019), road freight accounts for around a quarter of transport emissions in Germany.

In the EU, truck manufacturers must reduce the CO2 emissions of their fleets by 15 percent by 2025 and by 30 percent by 2030 in order to avoid penalties. After all, Europe wants to be CO2-neutral by 2050.

In heavy and long-distance transport, the battery concept is not considered an option, at least not yet. For 40-ton trucks, which travel 150,000 km or more per year and of which just under 60,000 are registered in Germany, or in opencast mining and in the agricultural and construction site sector, a battery-electric drive has so far been too heavy, too large, too expensive or impractical.

Hydrogen is an obvious choice because it can be converted for propulsion in two ways. Either by a fuel cell that generates electrical energy from hydrogen, which then drives an electric motor. Or by direct combustion in a conventional piston engine. Both concepts are CO2 emission-free. Fuel cells are sensitive and currently only work with high-purity hydrogen. An internal combustion engine, on the other hand, can also cope with poorer hydrogen quality.

Even if the argumentation in favor of hydrogen is mostly and primarily aimed at heavy and long-distance transport, there are also and already quite plausible concepts that run counter to this logic. The U.S. manufacturer Hyzon, for example, is currently not targeting long-distance transport with its H2 trucks, but regional distribution transport. While a central hydrogen refueling station is sufficient for the latter, long-distance freight transport requires a more extensive hydrogen refueling network.

The main arguments Pro ...

An overview of the main arguments in favor of hydrogen propulsion:

- Of all known fuels, hydrogen has the highest energy density. It exceeds the energy density of diesel by a factor of three and that of an electric car battery by up to a factor of a hundred. Compared to battery-electric propulsion, it allows significantly greater ranges, shorter refueling times and virtually the usual transport capacity.
- A price of EUR 5 per kg of hydrogen is coming within reach. A 40-ton truck consumes around 8 kg of hydrogen per 100 km compared to around 33 liters of diesel. In terms of operating costs, hydrogen is thus clearly becoming a viable alternative to fossil fuels. The price of the vehicle is not considered decisive in the commercial vehicle sector. Daimler Truck AG has customers with more than 100,000 trucks that travel more than ten million miles per day. Cost advantages of just a few cents per kilometer already pay off. Daimler Truck AG expects fuel cell trucks to match the total cost of ownership of diesel trucks from 2027.
- When hydrogen is used in internal combustion engines, many components of internal combustion engines can continue to be used with minor modifications - and this also preserves the expertise of the European automotive industry as well as many jobs. And: The EU recently decided that in the commercial vehicle sector - in contrast to passenger cars - hydrogen combustion engines are also considered emission-free if they produce less than 1 gram of CO2 per kilowatt hour. Truck manufacturer Deutz, for example, plans to go into series production with a hydrogen combustion engine in 2024. In four-axle vehicles, for example, there is simply no room for batteries or fuel cells.
- Compared to lithium batteries, fuel cells have the advantage of very good recyclability of around 98 percent of used materials. Fuel cells do not contain any rare raw materials such as cobalt and do not have such high-quality requirements in production as battery cells.
- Although geologically not a scarce resource, there are fears that the production capacities for lithium will not be sufficient to meet the forecast demand in the medium term, especially for EVs. Lengthy approval procedures and interruptions in planned projects are already causing limited supply and sharply increased prices.

... and contra hydrogen drive for trucks

However, the hydrogen drive concept also has weaknesses, which is why it is difficult to make a definite statement about its potential triumph.

- Transport and storage of hydrogen are energy-intensive. At atmosphere pressure, one kilogram of hydrogen has a volume of over eleven cubic meters (one kilogram of hydrogen is sufficient for a passenger car for about 80 to 100 kilometers). Because the hydrogen cannot (so far) be pumped through existing

gas pipelines (the gas would escape at the valves and the steel would be damaged), it has to be transported by road to refueling stations. The gas specialist Linde offers to supply hydrogen in liquid form. The boiling point is -253 degrees, which means that liquefaction needs very powerful cooling systems that require a corresponding amount of energy

- To date, hydrogen-powered vehicles have a lower efficiency (or effectiveness) than battery-powered vehicles. Above all, the electricity-intensive production of hydrogen means that up to twice as much electricity is needed to cover the same distance (well-to-wheel efficiency; around 70% of the stored electricity is used as motive power; this value is significantly lower for hydrogen cars at around 20% compared to electric cars). Of course, this comparison is only 'fair' if one assumes that the same renewable (primary) energy source is used directly. Since the intermediate storage of green electricity is precisely a problem that is to be solved with hydrogen, for example, the comparison is flawed anyway.

The concepts of the most important truck manufacturers. Most manufacturers attach great significance to hydrogen...

Daimler Truck and Volvo are jointly developing a fuel cell system for trucks, with series production set to begin in the second half of the decade. Truck manufacturer Renault is also involved. Daimler has so far manufactured the GenH2 heavy-duty truck prototype, with two fuel cells, two electric motors and two stainless steel tanks for 80 kilograms of liquid hydrogen stored at minus 253 degrees. Regarding technology concepts, Daimler Truck is taking an open-minded approach to the energy transition in truck propulsion and is developing both heavy trucks with batteries and those with hydrogen as an energy carrier. Hydrogen trucks could be a viable option "especially in tough long-haul operations, particularly in terms of total cost of ownership."

Daimler Truck is counting on a hydrogen-based energy system of the future and recalls that more than 40 governments have "launched extensive hydrogen action plans" because many areas could only be decarbonized with hydrogen as an energy carrier. Daimler Trucks expects "hundreds of billions of euros to be invested in hydrogen production, transport and infrastructure by 2030."

Toyota and Hino plan to test fuel cell trucks with a total weight of 25 tons in practice in Japan in 2022. The companies are also developing a fuel cell truck for the U.S. market. In China, Toyota is working with five Chinese companies in the "United Fuel Cell Systems R&D" to develop fuel cell trucks.

U.S. based company Nikola and Iveco from Italy are cooperating. Nikola has been using the Iveco plant in Ulm since the end of 2021. At the beginning of 2022, the Nikola Tre was launched as an electric truck in Europe and the U.S., and in 2023 it will be delivered with a fuel cell. Bosch supplies fuel cells and central computers, among other things. In 2021, Nikola, IVECO, and OGE announced the signing of a memorandum of understanding to plan a joint business model for the piped transport of hydrogen for FCEVs from various production sites to hydrogen refueling stations.

Hyundai says it is producing the first heavy truck with fuel cell electric - the Xcient Fuel Cell – in serial production. The first examples are in use in Switzerland for freight forwarders and the Coop and Migros retail chains. Hyundai plans to deploy 1,600 of these hydrogen trucks by 2025.

The U.S. company Hyzon Motors, specialized in fuel cell commercial vehicles, began delivering its first fuel cell trucks to European customers last summer. Hyzon is

currently not targeting long-distance transport with its H2 trucks but regional distribution transport.

... the VW Group remains sceptical (but this seems to change under the new CEO)

Traton (Metzler recommendation Buy, pt. EUR 33) is focusing primarily on battery cells in the mid and long term. In doing so, Traton intends to take advantage of the synergies within the VW Group (Metzler recommendation Buy, pt. EUR 320), which has announced the construction of its own cell factories. The VW Group sees hydrogen trucks also establishing themselves on the market in the next ten years, but only in niches, such as for cement mixers or for long-distance buses that cannot charge enough electricity during breaks. In their view the hydrogen truck is much less efficient and much more expensive than the battery truck.

Scania, a subsidiary of Traton, wants to sell one in ten e-drive vehicles in Europe in 2025, and one in two by 2030. However, an extra fast-charging network for electric trucks would also have to be expanded in Europe.

However, Traton's Munich-based subsidiary MAN is developing both hydrogen combustion engines and fuel cell drives. Traton is also cooperating on fuel cell drives with the Japanese truck manufacturer Hino, which belongs to Toyota.

All in all, the new CEO of the VW Group, Blume, appears to be ready to make a strategic shift on the subject of electromobility. Unlike his predecessor, he is also in favor of so-called e-fuels. In his view, the goals of the Paris climate agreement cannot be achieved with electric mobility alone.

Competitors

Founded in 2015 by Air Liquide, Daimler Truck, Hyundai, Linde, OMV, Shell and Total, the German operator of hydrogen refueling stations H2 Mobility has established a network of almost 100 refueling stations (700 bar) in Germany. They expect an expansion to 300 by 2030. More than 200 are to be large-scale facilities for refueling trucks and buses (350 bar). However, there are only around 35 of these so far. In this way, the company wants to prepare for the ramp-up of heavy vehicles with alternative propulsion. H2 Mobility aims to be profitable by 2026. Hydrogen electrolyzer manufacturers Nel Asa or McPhy also offer solutions for the necessary infrastructure (H2 refueling stations, H2 transport).

Our expectation for the segment development

We are optimistic that Wolftank can participate in the dynamic development of the hydrogen market with its distribution solutions. Therefore, we see potential for future growth through the construction of refueling stations and through refueling and filling concepts. In addition, we assume opportunities for the use of Wolftank's hydrogen solutions in other areas of the transport sector, such as ships or aircraft, or in other sectors, such as buildings or industry.

LNG

As an general contractor (EPC), Wolftank offers complete projects and full services for new tank facilities and service stations.

LNG - the market environment

Liquid Natural Gas - LNG - consists of about 90% methane (CH4), which is liquefied by cooling to below -162 degrees at atmospheric pressure. The volume can thus be reduced by 1/600 at high energy density. It can thus be stored and transported. In mobility, LNG is mainly used as a fuel for heavy-duty vehicles (heavy trucks and tractor-trailers) and in shipping.

LNG as bridging technology on the way to achieve emissions targets

LNG is seen as a bridging technology in achieving the European Commission's environmental policy goals for combating climate change, which call for a significant reduction in transport-induced emissions (greenhouse gas emissions). In contrast to passenger transport, no or not enough completely emission-free or climate-neutral technology alternatives are available to date. Therefore, LNG is considered as one option for reducing CO2 emissions by up to 25% compared to conventional diesel engines in the short term and complying with the strict emission limits of the Euro VI standards. In the commercial vehicle sector, heavy duty vehicles account for 80% of energy consumption. Approx. 73% of freight transport within the European Union is by road, i.e. mostly by trucks.

When LNG is used, emissions of nitrogen oxides (NOX) and particulate matter are also reduced compared to diesel engines, and traffic noise can be lowered.

Hence, leading truck manufacturers already offer LNG models with comparable ranges to diesel engines. These range between 1,000km (e.g. Scania, Volvo) and 1,600km (e.g. Iveco, Scania) and are particularly suitable for long-distance freight transport.

Government subsidies (still) driving growth in LNG trucks and LNG infrastructure market

Due to the EU's climate policy goals, the LNG truck and LNG fuel market benefits from government subsidies from individual member states. In Germany, for example, LNG trucks are exempt from truck tolls until the end of 2023 and benefit from a lower energy tax rate until the end of 2026 (LNG: EUR 13.90/MWh, standard rate: EUR 31.80/MWh). From a total cost of ownership (TCO) perspective, this will make LNG trucks competitive over their life cycle despite higher initial purchasing costs. The measures are backed by the EU Directive AFID (2014/94/EU) from 2014, which calls for the development of sufficient infrastructure for alternative fuels. It demands adequate coverage for the TEN-T core network (trans-European transport network) by the end of 2025 and for the TEN-T network by the end of 2030. As a result, the number of LNG refueling stations built in Europe has risen to over 500 (as of 02/2022). Demand for the year 2025 is estimated by the industry association at over 750 and for the year 2030 at over 1,500 refueling stations (ACEA estimate, 2021). Other estimates even forecast a need for 2,000 service stations in 2030 (NGVA estimate). Most recently, an increasing impact of government subsidies could be noticed at LNG refueling stations: In Germany, for example, sales increased from under 20,000 tons to over 130,000 tons of LNG within 2 years.

... but political headwind looms

In a well-to-wheel (WtW) consideration, critics say, the so-called emission savings should be put in relation to total emissions. When comparing the total emissions of different fuel and propulsion technologies over the entire value chain, i.e. from the extraction and transport of the fuel to the actual combustion in the vehicle, the emission savings potential of LNG is reduced to 2% and 9%, respectively, according to various studies.

That is why for some time there has been upcoming resistance whether LNG fuel should continue to be considered a suitable tool for achieving emissions targets and should be promoted politically as a result.

BioLNG – a possible game changer?

Bio-methane can be obtained from the upgrading of biogas by, among other things, splitting off CO2 and then liquefied to produce bio-LNG. Its combustion properties are comparable to those of ordinary LNG (produced from fossil natural gas). Moreover, LNG can be blended with bio-LNG to any degree. The resulting LNG mix is consequently more emission-neutral - "greener." The current share of bio-LNG at German LNG stations, for example, is low at less than 0.7%, but is expected to increase significantly in the coming years. Current construction projects of bio-LNG plants promise to be able to increase the bio-LNG share "significantly" by 2024. However, there are also doubts about whether bio-methane or synthetic e-methane can be produced in sufficient quantities to meet heavy-duty transport demand. Potential recognition as a zero-emission under the EU fleet limit would further encourage future demand for bio-LNG as a fuel. Overall, it remains to be seen what climate policy consensus the EU will reach regarding LNG technology in transport and the associated further government support.

Regional differences in the LNG market

Chinese LNG demand in the transport sector has developed even more positively. Cost advantages and political support due to lower emission values have contributed to market growth. Consequently, LNG infrastructure has also seen rapid growth from 200 LNG refueling stations (year: 2011) to over 2,500 (year: 2018). A similar development can possibly be expected in India, where it has already been announced that up to 1,000 LNG refueling stations will be built in the next three years, again with the aim of reducing emissions in the transport sector. Insofar it is quite fitting that Iveco, a leading LNG truck manufacturer, has discovered India as an attractive market and recently presented a LNG truck for the first time.

At least in the short therm, European gas shortage is causing concern

In context of the current geopolitical situation resulting from the Ukraine war, there is a shortage of natural gas (and therefore LNG) and the supply guarantee in countries with a high share of Russian gas imports is under scrutiny. The tight supply has recently caused natural gas prices to rise sharply.

Gas price surges to new high due to contuining supply shortage in Europe

Sources: Bloomberg, Metzler Research

Competitors

The market is relatively fragmented. The competitors include subsidiaries of gas companies (e.g. Liqvis GmbH, a subsidiary of Uniper) and a large number of (private) companies with expertise in conventional service stations with most of them also offer their services for LNG stations.

Our expectation for the segment development

Taking into account the LNG price trend and the uncertainties surrounding gas supply, we expect to see, at least temporarily, a restraint expansion of the LNG refueling station network. Accordingly, we are cautious in our estimates for Wolftank's LNG segment revenues in 2022 and 2023.

Biogas

Wolftank intends to produce green hydrogen from bio-hydrocarbons by steam reforming as well as electrolysis in the future. The company also plans to produce bio-LNG by liquefying biomethane. The steam reformers will be located where there are existing infrastructures. These are, for example, former refineries or chemical plants (with an existing high-pressure gas connection). The electrolysers are to be used directly at photovoltaic plants, water turbines or wind power plants.

Biogas - the market environment

Biogas is produced when organic matter or substrate (energy crops, slurry, sewage sludge, biowaste, etc.) decomposes under anaerobic conditions with the help of bacteria in biogas plants and is converted through several controlled processes. Necessarily, the plant carbon is incorporated into two components of the biogas during the fermentation process: First, back into carbon dioxide (CO2) and second, into methane (CH_4). The proportion of methane is between 50%-75% depending on the substrate used for fermentation - the rest of the biogas is mainly CO2.

Bio-gas is usually used to generate electricity and heat by means of cogeneration in combined heat and power plants. Another application is the processing of bio-methane. This involves desulfurization, drying, and carbon (CO2) capture to increase the methane content. At the end of these processes, a gas with a methane content of 96% is produced. This so-called bio-methane is considered a climate-neutral, green gas and has the same combustion properties as conventional natural gas. In addition, bio-methane can be liquefied under cooling in the same way as natural gas, resulting in bio-LNG.

Possible use in the production of hydrogen

Steam reforming of bio-methane represents a technical alternative to electrolysis in the production of climate-neutral (green) hydrogen. Under bio(mass)-to-X, as the thermochemical technology is often called, bio-methane obtained from bio-gas is reformed to hydrogen in a steam reformer. These gas reformers can be commissioned on site, i.e. decentralized at biogas plants, allowing existing plants to be used. The local production of hydrogen could thus close regional material cycles and secure the supply.

Our expectation for the segment development

Wolftank is targeting an output of approx. 2000 kg H2/day. We assume a sequential ramp-up of production to this level from 2023 to 2026.

Environmental Services

Soil and water remediation and contamination monitoring

The Environmental Services business unit offers a wide range of services including various soil and water remediation processes as well as a contamination monitoring and detection system based on smart sensor technology.

Soil and water remediation

As a full-service provider, Wolftank covers the complete value chain in soil and water remediation with mobile testing laboratories and its various process technologies. This "one-stop-shop" solution ranges from comprehensive environmental due diligence to appropriate remediation measures carried out by an experienced team of engineers and geologists.

For renaturation, Wolftank applies various remediation methods. Geoengineering uses soil vapor extraction (for volatile and semi-volatile contaminants) or chemical treatment (neutralization of contaminants). The remediation process with plants, phyto-remediation, uses various plants that absorb pollutants and lead to their microbial degradation. The same principle is followed by the use of living organisms, such as microbes or bacteria, to remove contaminants and toxins in soil and water.

When closing a service station, Wolftank offers a complete solution, i.e. the company dismantles the facilities, remediates any damage to the soil or water, handles any necessary official procedures and finally hands over the 'green field' to the customer.

In total, Wolftank's track record counts over 4,000 environmental remediation projects and approximately 2,500 environmental consultations.

Monitoring and detection systems

Wolftank uses a system of physiochemical reaction sensors and wireless communication technology for the technical implementation of continuous monitoring and early detection of soil and water contamination and can thus ensure access to the necessary data at any time. These solutions are applied in cases where there is an increased risk of pollution or leakage of harmful liquids.

Applications are found in the petrochemical industry, including tank farms, industrial plants or service stations.

By pursuing a buy-and-build strategy, the company has been able to acquire technological know-how through the acquisitions of Maremmana Ecologia Srl. and Rovereta Srl, thus expanding its depth of added value in soil remediation and recycling. Rovereta Srl, for example, has the know-how to recylcle oil from contaminated substances (soil or water) and return it to the cycle. In this way, Wolftank can extract several million liters of heating oil per year and sell them on the market.

Customers in this area include, for example, the Italian oil company ENI, with which a framework agreement for soil remediation has been concluded. The geographic focus of the environmental services business is on Europe and especially Italy. In recent years, Wolftank has expanded its international presence with offices in Brazil (02/2020) and China (05/2018). Wolftank also offers these services in Spain and France. In Africa, Wolftank works with exclusive contractors.

International growth through buy-and-build strategy

Wolftank has made several acquisitions in the last four years, primarily to advance the internationalization of its business but also to strengthen its competitive position in its core market Italy. The acquisitions of the competitor Rovereta and the stake in Petroltecnica have enabled Wolftank to expand its competitive position and at the same time strengthen its international perception as a relevant player in the segment. The acquisitions of the foreign suppliers AlterEco S.L Madrid and Sometec Aqua accelerated growth in Spain and Latin America.

Wolftank persues a buy-and-build strategy to acquire technological know-how and to accelerate international growth

Date	Company	Description	Type	Reasoning
Dec-21	Mares S.r.l.	Company focused on traditional service stations, turnkey environmental services and redevelopment projects	M&A (50% stake, joint venture between Wolftank and Kuwait Petroleum S.p.A)	• Mares' operation comprises a network of ~3,000 service stations under "Q8" brand • Potenial for synergy across major segments: environmental services and resconstructing of existing service stations towards alternative fuels
Jun-20	Rovereta S.r.l.	Recyling company focused on reprocessing of contaminated soil and water	M&A (majority stake, seller: Petroltecnica S.p.A.)	• Cost and R&D synergies • Extension of the value chain • Acceleration of international growth
Jun-20	Petroltecnica S.p.A.	Multinational company engaged in soil and water remediation & recylcing	M&A (10% minority stake as part of the Rovereta S.r.l. transaction)	• Expansion of the existing product range for existing customers • See also: Rovereta transaction above
May-20	Sometec Aqua	Spanish company specialized in soil and water remediation with regional focus on Spain	M&A (100%)	• Horizontal acqusition of Spanish competitor • Acceleration of growth & market share in Spain • Further persuing a buy-and-build strategy in the environmental services segment
May-19	City Ningbo (Zhenhai District)	Major sub-provincial city in northeast Zhejiang province, located 220 km south of Shanghai	Cooperation	• Collaboration in the area of environmental protection • Use of Woltank's in-situ remediation technology in Ningbo's chemical and industrial park
Apr-19	OTI Greentech AG	International provider of chemicals and services for industrial applications	Cooperation	• Distribution agreement: Wolftank Adisa appointed as exlusive distributor in selected countries of OTI Greentech's ECOSOLUT product line
Oct-18	AlterEcoo S.L	Company specialized in project development and engineering services	M&A (60%)	• Horizontal acquisition to create synergy potential • Faster market entry in Spanish and Latin America
Jul-18	Maremmana Ecologia Srl	Company engaged in environmental services	Capital increase (stake increased from 65% up to 90.2%)	• Growth strategy in the environmental services segment
Jan-18	DRK 32 GmbH	Supplier and service provider of tank liners, leak detectors and pipe systems	M&A (100%)	• Complementary products and distribution network

Sources: Wolftank, Metzler Research

Environmental Services - the market environment

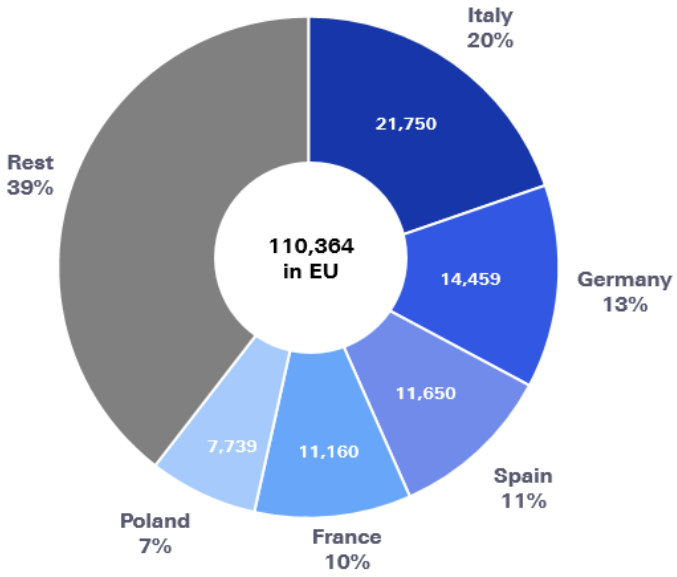
The market for environmental remediation is expected to develop positively. The market research institute MarketsandMarkets estimates growth at CAGR of around 9% p.a. for the period between 2021 and 2026.

The main drivers of this growth are:

- stricter regulation regarding environmental protection. For example, China passed a new soil protection law at the beginning of 2019, which obliges companies nationwide to prevent and control soil pollution.
- growing demand due to the dismantling of service stations and the subsequent recultivation of the land. Alternative mobility technologies pose a chal-

lenge to the profitability of conventional service stations. Boston Consulting sees the continued existence of up to 80% of conventional service stations threatened by 2035, depending on the market penetration of electrified vehicles and alternative mobility concepts. With a geographical focus on Italy and Spain, Wolftank is active in countries with a particularly high number of refueling stations. The closure of more than 10,000 service stations in Europe within the next 10 years does not seem unrealistic.

Number of petrol stations - regional focus on Italy supports further growth within the segment of environmental services



Sources: National Oil Industry Associations, Metzler Research

Competitors

In Italy, Wolftank has established a market-leading position through acquisitions. In general, the market for environmental remediation is relatively fragmented. Environmental and soil remediation services are offered by a variety of local providers. Larger waste management companies such as McAuliffe also offer environmental services in their product portfolio.

Our expectations for the segment development

We expect Wolftank to participate in the market growth for environmental services and achieve high single-digit growth rates in the coming years. The good positioning in Italy and Spain should contribute to this development as should a diminishing, pandemic-related headwind in the development of sales potential, e.g. in Wolftank's relatively new markets of Brazil and China.

Industrial Coatings

Tank refurbishment and maintenance

In the coatings or industrial coatings segment, Wolftank offers self-developed solutions and products for the refurbishment and maintenance of tanks and pipes.

Benefits of this service from the customer's point of view are prevention and thus avoidance of possible environmental damage that could occur due to old or corroded installations. Biofuel E10, for example, with higher ethanol content, causes corrosion in metal tanks.

In addition, considerable CO2- and cost savings result from the extension of the useful life of existing plants. The implementation is carried out during normal operation within a few days, so that there is no significant loss of productivity for the customer during this time.

The company's core products in this area include technology for double-walled renovation - DOPA® technology - and Epoflex® products - epoxy resins.

Using DOPA® technology, the company converts previously single-walled tanks into double-walled tanks. The technology is exclusive worldwide and certified according to ISO standards. On request, a remotely controllable system can also be implemented to monitor the vacuum inside the walls. This is called a structural lining of the vessel so that, should the original wall be corroded, it remains functional and protected. The service life can thus be extended by up to 30 years. The DOPA lining system consists of several layers to be applied. The self-developed epoxy resin products, Epoflex®, are also used here. In addition to DOPA technology, these can also be used for single-wall coatings, e.g. as corrosion protection or for local cracks and fractures. The patented epoxy resins developed in-house have special properties. They are environmentally friendly and easy to process, solvent-free and non-flammable. This means that, unlike cheap resins, they are suitable for use in enclosed spaces. They also adhere particularly well. This is important because the epoxy resin is sprayed or rolled on with a layer thickness of up to four millimeters and must also adhere to vertical surfaces. The stronger the resin adheres, the more durable a tank will be. It must withstand all the movements of the base materials and the stored product, whether fuel or chemical, must not dissolve the resin nor must plastic particles get into the stored product.

Wolftank also offers both products, DOPA and Epoflex, to other remediation companies. Their operators are trained and certified by Wolftank.

The customer side include well-known corporations from the oil and gas industry, such as Total Energies, ExxonMobil, ENI, BP and Shell. In its 30-year history, Wolftank has rehabilitated over 25,000 tanks and implemented more than 3,000 monitoring or early warning systems. In Italy, the company considers itself the market leader with a market share well above 50%. The company is also active with its own branches in Spain, Germany, Brazil, Austria, France and China.

Industrial Coatings - the market environment

The demand for industrial coatings and especially tank refurbishment is largely determined by government regulation, the number of existing tanks and their age.

Particularly in Europe, given the Net Zero targets, there is just little incentives to invest in new tanks to replace aging fossil fuel storage tanks. For Europe, we estimate the average age of underground storage tanks to be 27 years as the same surveyed and published for the U.S. by the Environmental Protection Agency there. In Europe, for example, it was only recently decided to phase out internal combustion engines by 2035. Conversely, however, this date also means that even in Europe there will still be demand for gasoline for the existing combustion engine fleet for probably around two decades. For China and Brazil, the IEA expects demand for fossil fuels to continue to rise in the medium term anyway. China and Brazil are not aiming for Net Zero until 2060. Overall, the market research institute Insights Global assumes a global growth at CAGR of around 4% for oil and gas tanks between 2021 and 2030.

Tanks are also used in the chemical, pharmaceutical and food industries. Wolftank provides its solutions - which are also suitable for foodstuffs - to companies in these industries. For example, Wolftank was able to win ADM Germany as a customer for the storage of vegetable oil.

Competitors

Competitors with similar technological know-how and comparable depth of added value (research into new epoxy resins, refurbishment services) in the tank refurbishment sector are rare. The Wolftank services competes primarily with tank replacement.

Our expectations for segment development

A trend toward stricter environmental regulation, the relatively high age of existing tank facilities, and opportunities to gain a further foothold in non-European countries and in other sectors lead us to expect mid-single-digit revenue growth for Wolftank in this segment. In 2020 and 2021, travel restrictions due to the Corona pandemic had a significant negative impact on revenue and earnings development. These effects are expected to reverse in the medium term as conditions normalize.

Financials

The IPO took place with a relatively weak equity ratio

Wolftank's listing took place in January 2019. The company's equity ratio was around 18% in 2019. Equity ratio declined to around 15% in the following year, mainly due to acquisitions and consolidation effects. Two capital increases in 2021 of 10% improved company's balance sheet resulting in an equity ratio of 26% as of December 31, 2021. We assume that the company will be able to further improve the equity ratio to around 30% by 2025 via accumulated earnings.

Net debt is still at a relatively high level in relation to EBITDA

Net debt amounted to around EUR 14 m in 2019, rising to EUR 20 m in 2020 due to the acquisitions and an annual loss, which was also due to corona. Positive cash flow and the two capital increases ensured a decrease in net debt to EUR 11 m in 2021. In 2022, we expect net debt to increase caused by the company plans to increase its inventories in hydrogen and LNG refueling facilities due to international supply chain disruptions. In the years from 2023 onwards, solid cash flow and a decline in working capital should lead to a rapid decrease in net debt.

Balance sheet ratios relatively weak so far but with prospect of improvement

in EURm	2019	2020	2021	2022e	2023e	2024e	2025e
Equity ratio (%)	18.4	14.7	26.2	26.3	26.8	28.6	31.2
Net debt	13.8	19.8	11.4	14.0	9.0	3.0	-3.0
FCF	-3.0	-1.5	2.6	-2.6	5.0	6.0	6.0
EBITDA	4.6	0.3	1.5	5.2	6.6	8.2	9.4
Net debt/EBITDA	3.0	70.6	7.6	2.7	1.4	0.4	-0.3

Sources: Bloomberg, Metzler Research

Insights into the P&L

Comparisons of Wolftank's key financials over time are not very informative due to acquisitions and consolidation effects.

In 2021, the company's sales split by region were as follows:

Sales split by region (2021)	
Italy	79
Spain	5
Austria	3
Germany	2
France	1
UK	1
Balkan	1
Other	8

Sources: Wolftank, Metzler Research

Personnel expenses were just below 17% of sales in 2021 and are expected to ease to a level at around 15% of sales from 2023.

In the tank coating sector, the company earns a trade margin on the raw materials (epoxy resins) and a margin on the services provided. The margins vary depending on the customer, the framework contract, the sector (oil & gas or food, etc.) and the country (Italy, Germany, France, etc.; also due to different legal requirements).

The price of a hydrogen refueling station depends on the performance, i.e.: How

fast can refueling be done and what break intervals are accepted. A simple container that can refuel 2-5 vehicles per day, with long refueling intervals, costs about EUR 750,000; a high-performance refueling station with 20 or more vehicles per day, with 10-minute intervals, costs about EUR 2.5 million. When setting up a hydrogen refueling station, approximately half of the purchase price is for cost of goods (e.g. the HSF dispensers from EDC) and the other half is for Wolftank's services.

Other operating expenses were relatively high in 2021. Various special items contributed to the increase compared to the previous year. These include a payment default of EUR 0.7 m due to the bankruptcy of an Italian customer and around EUR 0.7 m in expenses for the capital increases.

The company's tax rate is approximately 25%.

The company estimates its capex for the next few years at around EUR 1 m p.a. excluding the newly planned biogas activities.

Company outlook for FY 2022

The company expects a 'positive business development' compared to the previous year. In particular, the top line should be well exceeded. On the earnings side, delay effects will probably still be seen, in particular due to a de facto absence of business in China and delays in construction permissions.

The company continues to see a high level of interest in hydrogen refueling station infrastructure. However, delays in building permissions and funding commitments are delaying tangible order placements. For the industrial coating business, the company is aiming for growth, particularly in the chemical and food industries.

The regional growth focus in 2022 will be primarily on Europe.

Current business situation

As of June 2022, the company reports inquiries for hydrogen refueling stations with an equivalent value of around EUR 140 million. In response to this inquiry, Wolftank has so far prepared offers with a value of around EUR 20 million.

However, there are still only a few contracted orders for hydrogen refueling stations. At the beginning of 2022, 52% of the order backlog was for Environmental Services, 15% for Industrial Coatings, 26% for LNG refueling stations and 3% for hydrogen refueling stations.

Our estimates - consolidation and catch-up effects in 2022; attractive growth opportunities in subsequent years

Hydrogen: In the Hydrogen segment, the company should be able to significantly increase its sales in the coming years and report disproportionate growth rates compared with Group sales. We expect demand for hydrogen infrastructure to increase. The cooperations with Molgas, Q8 and SNAM alone should, in our estimation, lead to the construction of 3 hydrogen refueling stations per year by 2024. We expect other refueling station orders from the municipal vehicle sector and company refueling facilities. We have not included potential revenues from the cooperation with SFC. For the TIM contract that is expected to be tendered soon and for which Wolftank wants to pitch together with SFC. About 3,500 control centers would have to be converted from diesel gensets to hydrogen fuel cell systems in the next 5-10 years with a revenue potential of about 50 to 100,000 EUR per system of which about 40% would be accounted for by Wolftank.

LNG: In 2022, sales in the LNG segment should increase by approximately EUR 9 m, mainly due to the first-time consolidation of parts of Mares Srl (Mares generat-

ed sales of EUR 20 m with these services last year). At the same time, however, projects are likely to be postponed due to the uncertainties surrounding the issues of gas supply and the price explosion for gas as a fuel. In our opinion, demand for refueling stations should return to normal next year as the gas supply situation becomes more transparent and alternatives to Russian gas are gradually developed. Under the cooperation with Q8, we estimate that around 10 LNG refueling stations should be built by Wolftank by 2024. With Molgas, 8 LNG refueling stations could be added by 2024. In the medium term, we expect growth of around 3% p.a.

Biogas: Wolftank wants to produce green hydrogen from bio-hydrocarbons by steam reforming as well as electrolysis. Wolftank also wants to produce Bio LNG by liquefaction of biomethane. Wolftank aims at an output of about 2000 kg H2/ day. We assume a sequential ramp-up of production to this level from 2023 to 2026.

Environmental Services: This area should benefit in 2022 from the consolidation of the remaining part of Mares Srl. amounting to approx. EUR 11 m. For the subsequent years, we expect organic growth of around 8% (CAGR 2022-2027), which is roughly in line with the market growth of the sector. Here, too, the Q8 cooperation should also have a positive impact in the longer term; for example, the closure of 10 conventional tank facilities is currently being planned.

Industrial coatings: These activities should be able to show relatively significant catch-up effects this year and the following year due to declining sales in the previous two years. Due to Wolftank's proven expertise in double-wall refurbishment, we expect medium-term growth to average around 5% p.a., slightly above market growth.

Our segment estimates

in EURm	2022e	2023e	%	2024e	%	2025e	%
Hydrogen							
Revenues	4	8	122	15	88	21	37
EBITDA	0.2	0.7	.	1.4	100.0	1.9	35.7
EBITDA margin (%)	*5.6*	*8.8*		*9.3*		*9.2*	
LNG							
Revenues	15	18	23	19	3	20	3
EBITDA	0.9	1.2	33	1.4	16.7	1.6	14.3
EBITDA margin (%)	*6.0*	*6.5*		*7.4*		*8.2*	
Biogas							
Revenues	0	1	.	2	100	3	50
EBITDA	0.0	0.1	.	0.2	260.0	0.3	55.6
EBITDA margin (%)	.	*5.0*		*9.0*		*9.3*	
Environmental Services							
Revenues	34	36	8	39	8	42	8
EBITDA	2.5	2.9	16	3.4	17	3.7	9
EBITDA margin (%)	*7.5*	*8.0*		*8.7*		*8.8*	
Industrial Coatings							
Revenues	18	19	5	20	5	21	5
EBITDA	1.6	1.7	6	1.8	6	1.9	6
EBITDA margin (%)	*8.9*	*9.0*		*9.1*		*9.2*	
GROUP							
Revenues	70	83	18	95	15	106	11.6
EBITDA	5.2	6.6	26.0	8.2	24.9	9.4	14.7
EBITDA margin (%)	*7.4*	*7.9*		*8.6*		*8.9*	

Sources: Wolftank Adisa, Metzler Research

Company history, management and shareholder structure

Wolf Tankschutz was founded in 1987, with its roots in the remediation and continuous monitoring of tank farms and the cleaning and decontamination of contaminated soil and groundwater.

In 2014, a management buyout and the acquisition of the Swiss specialty resins producer ADISA AG took place.

This was followed by acquisitions in the refurbishment sector in Italy (2016), Spain and Germany (2018) and the purchase of 33% of the Austrian hydrogen refueling equipment manufacturer EDC in 2021.

Wolftank is divided into five business units, which are managed from the headquarters in Innsbruck/Austria.

Through subsidiaries in eight countries on three continents, Wolftank provides services to customers in over 20 countries. Since 2019, the Wolftank Group is a listed company.

The Supervisory Board

Markus Wenner, Chairman

After studying law and working as a lawyer at Clifford Chance and as an investment manager at GSM Industries, Markus Wenner became Managing Partner of the Munich-based consulting firm GCI in 1999.

Dr. Andreas von Aufschnaiter, Vice Chairman

After studying at the University of Innsbruck, Dr. Aufschneiter entered professional life as a consultant with Arthur Andersen in Vienna. In 1991, he joined the technology company MS Industrie and is now its CEO.

The Management Board

Dr. Peter Werth, CEO:

After completing his engineering studies, doctorate and MBA, Dr. Werth took on leading positions at the Stuttgart-based drive technology specialist Hofer AG. In 2007, he joined the Executive Board of Wolftank AG, where he became Chairman in 2014.

Dr. Matteo Ciarapica, COO

Matteo Ciarapica has been heading the operating business as Group COO together with Peter Werth since 2022. His additional functions include managing the Italian subsidiary, which he has headed since 2020 when he joined as CEO. He previously held senior sales and business development positions with refueling stations manufacturer Wayne Dresser.

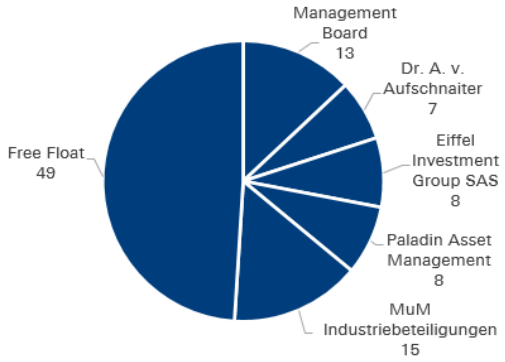
Christian Pukljak, CFO

Christian Pukljak has assumed the duties of Group CFO in 2022. Previously, Pukljak, who is a trained and practicing tax advisor, worked in Controlling at the holding company for almost 5 years.

Shareholder structure

The free float of the company amounts to 49%.

Wolftank's shareholder structure



Sources: Wolftank, Metzler Research

Valuation

Wolftank's 'traditional' tank activities already justify large parts of the current valuation; opportunities from hydrogen activities do not yet seem adequately reflected

We use absolute and relative valuation methods to calculate the fair value of Wolftank shares. We use a discounted cash flow (DCF) model as our absolute valuation method.

Our relative valuation includes a sum-of-the-parts approach

We compare the company's environmental services and industrial coatings businesses with its waste management peers GFL Environment (USA) and Befesa (Germany).

We compare Wolftank's alternative fuels (LNG) activities with Swedish SWECO (engineering consulting), US Clean Energy (design, building and operation of natural gas refueling stations) and German GEA (technology, mechanical equipment, refrigeration technology).

Wolftank's hydrogen and biogas businesses are still in their infancy, but feature the greatest growth potential. We compare the Biogas business to the renewables operators 7C Solarparken and Encavis. And the Hydrogen business to the Norwegian and French electrolyzer and hydrogen station manufacturers NEL ASA and MC-PHY Energy, and the German fuel cell specialist SFC Energy.

We derive a fair value of EUR 25.8 per share

Based on the results of our absolute and relative valuations, the fair value of Wolftank is EUR 25.8 per share.

Our share price target is derived from the mean of the two valuation models

in EUR

	Estimated fair value
Sum-of-the-parts	25.7
DCF model	25.9
Average	**25.8**

Source: Metzler Research

Our DCF model

As a first step, we value shares in Wolftank using our DCF model.

	Forecast period			Transition period					TV
DCF (EURm)	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e
Sales	70	83	95	103	113	123	134	146	147
Sales growth (%)	57	17.7	14.9	9	9	9	9	9	1
Operating margin (%)	3.3	4.9	6.1	6.0	6.0	6.0	6.0	6.0	5
EBIT	2.3	4.1	5.8	6.2	6.8	7.4	8.0	8.8	7.4
Taxes	0.2	0.7	1.1	1.5	1.7	1.8	2.0	2.2	1.8
Tax rate (%)	25.0	25.0	25.0	25	25	25	25	25	25
NOPAT	**2.1**	**3.4**	**4.7**	**4.6**	**5.1**	**5.5**	**6.0**	**6.6**	**5.5**
Depreciation & Amortisation	2.9	2.5	2.4	2.6	2.9	3.1	3.4	3.7	2.5
Operating cash flow to EV	**5.0**	**5.9**	**7.1**	**7.3**	**7.9**	**8.7**	**9.4**	**10.3**	**8.0**
Capital expenditure	1.2	1.5	1.7	1.5	1.7	1.8	2.0	2.2	1.5
Free cash flow	**3.8**	**4.4**	**5.4**	**5.7**	**6.3**	**6.8**	**7.4**	**8.1**	**6.6**
Discounted free cash flow	3.7	4.1	4.7	4.8	4.9	5.1	5.2	5.4	

Sum of DCF	38
Terminal value	92
Enterprise value	130
Net Debt (incl. pension provisions)	14
Minorities	2
Equity value	**113**
Number of shares (m)	4.4
Value per share	**25.9**

Our assumptions	
Sales growth (%), TV year	1.0
Operating margin (%), TV year	5
Tax rate (%), years 3-7	25
Beta	1.1
LT debt interest rate (%)	5
Risk Free Rate (%)	1
Market Risk Premium (%)	6

Source: Metzler Research

The DCF model is very sensitive to changes in the variables applied, in particular to the terminal growth rate and long-term EBIT margin.

Sensitivity analysis of estimated fair value to terminal sales growth and long-term EBIT margin

	Terminal sales growth rate (in %)						
Long-term EBIT margin (in %)	0.00	0.25	0.50	1.00	1.25	1.50	1.75
3.00	16.1	16.7	17.3	18.8	19.7	20.7	21.8
4.00	18.9	19.7	20.5	22.4	23.5	24.7	26.1
5.00	21.8	22.7	23.6	**25.9**	27.2	28.7	30.4
6.00	24.6	25.7	26.8	29.4	31.0	32.7	34.7
7.00	27.5	28.6	29.9	33.0	34.7	36.7	39.0
8.00	30.3	31.6	33.1	36.5	38.5	40.7	43.2

Source: Metzler Research

Our sum-of-the-parts model

For our relative valuation, we compare Wolftank to its peer groups on the basis of enterprise value (EV/EBITDA 2024e). Except for the hydrogen business. Here we apply an EV/sales multiplier.

The Environmental Services peers trade at 7x EV/EBITDA 2024e on average, the Engineering peers trade at 8.5x and the Renewables peers at 11.7x.

The Hydrogen peers are currently trading at 4.5x EV/sales 2024e.

Wolftank is trading at 9.2x EV/EBITDA 2024e and at 0.8x EV/Sales 2024e.

Sum-of-the-parts valuation reveals upside

Environmental services and industrial coatings	EBITDA 2024e (in EURm)	Peers	Bloomberg Ric	Share price 02.09.2022 (in local currency)	EV/EBITDA 2024e peers	Fair EV (in EURm)
		Befesa	BFSA GY	39	5.9	
		GFL Environmental Inc.	GFL US	29	8.2	
	5.2				7.0	36.6
LNG	**EBITDA** 2024e (in EURm)	**Peers**	Bloomberg Ric	Share price 02.09.2022 (in local currency)	EV/EBITDA 2024e peers	
		SWECO	SWECB SS	99	9.5	
		Clean Energy Fuels Corp.	CLNE US	6	9.0	
		GEA	G1A GY	33	7.1	
	1.4				8.5	*12.0*
Biogas	**EBITDA** 2024e (in EURm)	**Peers**	Bloomberg Ric	Share price 02.09.2022 (in local currency)	EV/EBITDA 2024e peers	
		7C Solarparken	HRPK GY	5	9.9	
		Encavis	ECV GY	21	13.4	
	0.2				11.7	*2.1*
Hydrogen	**Sales** 2024e (in EURm)	**Peers**	Bloomberg Ric	Share price 02.09.2022 (in local currency)	EV/Sales 2024e peers	
		NEL ASA	NEL NO	14	7.8	
		MCPHY Energy	MCPHY FP	12	3.8	
		SFC Energy	F3C GY	21	1.9	
	15.0				4.5	*67.2*
TOTAL fair EV (in EURm)						**118**
Net debt 2024e (in EUR m)						3
Minorities (in EURm)						2
Fair Mcap (in EURm)						112
Fair value per share (in EUR)						**25.7**

Source: Metzler Research

Based on our sum-of-the-parts model, we calculate a fair value per Wolftank share of EUR 25.7.

Balance sheet

(in EUR m)	2019	%	2020	%	2021	%	2022e	%	2023e	%	2024e	%
Assets	44	7.8	51	15.2	62	21.1	66	6.5	64	-3.5	61	-3.9
Fixed assets	**12**	**1.6**	**17**	**45.6**	**20**	**20.1**	**22**	**7.1**	**22**	**2.3**	**22**	**1.4**
Intangible fixed assets	5	-3.4	7	57.8	9	23.2	10	10.9	10	5.1	10	1.0
Goodwill	3	0.4	5	76.6	7	31.2	8	13.0	8	6.3	8	0.0
Other intangible assets	2	-10.1	2	20.4	2	-0.2	2	2.9	2	0.0	2	5.3
Tangible assets	6	-0.1	9	36.8	11	22.9	11	3.6	11	0.0	11	1.8
Technical plant and equipment	2	-26.0	4	117.2	4	4.2	4	3.7	4	0.0	4	2.3
Financial assets	1	101.7	1	44.8	1	-27.1	1	11.5	1	0.0	1	0.0
Other financial assets	1	251.0	1	55.6	1	-31.3	1	9.3	1	0.0	1	0.0
Current assets	**32**	**11.7**	**32**	**0.4**	**40**	**22.9**	**43**	**7.0**	**40**	**-6.6**	**37**	**-7.0**
Inventories	6	10.9	5	-11.0	6	3.8	6	0.8	6	-3.5	6	3.6
Receivables and other assets	22	9.9	24	8.4	27	12.1	30	10.5	26	-10.2	24	-11.3
Cash and cash items	4	22.5	3	-25.6	7	139.8	7	-1.6	8	5.5	8	0.0
Deferred taxes	0	-44.5	2	293.7	2	-2.7	2	-11.8	2	0.0	2	0.0
Shareholders' equity and liabilities	44	7.7	51	15.3	62	21.0	66	6.5	63	-3.5	61	-3.9
Shareholders' equity	**8**	**164.1**	**8**	**-7.7**	**16**	**115.2**	**16**	**0.5**	**17**	**3.1**	**18**	**8.9**
Subscribed capital	1	13.2	1	2.7	4	264.2	4	0.0	4	0.0	4	0.0
Reserves	7	210.9	5	-32.1	10	105.9	10	0.0	10	5.3	12	15.0
Minority interests	0	240.7	2	817.4	2	35.3	2	3.8	2	0.0	2	0.0
Outside capital	**36**	**-4.9**	**43**	**18.8**	**45**	**5.2**	**49**	**9.2**	**46**	**-5.7**	**42**	**-8.7**
Liabilities	35	-3.3	41	18.1	43	5.1	47	9.7	44	-6.1	40	-9.0
Financial debt	16	0.8	16	1.7	13	-18.8	17	31.0	14	-17.2	10	-28.6
Accounts payable, trade	15	-10.1	14	-3.6	20	37.0	20	0.9	20	-2.5	20	0.0
Other liabilities	4	10.0	11	156.5	11	-2.5	10	-0.1	11	4.8	11	0.0
Deferred taxes liabilities	0	-14.6	1	342.2	1	-17.5	0	-31.9	0	0.0	0	0.0
Balance sheet total	44	7.8	51	15.2	62	21.1	66	6.5	64	-3.5	61	-3.9

Sources: Bloomberg, Metzler Research

Profit & loss account

(in EUR m)	2019	%	2020	%	2021	%	2022e	%	2023e	%	2024e	%
Sales	52	16.3	35	-32.4	45	27.4	70	57.1	82	17.7	95	14.9
Change in finished goods and work in progress	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Own work capitalised	-2	n.m.	-1	66.2	1	286.1	0	-100.0	0	n.a.	0	n.a.
Total output	**50**	**12.5**	**34**	**-31.2**	**46**	**33.3**	**70**	**53.0**	**82**	**17.7**	**95**	**14.9**
Other operating income	1	-52.5	1	65.9	1	19.5	0	-100.0	0	n.a.	0	n.a.
Operating expenses	49	11.7	37	-24.4	48	30.0	68	39.9	78	15.7	89	13.5
Cost of materials	35	-1.1	24	-30.8	30	23.5	48	59.7	58	19.4	66	14.9
Personnel expenses	6	37.2	7	10.6	8	10.4	10	32.7	12	15.2	14	15.7
Depreciation and amortization	3	91.3	2	-36.7	3	36.8	3	2.0	2	-13.8	2	-4.0
Write-downs on intang. fixed assets and tang. assets	0	n.a.	0	n.a.	0	n.a.	0	n.a.	0	n.a.	0	n.a.
Other operating expenses	4	110.7	4	-14.8	8	110.1	6	-17.8	6	1.6	6	3.2
EBIT	1	-20.5	-2	-236.5	-1	25.4	2	271.5	4	76.1	6	42.7
Financial result	-1	-3.0	-1	-30.9	-1	-35.8	-1	7.9	-1	0.0	-1	0.0
Income from investments	0	-62.5	0	-38.9	0	18.2	0	976.9	0	0.0	0	0.0
Interest income (net)	-1	1.0	-1	1.1	-1	-47.2	-1	-0.9	-1	0.0	-1	0.0
Result of ordinary activities	**1**	**-41.1**	**-3**	**-648.9**	**-3**	**2.9**	**1**	**135.8**	**3**	**176.8**	**4**	**63.1**
EBT	1	-41.1	-3	-648.9	-3	2.9	1	135.8	3	176.8	4	63.1
Taxes on income	0	-3.4	-1	-218.5	0	127.7	0	49.8	1	205.9	1	66.5
Tax rate (%)	83.5	64.1	18.0	-78.4	-5.1	-128.5	21.5	518.0	23.7	10.5	24.2	2.1
Net income	0	-80.2	-2	n.m.	-3	-24.5	1	121.9	2	205.9	3	66.5
Minority interests	0	157.8	-0	-191.5	0	142.4	0	308.2	0	5.0	0	4.8
Minority rate (%)	147.7	392.4	5.0	-96.6	-1.7	-134.0	31.4	n.m.	10.8	-65.7	6.8	-37.1
Net Income after minorities	-0	-106.3	-2	n.m.	-3	-33.3	0	114.8	2	297.7	3	74.0
Unappropriated consolidated net income	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Adjustment calculation												
Net Income after minorities	-0	-106.3	-2	n.m.	-3	-33.3	0	114.8	2	297.7	3	74.0
Adjustments of net income	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Adjustment rate (%)	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.
Adj. net income after minorities	-0	-106.3	-2	n.m.	-3	-33.3	0	114.8	2	297.7	3	74.0
Number of shares outstanding	1	0.0	1	2.7	4	264.3	4	0.0	4	0.0	4	0.0
EPS (EUR)	-0.03	-106.3	-1.84	n.m.	-0.67	63.4	0.10	114.8	0.40	297.7	0.69	74.0
EPS adj. (EUR)	-0.03	-106.3	-1.84	n.m.	-0.67	63.4	0.10	114.8	0.40	297.7	0.69	74.0

Sources: Bloomberg, Metzler Research

Cash flow/ratios/valuation

	2019	%	2020	%	2021	%	2022e	%	2023e	%	2024e	%
Cash Flow/ Net Debt (in EUR m)												
Gross Cash Flow	-1	-157.9	-0	94.7	5	n.m.	4	-26.7	4	25.2	6	26.4
Increase in working capital	0	n.a.	0	n.a.	0	n.a.	5	n.a.	-2	-140.0	-2	0.0
Capital expenditures	2	n.a.	1	n.a.	2	n.a.	1	n.a.	2	n.a.	2	n.a.
D+A/Capex (%)	177.5	n.a.	148.5	n.a.	123.7	n.a.	241.7	n.a.	166.7	n.a.	141.2	n.a.
Free cash flow (Metzler definition)	-3	-379.0	-1	51.2	3	277.7	-3	-200.7	5	291.0	6	19.8
Free cash flow yield (%)	n.a.	n.a.	-13.8	n.a.	3.3	n.a.	-3.6	n.a.	7.0	n.a.	8.3	n.a.
Dividend paid	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Free cash flow (post dividend)	2	-32.1	-5	-382.4	11	321.9	-3	-124.7	5	291.0	6	19.8
Net Debt incl. Provisions	14	-4.0	20	43.7	11	-42.4	14	22.9	9	-35.6	3	-66.3
Gearing (%)	168.8	n.a.	262.9	n.a.	70.4	n.a.	86.1	n.a.	53.8	n.a.	16.7	n.a.
Net debt/EBITDA	3.0	n.a.	70.6	n.a.	7.6	n.a.	2.7	n.a.	1.4	n.a.	0.4	n.a.
Ratios (in %)												
Liquidity												
Quick ratio	246.3	n.a.	121.2	n.a.	145.6	n.a.	160.4	n.a.	152.4	n.a.	139.1	n.a.
Current ratio	304.0	n.a.	145.7	n.a.	169.7	n.a.	185.2	n.a.	176.9	n.a.	164.4	n.a.
Pay-out ratio	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.
Balance sheet structure												
Equity/total assets	18.4	n.a.	14.7	n.a.	26.2	n.a.	24.7	n.a.	26.4	n.a.	30.0	n.a.
Equity to fixed assets	68.7	n.a.	34.5	n.a.	68.5	n.a.	64.0	n.a.	64.8	n.a.	70.6	n.a.
Long-term capital to total assets	32.2	n.a.	28.4	n.a.	38.6	n.a.	42.8	n.a.	40.6	n.a.	38.2	n.a.
Long-term capital to fixed assets and inventories	80.6	n.a.	64.9	n.a.	92.0	n.a.	102.8	n.a.	93.1	n.a.	82.6	n.a.
Liabilities to equity (leverage)	427.2	n.a.	546.6	n.a.	266.9	n.a.	291.2	n.a.	265.2	n.a.	221.6	n.a.
Profitability/efficiency												
Working capital to sales	20.5	n.a.	37.0	n.a.	21.8	n.a.	12.4	n.a.	10.9	n.a.	7.6	n.a.
EBIT margin	2.5	n.a.	-5.1	n.a.	-3.0	n.a.	3.3	n.a.	4.9	n.a.	6.1	n.a.
EBITDA margin	8.9	n.a.	0.8	n.a.	3.4	n.a.	7.4	n.a.	7.9	n.a.	8.6	n.a.
Net ROS	-0.1	n.a.	-6.3	n.a.	-6.6	n.a.	0.6	n.a.	2.1	n.a.	3.2	n.a.
Cash flow margin	-2.2	n.a.	-0.2	n.a.	11.0	n.a.	5.1	n.a.	5.4	n.a.	6.0	n.a.
ROE (after Tax/Min.)	-0.7	n.a.	-32.2	n.a.	-30.0	n.a.	3.2	n.a.	12.3	n.a.	20.0	n.a.
Productivity												
Average number of employees ('000)	0.2	7.4	0.2	4.7	0.2	18.6	0.3	20.8	0.3	6.0	0.3	5.2
Sales per employee (EUR '000)	284.0	8.4	183.3	-35.4	197.0	7.5	256.3	30.1	284.5	11.0	310.8	9.3
EBIT per employee (EUR '000)	7.2	-25.9	-9.4	-230.4	-5.9	37.1	8.4	242.0	14.0	66.1	19.0	35.7
Valuation												
PER adj.	n.a.	n.a.	-4.8	n.a.	-26.8	n.a.	163.7	n.a.	41.2	n.a.	23.7	n.a.
PBV	0.0	n.a.	1.8	n.a.	5.7	n.a.	5.2	n.a.	5.0	n.a.	4.5	n.a.
EV/EBITDA	3.0	n.a.	108.4	n.a.	60.4	n.a.	16.5	n.a.	12.3	n.a.	9.1	n.a.
EV/EBIT	10.4	n.a.	-16.9	n.a.	-67.6	n.a.	37.2	n.a.	19.9	n.a.	12.9	n.a.
Dividend yield (%)	n.a.	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.	0.0	n.a.

Sources: Bloomberg, Metzler Research

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Recommendation history

Recommendations for each financial instrument or issuer - mentioned in this document - published by Metzler in the past twelve months

Date of dissemination	Metzler recommendation * Previous	Current	Current price **	Price target *	Author ***
Issuer/Financial Instrument (ISIN): GEA Group (DE0006602006)					
10.08.2022	Buy	Buy	35.72 EUR	47.00 EUR	Bauer, Stephan
11.07.2022	Buy	Buy	33.69 EUR	47.00 EUR	Bauer, Stephan
06.05.2022	Buy	Buy	36.49 EUR	47.00 EUR	Bauer, Stephan
12.04.2022	Buy	Buy	36.54 EUR	47.00 EUR	Bauer, Stephan
14.03.2022	Buy	Buy	36.35 EUR	47.00 EUR	Bauer, Stephan
19.11.2021	Buy	Buy	44.88 EUR	53.00 EUR	Bauer, Stephan
05.11.2021	Buy	Buy	43.61 EUR	46.00 EUR	Bauer, Stephan
Issuer/Financial Instrument (ISIN): SFC Energy (DE0007568578)					
20.07.2022	Buy	Buy	20.35 EUR	34.00 EUR	Neuberger, Alexander
28.03.2022	Buy	Buy	26.75 EUR	36.00 EUR	Neuberger, Alexander
Issuer/Financial Instrument (ISIN): Traton (DE000TRAT0N7)					
24.01.2022	Buy	Buy	22.44 EUR	33.00 EUR	Pieper, Jürgen
Issuer/Financial Instrument (ISIN): Volkswagen (DE0007664039)					
14.03.2022	Buy	Buy	143.70 EUR	320.00 EUR	Pieper, Jürgen
28.02.2022	Buy	Buy	185.32 EUR	320.00 EUR	Pieper, Jürgen
01.02.2022	Buy	Buy	183.32 EUR	320.00 EUR	Pieper, Jürgen
03.12.2021	Buy	Buy	166.56 EUR	320.00 EUR	Pieper, Jürgen
Issuer/Financial Instrument (ISIN): Volkswagen (XS1865186321)					
25.11.2021	Buy	Buy			Rack, Juliane
Issuer/Financial Instrument (ISIN): Volkswagen (XS1865186677)					
22.06.2022	Buy	Buy			Rack, Juliane
25.11.2021	Buy	Buy			Rack, Juliane
Issuer/Financial Instrument (ISIN): Volkswagen (XS1910948162)					
22.06.2022	Buy	Buy			Rack, Juliane
25.11.2021	n.a.	Buy			Rack, Juliane
Issuer/Financial Instrument (ISIN): Volkswagen (XS1910948329)					
25.11.2021	Buy	Buy			Rack, Juliane
Issuer/Financial Instrument (ISIN): Volkswagen (XS1910948675)					
22.06.2022	Buy	Buy			Rack, Juliane
Issuer/Financial Instrument (ISIN): Volkswagen (XS2234567233)					
22.06.2022	Buy	Buy			Rack, Juliane
25.11.2021	Buy	Buy			Rack, Juliane
Issuer/Financial Instrument (ISIN): Volkswagen (XS2234567662)					
25.11.2021	Buy	Buy			Rack, Juliane
Issuer/Financial Instrument (ISIN): Volkswagen (XS2491738352)					

Date of dissemination	Metzler recommendation * Previous	Current	Current price **	Price target *	Author ***
22.06.2022	n.a.	Buy			Rack, Juliane
Issuer/Financial Instrument (ISIN): Volkswagen (XS2491738949)					
22.06.2022	n.a.	Buy			Rack, Juliane

* Effective until the price target and/or investment recommendation is updated (FI/FX recommendations are valid solely at the time of publication)

** XETRA trading price at the close of the previous day unless stated otherwise herein

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SFC Energy

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Scope of application

This document was prepared in the Federal Republic of Germany in line with the legal provisions valid there. It may therefore be possible that this document does not comply with all provisions relating to the preparation of such documents in other countries.

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