

This supplement is part of the Consolidated Environmental Statement 2022 of Membranes and Coatings. It provides information on current changes, which is why only the sections that have changed since the Consolidated Environmental Statement are listed in this table of contents.

Updated Environmental Statement 2023

Dörken GmbH & Co. KG and Dörken Coatings GmbH & Co. KG

Table of contents

1.2.	Changes	2
1.2.1.	Organizational changes	2
3.	Environmental regulations	2
8.	Core indicators	2
8.1.	Reference value	2
8.2.	Energy efficiency	3
8.2.1.	Electrical energy	3
8.2.2.	District heating	3
8.2.3.	Natural gas	3
8.2.4.	Diesel fuel	4
8.2.5.	Total energy consumption	4
8.3.	Material efficiency	5
8.4.	Water	5
8.5.	Waste	5
8.6.	Biological diversity	7
8.7.	Emissions	8
9.	Targets / target assessment	9
9.1.	Dörken Group	9
9.1.1.	Indirect emissions	9
9.1.2.	Employee participation	10
9.2.	Dörken Coatings	10
9.2.1.	Energy efficiency	10
9.2.2.	Material efficiency	10
9.2.3.	Specific waste	11
9.2.4.	Emissions (VOC)	11
9.2.5.	Employee participation	11
9.3.	Dörken Membranes	12
9.3.1.	Energy efficiency:	12
9.3.2.	Material efficiency	12
9.3.3.	Waste reduction:	13
9.3.4.	Specific waste	13
10.	Declaration of validity	15

1.2. Changes

1.2.1. Organizational changes

Since February 2023, Dörken Coatings R&D has had a microbiological laboratory classified in risk group 2.

In addition to the previous quality tests, this enables targeted support in the development of biocide-free pastes.

3. Environmental regulations

Within the DörkenGroup, the Legal Compliance module in the Quentic software environment is used to monitor changes to environmental regulations and to track the resulting measures. The register of legal regulations is maintained by lawyers from the service company EcoCompliance.

Various new classifications of chemicals from the German Chemicals Act (ChemG) are monitored by R&D and taken into account accordingly in developments. (e.g. cumene, melamine)

The implementation of measures is monitored at regular review meetings. If deviations are identified in Quentic as part of the review of legal obligations, countermeasures are initiated immediately and the authorities are involved if necessary. This ensures the legally compliant operation of the facilities.

8. Core indicators

8.1. Reference value

The reference value for the Herdecke and Hagen sites for the energy efficiency of electricity, overall energy efficiency, material efficiency, waste, biodiversity and emissions is the production quantity.

Reference value		Herdecke	Hagen
Quantity produced [t]	2020	24,227	12,522
	2021	25,428	12,139
	2022	20,545	11,361

Table 1: Reference values – quantity produced

The reference value for energy for heating purposes is the built-up area [m²] of the respective locations.

As of 2020, the built-up area in Herdecke will be increased by the Dörken Coatings Herdecke administration building.

From 2021, the built-up area in Hagen will increase due to production and the Dörken Membranes competence center.

District heating at the Herdecke site and natural gas energy at the Hagen site will be valued using this reference value.

Reference value		Herdecke	Hagen
Built-up area [m ²]	2020	32,600	15,350
	2021	32,600	22,870
	2022	32,600	22,870

Table 2: Reference values – built-up area

8.2. Energy efficiency

8.2.1. Electrical energy

Electricity		Herdecke	Hagen
Consumption [MWh]	2020	22,908	12,918
	2021	23,625	14,647
	2022	21,819	16,081
Energy efficiency [MWh/t]	2020	0.95	1.03
	2021	0.93	1.06
	2022	1.06	1.42

Table 3: Energy efficiency of electricity

8.2.2. District heating

District heating is used for heating purposes at the Herdecke site.

District heating		Herdecke
Consumption [MWh]	2020	8,579
	2021	9,078
	2022	7,668
Climate-adjusted ratio District heating consumption to built-up area [MWh/m ²] (GTZ 20/15 IWU)	2020	0.23
	2021	0.27
	2022	0.20

Table 4: Ratio of district heating consumption to built-up area

8.2.3. Natural gas

Natural gas is used at the Herdecke site within production exclusively at Dörken Membranes in the coating plant.

Natural gas		Herdecke
Consumption [MWh]	2020	4,079
	2021	4,259
	2022	3,968
Energy efficiency [MWh/t]	2020	0.17
	2021	0.17
	2022	0.19

Table 5: Energy efficiency of natural gas (production)

The Hagen site uses this energy for heating purposes.

A climate-adjusted ratio of natural gas consumption to built-up area is used to evaluate natural gas consumption.

Natural gas	Hagen	
Consumption [MWh]	2020	2,218
	2021	2,182
	2022	2,164
Climate-adjusted ratio Consumption of natural gas to built-up area [MWh/m ²] (GTZ 20/15 IWU)	2020	0.12
	2021	0.09
	2022	0.08

Table 6: Ratio of natural gas consumption to built-up area (heating purposes)

8.2.4. Diesel fuel

Diesel fuel is used at the Herdecke site for internal logistics (industrial trucks). The quantities purchased per year are used for the evaluation.

Diesel	Herdecke	
Consumption [MWh]	2020	358
	2021	240
	2022	239
Energy efficiency [MWh/t]	2020	0.015
	2021	0.009
	2022	0.012

Table 7: Energy efficiency of diesel

8.2.5. Total energy consumption

The company has been using green electricity at both sites since March 2022

Total energy		Herdecke	Hagen
Consumption [MWh]	2020	35,925	15,136
	2021	37,203	16,828
	2022	33,983	18,245
Share of renewable energy [MWh]	2020	13,126	7,402
	2021	12,545	7,777
	2022	19,948 ¹	14,844 ¹

Table 8: Total energy consumption

¹ Share of renewable energy for January and February evaluated with data from the fuel mix disclosure of the previous year

Energy efficiency in relation to quantity produced		Herdecke	Hagen
Energy efficiency [MWh/t]	2020	1.48	1.21
	2021	1.46	1.39
	2022	1.65	1.61
Energy efficiency [MWh/t] of renewable energy	2020	0.54	0.59
	2021	0.49	0.64
	2022	0.97	1.31

Table 9: Energy efficiency

Total energy		Herdecke	Hagen
Share of energy from renewable energy sources in the annual total consumption (electricity and heat)	2020	42%	49%
	2021	38%	46%
	2022	60%	81%

Table 10: Share of renewable energy

8.3. Material efficiency

Material efficiency		Herdecke	Hagen
Material consumption [t]	2020	28,152	10,234
	2021	30,102	12,447
	2022	26,658	12,204
Material-efficient [t/t]	2020	1.16	0.82
	2021	1.18	1.03
	2022	1.30	1.07

Table 11: Material efficiency

8.4. Water

Water		Herdecke	Hagen
Consumption [m ³]	2020	25,365	5,219
	2021	20,010	9,844
	2022	36,060	13,620
Key figure [m ³ /t]	2020	1.05	0.42
	2021	0.79	0.81
	2022	1.76	1.20

Table 12: Water consumption according to the notification of charges

Corrected values compared to the Consolidated Environmental Statement; the data was taken from manual meter readings.

The reason for the high water consumption at the Herdecke site for 2022 is intensive cooling of the silo with EVA.

8.5. Waste

A distinction is made between hazardous and non-hazardous waste.

Non-hazardous waste includes the following types of waste:

Aqueous sludges (AVV 08 01 16 / AVV 02 02 04)

Plastics (AVV 15 01 02 / AVV 17 02 03 / AVV 20 01 39)

Wood (AVV 15 01 03)

Mixed municipal waste (AVV 20 03 01)

Paper, cardboard, cardboard packaging (AVV 20 01 01)

Metals (AVV 17 04 05 / 17 04 07)

Mixed packaging (AVV 15 01 06)

Mixed construction and demolition waste (AVV 17 01 07 / AVV 17 09 04 / AVV 17 06 04 / AVV 17 08 02)

Non-hazardous chemicals (AVV 08 01 12 / AVV 08 04 10 / AVV 12 01 17 / AVV 16 03 04 / AVV 16 03 06 / AVV 16 05 09)

Hazardous waste mainly includes the following:

Components (packaging) with hazardous residues (AVV 15 01 10 / AVV 15 01 11 / AVV 15 02 02)

Paint and varnish waste (AVV 08 01 11 / AVV 08 04 09 / AVV 08 01 16)

Hazardous chemicals (AVV 07 02 08 / AVV 11 01 11 / AVV 12 01 12 / AVV 16 05 04 / AVV 16 05 06 / AVV 16 05 07)

Solvents and solvent mixtures (AVV 14 06 03 / AVV 20 01 13),

Machine / gear oil (AVV 13 02 05)

Herdecke site

Hazardous waste

Type of waste	Year	2020	2021	2022
Packaging with hazardous residues	[t]	150.8	256.8	265.7
Paint and varnish waste	[t]	162.3	138.2	115.8
Chemicals	[t]	9.2	9.6	5.0
Electronic waste	[t]	3.2	4.1	5.6
Solvents and solvent mixtures	[t]	0.1	1.0	1.1
Machine/gear oil [t]	[t]	1.0	1.0	0
Total quantity [t]	[t]	327	411	395
Key figure: Proportion of hazardous waste to quantity produced	[kg/t]	13	16	19

Table 13: Hazardous waste – Herdecke

Non-hazardous waste

Type of waste	Year	2020	2021	2022
Plastics	[t]	2,032.9 ⁴	2,614.7 ⁴	2,956.4 ⁴
Aqueous sludge	[t]	615.3	775.6	700.8
Wood	[t]	161.8	248.8	253.6
Mixed municipal waste	[t]	97.6	113.3	253.6
Paper, cardboard, cardboard packaging	[t]	83.6	104.8	79.5
Metals	[t]	28.3	45.7	32.8
Mixed packaging	[t]	22.5	39.9	19.7
Chemicals	[t]	12.0	27.9	57.2
Mixed construction and demolition waste	[t]	9.7	29.9	8.1
Total quantity [t]	[t]	3,064	4,000	4,217
Key figure: Proportion of non-hazardous waste to quantity produced	[kg/t]	126.5	157.3	205.2
Separate collection rate [%]		94.4	95.2	96.3

Table 14: Non-hazardous waste – Herdecke

⁴The Consolidated Environmental Statement did not include the recycling of plastics that was not carried out via AHE.

Year	2020	2021	2022	
Total quantity of total waste	[t]	3,390	4,411	4,612
Key figure: Proportion of total waste to quantity produced	[kg/t]	140	173	224

Table 15: Total waste – Herdecke

Hagen site

Hazardous waste

Type of waste	Year	2020	2021	2022
Machine/gear oil	[t]	2.0	3.1	6.3
Electronic waste	[t]	0.0	0.4	1.6
Packaging with residues	[t]	0.1	0.2	0.1
Paint and varnish waste	[t]	0.0	3.3	6.6
Total quantity	[t]	2.08	6.99	14.62
Key figure: Proportion of hazardous waste to quantity produced	[kg/t]	0.17	0.58	1.29

Table 16: Hazardous waste – Hagen

Non-hazardous waste

Type of waste	Year	2020	2021	2022
Plastics	[t]	543.0	711.9	1,663.5
Mixed municipal waste	[t]	53.5	58.9	58.9
Wood	[t]	31.3	51.5	67.8
Paper, cardboard, cardboard packaging	[t]	70.2	48.8	54.6
Aqueous sludge	[t]	0.0	3.0	0.0
Metals	[t]	1.1	2.7	5.4
Mixed construction and demolition waste	[t]	2.6	1.2	8.4
Biodegradable	[t]	2.0	0.0	8.4
Mixed packaging	[t]	0.0	0.0	1.4
Total quantity [t]	[t]	704	878	1,868
Key figure: Proportion of non-hazardous waste to quantity produced	[kg/t]	126.5	157.3	205.2
Separate collection rate	[%]	91.1	93.3	96.8

Table 17: Non-hazardous waste – Hagen

Correction of the entire table due to transmission error in the Consolidated Environmental Statement

Year	2020	2021	2022	
Total quantity of total waste	[t]	706	885	1,883
Key figure: Proportion of total waste to quantity produced	[kg/t]	56.4	72.9	165.7

Table 18: Total waste – Hagen

8.6. Biological diversity

Land usage – Herdecke	2020–2022
Total area	m² 75,000
Sealed area	m ² 69,280
of which built on	m ² 31,000
Near-natural area: green facade and green roof	m ² 6,120
Near-natural area off the site	m ² 3,500
Proportion of sealed area	% 92

Table 19: Land usage – Herdecke

Key figure [m ² /t]	Total area	Sealed area	Built-up area	Near-natural on site	Near-natural off site
	2020	3.1	2.9	1.3	0.3
2021	2.9	2.7	1.3	0.2	0.1
2022	3.7	3.4	1.6	0.3	0.2

Table 20: Key figure – land usage – Herdecke

Hagen site

Land usage – Hagen		2020–2022	
Total area		m ²	78,200
Sealed area		m ²	50,900
of which built on until 2020		m ²	15,350
of which built on as of 2021		m ²	22,870
Near-natural area: green facade and green roof		m ²	27,300
Near-natural area off the site		m ²	0
Proportion of sealed area		%	65

Table 21: Land usage – Hagen

Key figure [m ² /t]	Total area	Sealed area	Built-up area	Near-natural on site
	2020	6.3	4.1	1.2
2021	6.4	4.2	1.9	2.3
2022	6.9	4.5	2.0	2.4

Table 22: Key figure – land usage – Hagen

8.7. Emissions

The total annual greenhouse gas emissions consist of the CO₂ emissions from the fossil fuels natural gas and diesel consumed at the sites.

At the **Herdecke** site, natural gas is required for production purposes and diesel for intralogistics (fluorocarriers).

At the **Hagen** site, natural gas is used for heating purposes.

In addition, the HFCs refilled in the refrigeration systems at both sites are taken into account.

CH₄, N₂O, PFC, NF₃ and SF₆ are not used or released at the sites.

The total emissions are converted into tons of CO₂ equivalent. For the key figure, the total emission of CO₂ equivalent in tons is compared to the total mass of finished goods produced.

Total emissions	Year	Herdecke	Hagen
CO ₂ equivalent [t]	2020	1,295	643
	2021	1,345	633
	2022	1,235	628
Key figure [t/t]	2020	0.05	0.05
	2021	0.05	0.05
	2022	0.06	0.06

Table 23: Total emissions of greenhouse gases

The total air emissions include SO₂, NO_x and PM as well as volatile organic compounds (VOC) in the paint production (Herdecke site).

The fossil fuels consumed at the sites and measurements from the exhaust air of the production areas concerned (Dörken Coatings) are used for this purpose.

The total emissions in the air are converted into tons. Emissions	Year	Herdecke	Hagen
Total emissions in the air [t]	2020	6.23	0.47
	2021	5.78	0.46
	2022	5.72	0.46
Key figure – total emissions [kg/t]	2020	0.26	0.05
	2021	0.23	0.05
	2022	0.28	0.06

Table 24: Total air emissions excluding greenhouse gases

9. Targets / target assessment

9.1. Dörken Group

The scope of the Dörken Group includes all divisions of Dörken Coatings and Dörken Membranes at the Herdecke and Hagen-Vorhalle sites. This includes the following divisions:

- Dörken Membranes
- Dörken Coating

9.1.1. Indirect emissions

Reduction of indirect emissions from electricity by 100 percent

Baseline value 2021: 4,147 t CO₂ equivalents
 Target value 2025: 0 t CO₂ equivalents

Program	Project data	Status
Change of electricity to renewable energy (electricity provider) Entire company	Costs: 50 kEUR per year as of 2021 Deadline: End of 2022 Responsible: Purchasing	realized as of March 2022. Herdecke: Jan – Feb 2022 3,990 MWh normal electricity Mar – Dec 2023 17,829 MWh green electricity Hagen: Jan – Feb 2022 2,637 MWh normal electricity Mar – Dec 2022 13,444 MWh green electricity → Emissions of 2,876 t CO₂ equivalents

9.1.2. Employee participation

Qualification measure for trainees to become energy scouts

<p>New: Participation of trainees in IHK Imitative Energy Scouts 2023 → Training through workshops on the topics of energy and resource efficiency, handling measuring devices, operational mobility management, presentation technology and profitability calculation</p>	<p>4 workshops</p>	<p>Sept. 2023 Motivate trainees End of Sept. 2023 Workshop launch Dec. 2023 Define and work on savings projects.</p>
--	--------------------	--

9.2. Dörken Coatings

9.2.1. Energy efficiency

Reducing specific energy consumption per production quantity by 5 percent.

Baseline value	2021:	456 kWh/t
Target value	2025:	433 kWh/t
Actual value	2022:	480 kWh/t

Electricity consumption has increased for 2022 due to the new Coatings administration, which also increases specific energy consumption.

The replacement of bead mill P2 in CPC Production will only have an impact as of the 2nd half of 2023.

Program	Project data	Status
Replacement of bead mill P2 CPC Production → More energy-efficient plant	Costs: 200 kEUR Deadline: June 2023 Responsible: Project Engineer	Completed
Planning of technical adjustments to water treatment for paste production → Energy savings through weekend shutdown	Costs: 10 kEUR Deadline: End of 2023 Responsible: Project Engineer	Planning

9.2.2. Material efficiency

Confirmation of material efficiency even when expanding the product portfolio.

Baseline value	2021:	1.03 t/t
Target value	2025:	1.03 t/t
Actual value	2022:	1.04 t/t

Implementation of the measures from the environmental program will not take effect until the 2nd half of 2023.

Program	Project data	Status
See program point 1 from energy efficiency; the new bead mill is also more material-efficient CPC Production	Costs: 200 kEUR Deadline: June 2023 Responsible: Project Engineer	Completed
New 20 liter bead mill in the production of pastes	Costs: 100 kEUR Deadline: End of 2023 Responsible: Project Engineer	Currently being implemented

9.2.3. Specific waste

Reduction of specific total waste by 10 percent

Baseline value	2021:	101 kg/t
Target value	2025:	90 kg/t
Actual value	2022:	115 kg/t

The increase in total waste is caused by packaging made of wood (disposable pallets). Before 2022, this waste was disposed of via membranes.

Program	Project data	Status
Supplier integration for raw materials Reduction of packaging waste CPC Production → Return and reuse of packaging	Costs: 10 kEUR Deadline: End of 2023 Responsible: Purchasing	Currently being implemented
New CPC Production filling process of zinc flake: Rinsing process – the resulting mixture of solvent and zinc flake is reused. Saving of 10 tons of hazardous waste	Organizational change Date: as of January 2023 Responsible: CPC Production	

9.2.4. Emissions (VOC)

Reduction of solvent-contaminated exhaust air in CPC production by 30%

Baseline value	2021:	4.53 t C / year
Target value	2025:	3.17 t C / year
Actual value	2022	no effect as yet

Program	Project data	Status
Biological exhaust air purification system for CPC Production → Reduction of emissions through the use of a biological scrubber	Costs: 800 kEUR Deadline: End of 2023 Responsible: Project Engineer	Currently being implemented

9.2.5. Employee participation

Training of internal auditors with a focus on environmental protection / environmental management

Program	Project data	Status
Training of internal auditors with a focus on environmental protection / environmental management Seminar: 4 days total	Costs: 25 kEUR Deadline: End of 2023 Responsible: CSR	Currently being implemented 16 participants have been trained as internal auditors. An additional training day will be held in September.

9.3. Dörken Membranes

9.3.1. Energy efficiency:

The two new production lines are significantly more energy-efficient than the old plant they are intended to replace. We are currently expecting possible savings of around 3,000 MWh per year and therefore a savings potential of around 15% compared to 2019. However, these savings will only take effect in process-stable operation and after the old plant fleet has been shut down – i.e. as of 2023.

In addition to 2021, we expect the opposite trend in 2022 due to the commissioning and learning curve with the new production lines and parallel operation with the old plant fleet. The full savings potential will continue to unfold over the following years and reach its maximum in 2025.

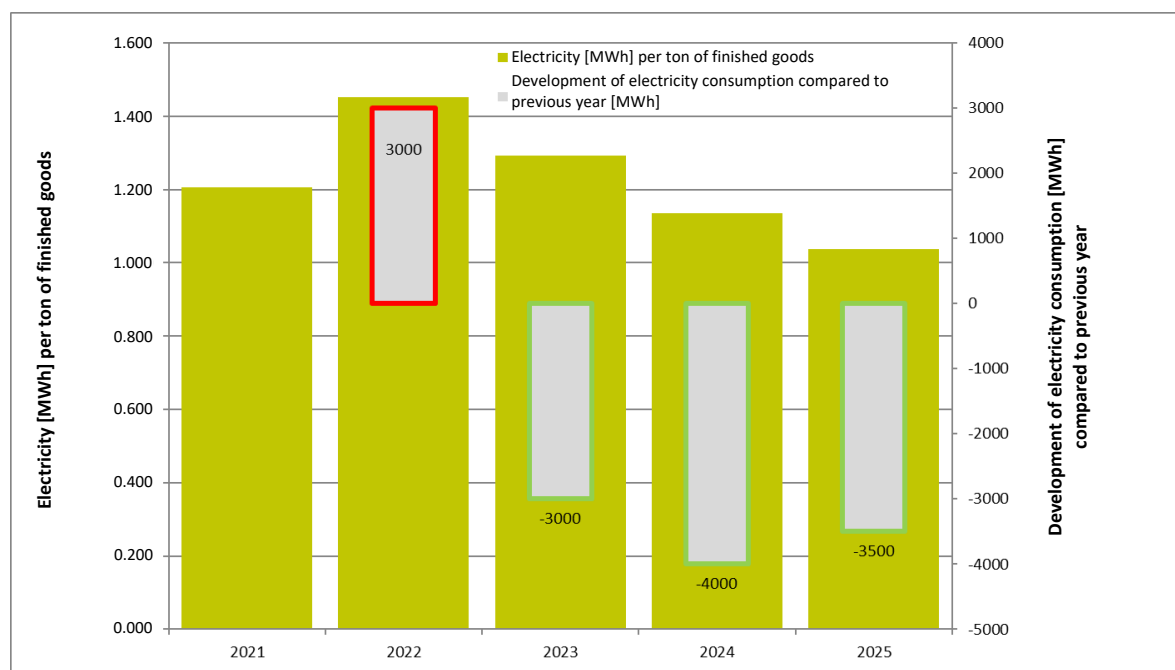


Fig. 1: Energy efficiency targets 2022-2025 Dörken Membranes

Reducing specific energy consumption per production quantity by 15 percent.

Baseline value 2021: 1.206 MWh/t
 Target value 2025: 1.037 MWh/t

Program	Project data	Status
Procurement and qualification of 2 new production lines (Higher energy efficiency; Reduced scrap quantity)	Costs: 15,600 kEUR Start: 2019 Deadline: 2023 Responsible: Lean Office	Status 2022: Systems have been procured and are currently in the qualification phase

9.3.2. Material efficiency

Confirmation of material efficiency even when expanding the product portfolio.

Baseline value 2021: 1.16 t/t
 Baseline value 2025: 1.16 t/t

Program	Project data	Status
CIP Production (various production optimization topics with a focus on material efficiency)	Costs: 105 kEUR Start: 2021 Deadline: 2022 Responsible: Lean Office	Completed: Value stable to date
Introduction of a detection system for error detection and ejection (scrap reduction)	Costs: 445 kEUR Start: 2020 Deadline: 2022 Responsible: Process Planning	Currently being implemented

9.3.3. Waste reduction:

As part of the commissioning of the two new production lines and the associated learning curve, we expect a significant increase in rejects and therefore waste in 2021 and 2022. During process-stable operation from the end of 2021 to the beginning of 2023, the scrap rates and therefore also the waste volumes will decrease significantly again. Our aim is therefore to reduce the waste volumes at the existing plants in 2023, 2024 and 2025 to such an extent that the increased waste volume in 2022 is compensated for and further reduced.

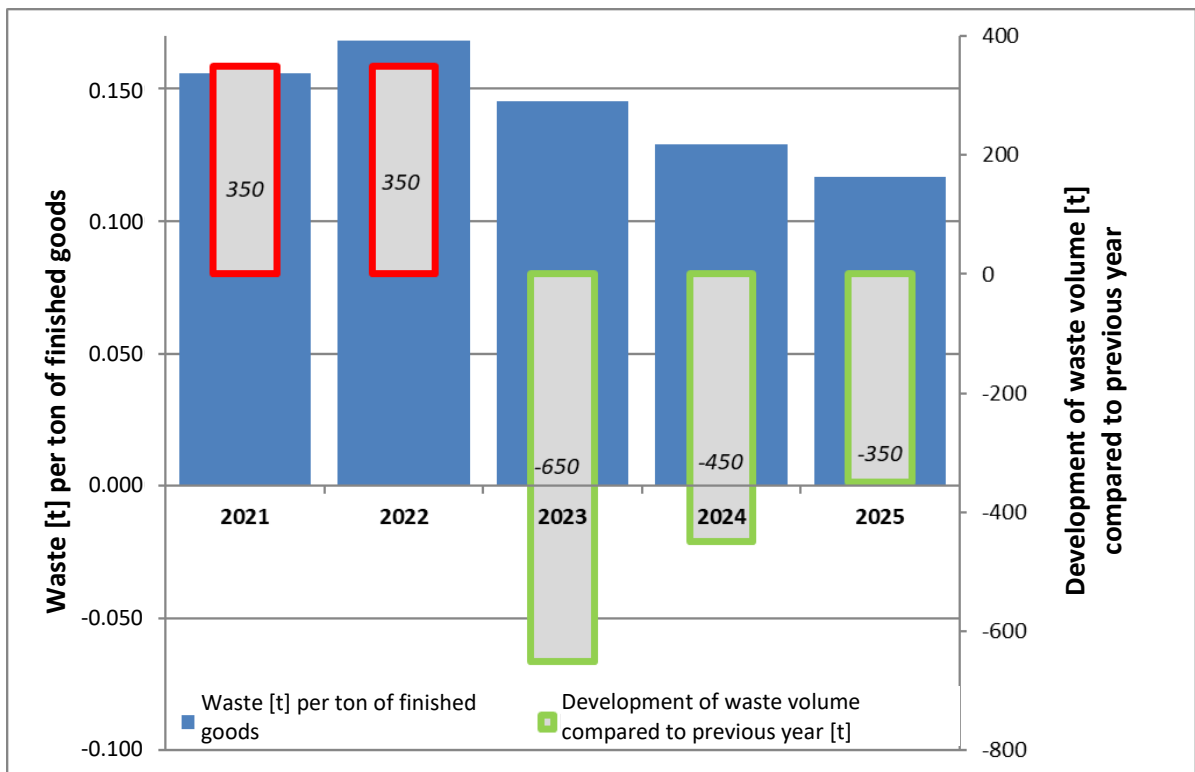


Fig. 2: Waste targets 2022-2025 Dörken Membranes

9.3.4. Specific waste

Reduction of specific total waste below the level before qualification of the new plants

Baseline value	2021:	0.156 t/t
Target value	2025:	0.117 t/t

Program	Project data	Status
Optimization of edge trim on a production plant to reduce production rejects (scrap reduction)	Costs: 32 kEUR Deadline: 2021 End of 2022 Responsible: Process Planning	Currently being implemented
Introduction of a detection system for error detection and rejection (scrap reduction)	Costs: 445 kEUR Start: 2020 Deadline: 2022 Responsible: Process Planning	Currently being implemented

10. Declaration of validity

The environmental experts listed below confirm that they have verified that the sites, as stated in this environmental statement of the organization Ewald Dörken AG with registration number DE-130-00031, meet all the requirements of Regulation (EC) No. 1221/2009 of the European Parliament and of the Council of 25 November 2009, as amended on 28 August 2017 and 19 December 2018, on the voluntary participation by organizations in a Community Eco-Management and Audit Scheme (EMAS).

Name of the environmental expert	Registration number	Approved for the sectors (NACE)	
Dr. Ulrich Hommelsheim	DE-V-0117	20.3	Manufacture of paints, varnishes, printing inks and mastics
		22.23	Manufacture of building supplies from plastics
		46.73.6	Wholesale trade services of paints and varnishes
		46.74.3	Wholesale of metal and plastic products for construction purposes
		46.75	Wholesale of chemical products
Dr. Sulzer	DE-V-0041	64.2	Associated companies
		70.1	Administration and management of companies and businesses

By signing this declaration, it is confirmed that:

- the assessment and validation have been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009 as amended by Commission Regulation (EU) 2017/1505 and (EU) 2018/2026,
- the result of the verification and validation confirms that there is no evidence of non-compliance with the applicable environmental regulations and
- the data and information in the environmental statement provide a reliable, credible and true picture of all the organization's activities.

This declaration cannot be equated with EMAS registration. EMAS registration can only be carried out by a competent body in accordance with Regulation (EC) No. 1221/2009. This declaration may not be used as a stand-alone basis for informing the public.

Berlin, 14.11.2023

the original declaration of validity is on the German version