SUSTAINABILITY REPORT

2022

KUHN INDUSTRIE HOLDING

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GENERAL

Foreword from the shareholders

Andre Kuhn

Andreas Willim

You hold in your hands the first edition of the sustainability report of our young group of companies. With this report, we would like to present to you our goals and measures with which we have embarked on this long journey to climate-neutral production, and also support our customers in achieving their own ambitious climate goals with the continuous further development of our products.

As an energy-intensive company with two production sites in Germany, our vision is to achieve climate-neutral production. With an energy demand of over 30 GWh of electricity and over 10 GWh of natural gas, this represents a great challenge and simultaneously enormous potential with a significant contribution to society. The majority of our products are used in areas that make a significant contribution to global CO_2 emissions. These are, for example, combustion engines in shipping and in power stations as well as various applications in the steel industry. Joint development projects with our customers and political commitment to sustainable emissions regulation as well as the creation of corresponding, industrial infrastructure give us the opportunity to make valuable contributions to climate neutrality far beyond our own production. This sustainability report shows our potential and describes our concrete goals and measures openly and transparently. In this way, we hope to motivate employees and involve business partners more effectively.

We continue to face tough global competition and must earn our way to climate neutrality on the market with our performance. Only if we are economically successful can we continue to make our contribution. Being a family business, we have a sustainable and generational approach as a matter of principle which will pay off in the long term. On our journey to climate neutrality, however, we must assume our economic responsibility for our employees and our customers. Therefore, progress is only ever possible step by step and by examining profitability aspects.

We have always been a technological pioneer in our industry. We set ourselves apart with our self-constructed machines and systems as well as our solutions in the field of automation and increasingly also digitalisation. Climate change is here – and people all over the world tackle the challenge of finding solutions that will secure our future. As a technological group of companies, we see great opportunity and social responsibility for us to break new ground in this area as well and to once again be a global leader in our industry.

The demand for our products continues to grow over the long term. We supply highly stressed parts and core components for machines and systems that are primarily used in power generation, environmental technology and the food industry. For example:

- Components for large engines that run on natural gas today and hydrogen derivatives tomorrow and thus represent the only solution for climate neutrality in global shipping, but can also meet the enormous global demand for energy as quickly as possible, especially in times of "dark doldrums".
- Drums made of special duplex stainless steel for decanters that clean our wastewater, are used in protein production or even cold press olive oil.
- Rotors and stators for ball mills that meet the highest demands in the production of proteins, chocolate, lacquers or LED pigments.

We will continue to meet this demand in the coming decades. To achieve this, we are investing massively in the development of solutions that save energy, replace fossil fuels, use renewable energy resources and overall reduce our CO_2 footprint from year to year. Our development company Kuhn Innovation GmbH develops know-hows that is technically sound and has been tested in practice in our production. In the future, we will increasingly offer these solutions as a service to other companies, because despite there being a huge number of consultants in this industry, we find few offering technically sound expertise and practical experience. So we are doing it ourselves here too and expanding our technical core competencies.

We, the shareholders of the Kuhn group, hope that you find this sustainability report stimulating and would be very pleased to receive both positive and constructive feedback on these topics. Together we look positively towards our future and thank our employees, partners and customers for the many valuable ideas and suggestions as well as their commitment along the way!

Radevormwald, May 2023

Code of Conduct | Group values

Jointly defined values and guidelines are the foundation of our group of companies. They form the basis and directive for our actions. We see our values as a kind of "mirror" – they are not normative, but are meant to give an impression of how we think and act. On the basis of shared values, good cooperation is of great importance to us. Historically, the idea of a company arose from the need for collaboration between people – it was only through more complex tasks that could no longer be managed alone that the "idea of a company" arose, in which people work together to perform a service for a customer.

The basis of our daily work is our management philosophy, which focuses equally on both people and results. We can only achieve top performance when everyone cooperates effectively. Trust can grow through dependable focus on our values. Ate the core, we are about being successful together as entrepreneurs. To achieve this, we have defined the following values as the core of our cooperation:

Presentation of the group

Kuhn Industrie Holding is a group of experienced companies whose core competencies lie in the areas of material development, centrifugal casting and machining technology.

With the complete value chain from development and raw casting to ready-to-install key components, the breadth of our product range sets us apart from global competition.

The group of companies has over 600 employees worldwide, has two production sites in Germany and is also present in Asia and the USA with local distributors.

Key figures of the Group

Number of subsidiaries:	6
Group sales 2022:	93 million EUR[1, 2]
Employees 2022 (Group-wide):	658 employees[2]
Casting tonnage 2022 (Group-wide):	24,131 tonnes[2]

[1] consolidated sales Klaus Kuhn Edelstahlgießerei GmbH, Zerspanungstechnik Kuhn Edelstahl GmbH, M. JÜRGENSEN GmbH & Co KG, Kuhn Innovation GmbH, Kuhn Special Steel Asia Limited, Kuhn Special Steel Taiwan Corp., Kuhn Special Steel North America, Inc.
[2] Forecast, as of: 13/02/2023

Klaus Kuhn Edelstahlgießerei GmbH & Zerspanungstechnik Kuhn Edelstahl GmbH

Kuhn Special Steel
High Performance Key Components

Founding year: 1960

Production site:
Radevormwald, Germany

Sales 2022: 50 million EUR[1]

Workforce: 315 employees

Total area: 52,360 m²

Foundry: 7 induction ovens
18 centrifugal casting machines

CNC machines: > 50

conventional lathes: > 15

max. outer diameter: 1,200 mm (horizontal) / 2,300 mm (vertical)

max. length: 8,000 mm

max. casting weight: 5,000 kg

[1] consolidated sales Klaus Kuhn Edelstahlgießerei GmbH und Zerspanungstechnik Kuhn Edelstahl GmbH

M. Jürgensen GmbH & Co KG

M. JÜRGENSEN
A Promise Kept

Founding year: 1937

Production site:
Sörup, Germany

Sales 2022: 38 million EUR

Workforce: 295 employees

Total area: 60,000 m²

Foundry: 10 induction ovens
12 centrifugal casting machines

CNC machines: > 40

conventional lathes: > 30

max. outer diameter: 800 mm (horizontal)

max. length: 1,700 mm

max. casting weight: 5,000 kg

Kuhn Innovation GmbH

Founding year: 2020

Location:
Radevormwald, Germany

Workforce: 8 employees

Advice and technical implementation, among other things, for: the automation of existing production facilities, the collection and evaluation of production, quality and machine data (e.g. with existing or newly installed sensor technology).

Kuhn Special Steel Asia Ltd.

Founding year: 2012

Location: Hong Kong, China

Sales 2022: 792,000 EUR

Distribution company

Kuhn Special Steel North America, Inc.

Founding year: 2016

Location: Chicago, North America

Sales 2022: 2.1 million EUR

Distribution company

Reference

This sustainability report takes into account the Group's production sites, namely

- Klaus Kuhn Edelstahlgießerei GmbH (consolidated with Zerspanungstechnik Kuhn Edelstahl GmbH) and
- M. Jürgensen GmbH & Co KG.

Certifications

The companies of Kuhn Industrie Holding continuously optimise their processes by implementing quality, environmental and/or energy management systems. The internationally applicable management systems are continuously audited by accredited certification bodies.

Kuhn Special Steel

Quality management in accordance with ISO 9001:2015

Valid from: 01/04/2021
Valid until: 31/03/2024
Initial certification: 2003

Energy management in accordance with ISO 50001:2018

Valid from: 01/12/2022
Valid until: 30/11/2025
Initial certification: 2013

M. Jürgensen

Quality management in accordance with ISO 9001:2015

Valid from: 01/02/2023
Valid until: 31/01/2026
Initial certification: 1999

Environmental management in accordance with ISO 14001:2015

Valid from: 01/02/2023
Valid until: 31/01/2026
Initial certification: 2002

Energy management in accordance with ISO 50001:2018

Valid from: 18/12/2020
Valid until: 17/12/2023
Initial certification: 2011

ENVIRONMENT

The long-term goal is to achieve CO_2-neutral production at both locations (Radevormwald and Sörup). The project "Our Way to Climate Neutrality" was initiated in 2021 and already showed first success within a very short amount of time. A permanently assembled project team defined the initial strategy and started the consistent implementation, which was closely accompanied by the management. The basis for this are the carbon footprints for the companies Kuhn Special Steel and M. Jürgensen, which were prepared retroactively from 2019 and from which valuable insights into corporate emissions were gained. Optimisation potential was derived from these findings which led to initial results as early as 2022 in the form of reductions in CO_2 emissions.

In 2022, our strategy on the "Way to Climate Neutrality" supported us greatly in preventing a possible shortage of natural gas in our supply. Significant price increases on the energy markets quickly resulted from the war that broke out in Ukraine in February 2022. These were primarily driven by an impending shortage of natural gas. In a worst-case scenario, a situation in which natural gas supplies would be completely stopped even had to be assumed. While there is no direct dependence on natural gas at M. Jürgensen, it would hardly have been possible to maintain production at Kuhn Special Steel over the long term. In 2022, newly established working groups therefore gave top priority to reducing natural gas consumption and developing alternative manufacturing processes without the use of natural gas. In the 2022 financial year, the "Natural gas shortage" project groups helped save 1,150,878 kWh of natural gas (https://www.ki-holding.com/newsroom/en/schritte-auf-dem-weg-zur-klimaneutralitaet/), making an important contribution on our way to climate neutrality.

The reduction of energy consumption and the associated improvement of energy efficiency are important, but not the only measures on the journey to climate neutrality. The companies of Kuhn Industrie Holding have included three further fields of action in their climate strategy. These are the use of renewable energies, the substitution of fossil fuels and the compensation of unavoidable CO_2 emissions. In addition to natural gas, important energy sources are electricity, district heating, diesel, heating oil and bottled gas. The primary goal for the next few years is to reduce the consumption of each energy source and to improve energy efficiency. Every kilowatt hour saved also prevents CO_2 emissions.

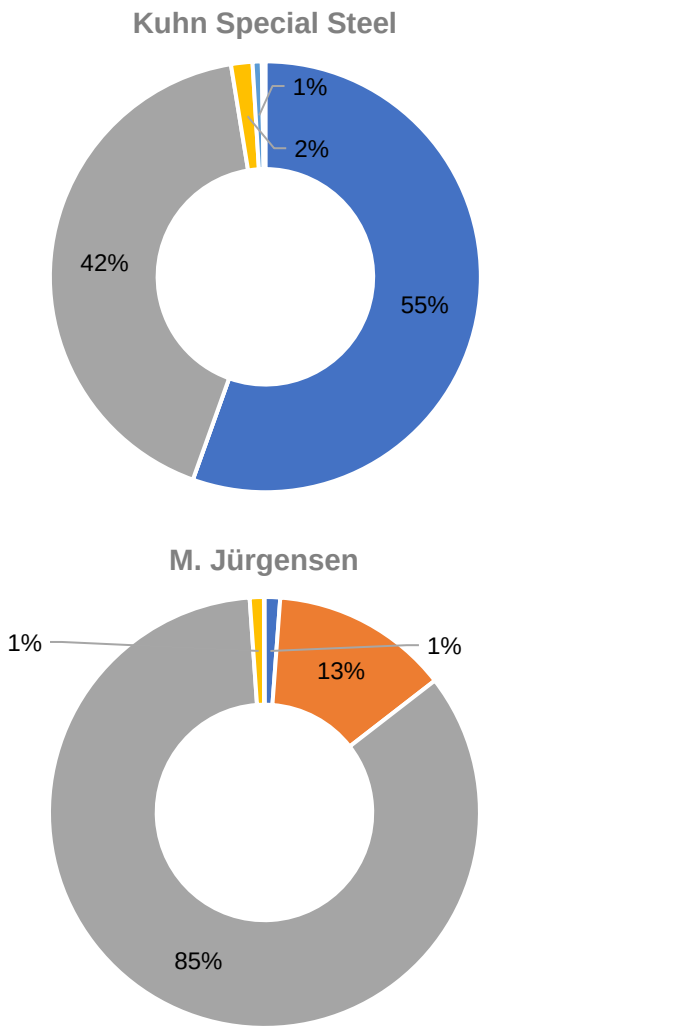
Despite all the energy efficiency measures, Kuhn Special Steel and M. Jürgensen will remain energy-intensive companies. This is where the second field of action on the journey to climate neutrality comes in. Energy used in production processes that cannot be saved should in future come exclusively from renewable sources. The first thing we want to do is turn this vision for electricity demand into reality. In 2022, a first step towards achieving this goal was taken by constructing a photovoltaic plant at the Radevormwald site. A detailed description of the project is provided in the Energy Resources chapter. The electricity quantities exceeding own generation are purchased from external energy suppliers. The corresponding contracts are to be converted to green electricity step by step. In addition, the companies of Kuhn Industrie Holding are in exchange with providers of Power Purchase Agreements (PPAs) in order to weigh up the options for purchasing electricity from regional renewable energy plants.

Energy sources

Table 1: Use of purchased energy sources in gigawatt hours [GWh]

	2020	2021	2022
Natural gas ●	**15.2**	**16.0**	**14.8**
Kuhn Special Steel	15.0	15.7	14.5
M. Jürgensen	0.2	0.3	0.3
District heating ●	**2.6**	**2.6**	**3.6**
Kuhn Special Steel	0.0	0.0	0.0
M. Jürgensen	2.6	2.6	3.6
Electricity ●	**28.2**	**31.1**	**34.0**
Kuhn Special Steel	10.5	10.7	11.0
M. Jürgensen	17.7	20.4	23.0
Diesel ●	**0.7**	**0.7**	**0.7**
Kuhn Special Steel	0.4	0.4	0.4
M. Jürgensen	0.2	0.3	0.3
Heating oil ●	**0.2**	**0.2**	**0.2**
Kuhn Special Steel	0.2	0.2	0.2
M. Jürgensen	0.0	0.0	0.0
Bottled gas ●	**0.1**	**0.1**	**0.1**
Kuhn Special Steel	0.1	0.1	0.1
M. Jürgensen	0.0	0.0	0.0

Energy mix per site in % (2022)



Renewable energy production

From an economic and environmental point of view, the use of renewable energies is steadily gaining in importance, especially for energy-intensive companies. For this reason, 2 million euros were invested in a photovoltaic plant at the Radevormwald site in 2022.

PV plant Radevormwald		
Generator area:	10,000	m²
Number of solar modules:	5,000	Units
Installed maximum power:	2	MWp
On-site consumption quota:	approx. 90	%

An audit in 2021 showed that a large part of the roof area of the production and office buildings would be suitable for the installation of a photovoltaic system. After a 14-month project and construction phase, the plant was commissioned in August 2022. Since then, Kuhn Special Steel has consumed about 90% of the solar power it generates itself. This leads to a reduction in energy costs and improves the carbon footprint of the site. The energy surplus is fed into the public grid, especially on production-free weekends and public holidays, in return for daily feed-in tariffs.

The investment in a photovoltaic plant is to be understood as a clear statement for the goal of climate-neutral production at the site. In addition, independence from the increasingly volatile energy markets could be established. With its maximum output of 2 MWp, the plant can cover up to 20% of the total electricity demand of the Radevormwald site. Table 2 shows the self-generated energy over the years and its share of the total electricity purchased by Kuhn Special Steel.

A photovoltaic plant shall also be installed at the Sörup site in the years to come. The knowledge gained during the project implementation in Radevormwald will be of great benefit.

In addition to photovoltaics, the group of companies is considering investing regionally in wind power in the future. Initial contacts have already been made. However, due to the high costs and the project durations of several years for such plants, there are currently no concrete plans or timelines in this matter.

	Green energy [GWh]	Share of total electricity consumption	CO_2- savings [t]
2021	0	0%	0
2022	0.28	3%	84.00

Table 2: Annual volumes and share of green energy

Environmental impact

Foundry processes are associated with multi-layered environmental impacts. On the input side, they are energy and resource intensive. The high process temperatures, especially in melting as well as heat treatment of steels, are the main consumers of the annual volumes of natural gas and electricity listed in the Energy Resources chapter. In addition, the wide range of alloys offered to customers by Kuhn Special Steel and M. Jürgensen requires a high input of raw materials such as pig iron, alloying elements and scrap. On the output side are the process emissions in the form of combustion gases, residual heat, dust, noise, scrap and other waste.

The companies are aware of their impact on the environment and have taken appropriate measures to monitor and manage them. Since 2002, M. Jürgensen has operated an environmental management system certified in accordance with DIN EN ISO 14001. This contributes to the continuous improvement of the company's environmental impact. Kuhn Special Steel does not currently operate a certified environmental management system. Nevertheless, environmental protection is a high priority. Employees charged with and trained in environmental protection ensure that this is guaranteed at all times.

For all plants that fall under the application of the Federal Immission Control Act (BImSchG), corresponding permits have been issued by the respective competent district government. The ancillary provisions imposed have been or are being continuously complied with. Plants subject to periodic inspection are inspected internally or by external specialist companies at the prescribed intervals. Annual reports required by law are submitted to the competent authorities in due time. Hazardous substances are stored in accordance with the Technical Rule for Hazardous Substances (TRGS) 510. Substances hazardous to water are only used and stored in facilities that comply with the Ordinance on Facilities Handling Substances that are Hazardous to Water (AwSV). The recurring inspection obligations mentioned are complied with and fulfilled by external specialist companies. The disposal of any waste is carried out professionally by certified disposal companies. Disposal certificates are available.

Carbon footprints

The greenhouse gas balances (carbon footprints) of Kuhn Special Steel and M. Jürgensen map the corporate carbon footprint (CCF) of both companies. The balancing is based on the guidelines of the Greenhouse Gas Protocol (GHG Protocol). Scope 1, Scope 2 and Scope 3 emissions caused by business activities are taken into account within the respective balancing period. A balancing period covers the financial year from 1 January to 31 December. The balancing framework includes direct and indirect emissions at the respective site as well as indirect emissions from upstream processes that fall under Scope 3 (cradle-to-gate). Supporting processes and cross-sectional technologies are taken into account as well as centrifugal casting and machining processes. As upstream processes, externally procured goods and services (category 1), fuel and energy-related activities (category 3), waste generated in operations (category 5) and employee travel to and from work (category 7) are accounted for.

Definition Scopes	
Scope 1	Direct greenhouse gas emissions from the combustion of primary energy sources at the site. *Examples: Natural gas, diesel, heating oil, technical gases*
Scope 2	Indirect greenhouse gas emissions resulting from the generation of externally purchased energy. *Examples: Electricity, district heating*
Scope 3	Other indirect greenhouse gas emissions resulting from upstream or downstream external processes. *Examples: Purchased metals and other auxiliary materials, employee travel, water, waste disposal*

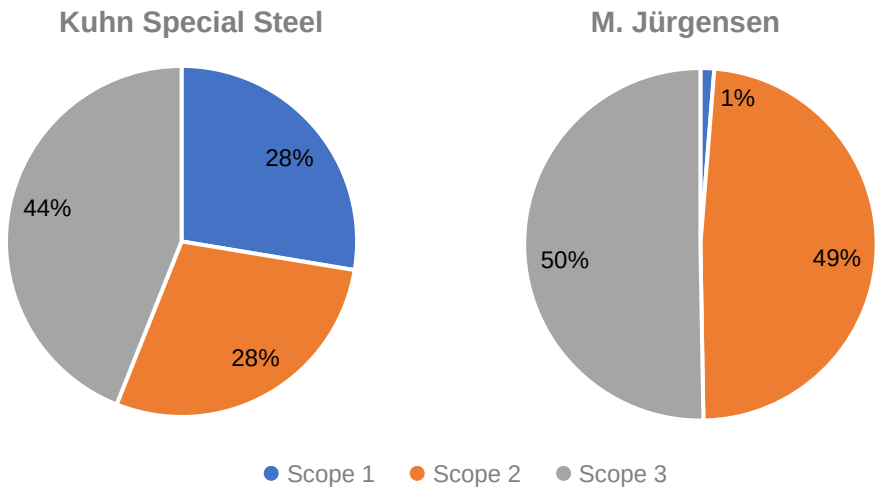
Both companies attach great importance to the five basic principles of greenhouse gas balancing according to the GHG Protocol in the accounting and reporting of their greenhouse gas emissions: relevance, completeness, consistency, transparency and accuracy. For this reason, the database is continuously reviewed and adjusted, updated or expanded if required. In addition, a safety margin of 5% is added to the balance sheet. The carbon footprints form the basis for deriving measures to reduce the greenhouse gas emissions of both companies. Since 2019, when the balancing process began at both sites, for example, CO_2 savings of approximately 1,400 t per year have been implemented through measures and projects. In the chapter on CO_2 savings, some of these measures are mentioned.

The greenhouse gas balance, which has so far been based on site level, will be further specified and broken down to more detailed levels in the coming years. The aim is to be able to submit an offer to customers with their enquiry, which shows the CO_2 emissions associated with the product.

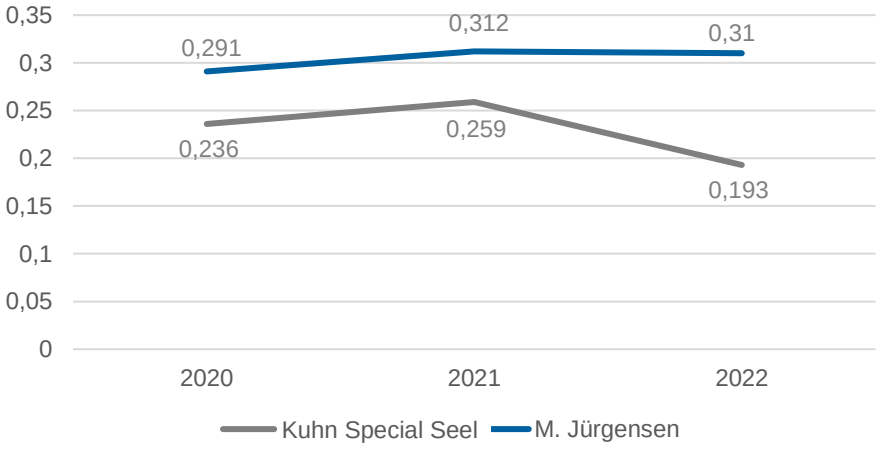
Table 3: CO_2 emissions in tonnes (t)

	2020	2021	2022
Scope 1 ●	**3,552**	**3,746**	**3,498**
Kuhn Special Steel	3,374	3,542	3,280
M. Jürgensen	177	204	218
Scope 2 ●	**8,302**	**10,690**	**11,721**
Kuhn Special Steel	2,809	3,466	3,376
M. Jürgensen	5,492	7,224	8,346
Scope 3 ●	**10,496**	**12,604**	**13,880**
Category 1	**9,679**	**11,851**	**13,065**
Kuhn Special Steel	3,317	4,511	4,876
M. Jürgensen	6,362	7,340	8,189
Category 3	**0**	**0**	**17**
Kuhn Special Steel	0	0	17
M. Jürgensen	0	0	0
Category 5	**44**	**36**	**36**
Kuhn Special Steel	27	22	20
M. Jürgensen	17	14	16
Category 7	**773**	**718**	**762**
Kuhn Special Steel	324	298	309
M. Jürgensen	450	420	453

CO_2 emissions per site in % (2022)



CO_2 emissions in relation to value added (in kg)



The CO_2 emissions of the companies Kuhn Special Steel and M. Jürgensen differ fundamentally in their origin. While Scope 1 emissions at Kuhn Special Steel were responsible for 28% of the overall balance in 2022, this share at M. Jürgensen was only 1%. This is due to the fact that there is almost no combustion of fossil raw materials at the Sörup site. Heat is largely obtained from the local district heating network. Excess process heat is in turn fed into the district heating network. The heat treatment of the cast articles, which is responsible for almost 40% of the natural gas consumption in Radevormwald, is completely omitted in Sörup due to the material.

In 2022, M. Jürgensen's electricity consumption of 23 GWh was more than double that of Kuhn Special Steel (11 GWh). This is reflected in the proportional ratio of Scope 2 emissions. While these accounted for 28% of the total balance in Radevormwald in 2022, the share in Sörup was 49%. The shares of Scope 3 emissions of both companies are almost identical. With 50% at M. Jürgensen and 44% at Kuhn Special Steel, they were by far the largest CO_2 emitter at both sites in 2022. Scope 3 emissions in the two foundries are largely attributable to the metals used. The emission factors of some alloying agents are so high that they can quickly be responsible for several thousand tonnes of CO_2 emissions in relation to their annual consumption. Although these emissions were already produced during the extraction of the respective metal, they are, according to the GHG Protocol guidelines, to be attributed to the upstream, indirect emissions of the user companies. Conventional pig iron, for example, is valued at 1.81 kg CO_2 equivalents per kilogram. An extreme example is the alloying element chromium, which is responsible for over 27 kg of CO_2 equivalents per kilogram.

On the journey to climate neutrality, reducing Scope 3 emissions will be the biggest challenge for the companies of Kuhn Industrie Holding. One tried and tested means is the increased use of recycled metals, i.e. scrap metal. Based on emission factors published by the Federal Funding for Energy and Resource Efficiency in the Economy (EEW), a kilogram of steel scrap is only accounted for with a few grams of CO_2 equivalent. In addition, resources are conserved through the use of scrap. The chapter on the circular economy deals with this topic in detail. However, it can already be stated at this point in time that a complete use of scrap will not be possible even in the distant future due to the quality characteristics of the products of Kuhn Industrie Holding that have to be achieved. This fact illustrates one of the basic characteristics of Scope 3 emissions. Companies rely on raw materials, consumables and supplies to conduct their business activities. As a result, the impact on the scope 3 emissions to be accounted for is the lowest compared to the scope 1 and scope 2 emissions.

In order to be able to demonstrate Kuhn Industrie Holding's way to climate-neutral production using a suitable, meaningful indicator, the Scope 3 emissions are not initially included for the reasons mentioned in the previous section. The CO_2 equivalents of Scope 1 and Scope 2 emissions in kilograms, in relation to the value added achieved in euros (kg CO_2e/€WS), were defined as the key indicator. Kuhn Special Steel was able to improve this indicator from 0.259 kgCO_2e/€WS in 2021 to 0.193 kgCO_2e/€WS in 2022. At M. Jürgensen, the indicator also slightly improved from 0.312 kgCO_2e/€WS in 2021 to 0.310 kgCO_2e/€WS in 2022.

CO_2-saving measures

In order to lower our energy consumption and thus reduce CO_2 emissions, we are trying out new ways and using innovative process technologies. Table 4 shows the main energy efficiency measures implemented at the Radevormwald site since 2020. The energy crisis still ongoing in 2022 forced Kuhn Special Steel to take measures to ensure its ability to act. One important endeavour was to hedge against a possible natural gas shortage. Without natural gas, it would be impossible to carry out some production processes. A concrete example is the very gas-intensive heat treatment. This was carried out entirely using natural gas until 2022. To limit the risk of a production stoppage, an investment was made in an electrically operated heat treatment furnace. This would ensure emergency operation at the site, even without natural gas. In addition, the furnace can be operated at weekends with the surplus electricity from the photovoltaic plant, which additionally leads to energy cost savings.

Other noteworthy investments in 2022 were the photovoltaic plant already mentioned several times and the acquisition of four new ladle and gravity die furnaces. In simple terms, these fires are large gas burners which are used to heat the casting ladles and gravity dies. Without pre-heating of these two components, the molten steel would cool down too much on contact, which can negatively affect the material properties and thus the quality. Due to their age, the ladle heaters used so far did not offer the possibility of regular use. They switched on as soon as a pouring ladle was positioned in front of the burner and switched off again as soon as the ladle was removed by an employee. In the meantime, natural gas was consumed throughout. The new ladle heaters are automatically adjustable. They monitor the ladle temperature during heating and regulate the gas demand down when the target temperature is reached. In this way, up to 549 MWh of natural gas can be saved annually.

In general, every investment in new process engineering and technologies is made with a view to their energy efficiency. An example of this is the lighting. At both Kuhn Special Steel and M. Jürgensen, the old light sources in production or office buildings have been replaced step by step with more energy-efficient lighting systems for several years.

Table 4: Energy efficiency measures

	Electricity [MWh]	Natural gas [MWh]	CO_2 [t]
2020	**18**	**0**	**9**
More energy-efficient lighting systems	13		7
Pump replacement	5		3
2021	**4**	**0**	**2**
Automatic shut down mechanism Chip conveyor	4		2
2022	**260**	**549**	**199**
Photovoltaic plant investment	260		78
New ladle and gravity die furnaces investment		549	121
Total savings	**282**	**549**	**210**

Water management

Water is the basis of all life on earth. Conscientious and above all economical use of this resource is of great importance for the environment as well as for society. The energy intensity of foundries is also apparent in water consumption. The melting and heat treatment processes, with process temperatures of up to 1,500°C, are accompanied by a large demand for cooling water. While quenching tanks have a long service life, centrifugal casting is continuously cooled with running water. At the Radevormwald site, most of this is taken from two wells. The rest of the site's water demand is covered by municipal water. The well water is also circulated internally. In the process, it is filtered in the meantime and then reintroduced into the production process. High water losses occur during casting and quenching due to evaporation. At the Sörup site, all water is drawn from the municipal pipes. Here, water consumption is much higher than in Radevormwald.

Table 5: Water consumption per site in m³

	2020	2021	2022
Municipal water	**48,952**	**50,920**	**57,163**
Kuhn Special Steel	3,245	3,304	3,519
M. Jürgensen	45,707	47,616	53,644
Well water	**6,632**	**7,610**	**8,503**
Kuhn Special Steel	6,632	7,610	8,503
M. Jürgensen	0	0	0
Total water consumption	**55,584**	**58,530**	**65,666**
Kuhn Special Steel	9,877	10,914	12,022
M. Jürgensen	45,707	47,616	53,644

The goal for the coming years is to continuously reduce water consumption at Kuhn Special Steel and M. Jürgensen.

Circular economy

Many raw materials are only available in limited quantities worldwide and cannot renew themselves or grow back. However, humanity's demand for raw materials is steadily increasing. Resource scarcity is already an issue in many areas today. It is accompanied by rising raw material prices and supply shortages. In the long term, this problem can only be counteracted by a consistent circular economy. Foundries can make a significant contribution to this with their processes. Active recycling is carried out by melting down scrap. Some scrap dealers already offer well presorted and thus high-quality scrap. Large amounts of greenhouse gas emissions can be prevented through increased use of scrap.

Kuhn Special Steel and M. Jürgensen operate a circular economy in two respects. Firstly, scrap is purchased externally and added to the charges of the materials. Secondly, internal recycling is carried out. The metal chips produced in the machining processes are collected by type, processed and then remelted as an admixture. Residual or faulty castings as well as quality failures are also processed internally and in this way re-enter the cycle.

	2020	2021	2022
Internal chip processing	**10,430**	**12,423**	**12,293**
Kuhn Special Steel	2,583	3,087	3,131
M. Jürgensen	7,847	9,336	9,162
Internal residual piece preparation	**1,308**	**1,450**	**1,345**
Kuhn Special Steel	121	124	119
M. Jürgensen	1,187	1,326	1,226
Use of scrap	**3,646**	**4,078**	**4,758**
Kuhn Special Steel	1,339	1,448	1,439
M. Jürgensen	2,307	2,630	3,319

Table 6: Recycled material in tonnes (t)

The efficiency of the circular economy is monitored and controlled by means of a recycling quota and a scrap quota. These put the annual tonnage of recycling material used or scrap purchased externally in relation to the total cast tonnage of the respective year.

	2020	2021	2022
Kuhn Special Steel			
Scrap quota	23.5%	24.2%	24.5%
Recycling quota	47.4%	53.6%	55.5%
M. Jürgensen			
Scrap quota	16.7%	16.3%	18.4%
Recycling quota	65.5%	66.0%	57.6%

Table 7: Scrap and recycling quota

Waste management

Different types of waste are produced in almost every business process. The companies of Kuhn Industrie Holding have implemented processes that guarantee that all types of waste are sent to the correct disposal route. A waste officer ensures the correct implementation of the waste concepts at each site. These employees have the necessary qualifications, which are regularly refreshed and enhanced through external seminars.

Any waste produced is strictly separated according to its properties and disposed of by specialist disposal companies. The disposal routes are fully documented and prepared annually in the form of a waste balance sheet. Disposal certificates for hazardous waste or special waste are available.

Mobility transition

The companies of Kuhn Industrie Holding want to actively promote the mobility transition in Germany. For this reason, 20 charging points (11kW) for hybrid and electric vehicles will be installed at the Radevormwald site in spring 2023. The electricity is subsequently available there free of charge to a group of authorised employees. Ideally, the charging stations are supplied with electricity during the day from the company's own photovoltaic plant and the employees drive in a completely climate-neutral manner.

The composition of the company fleet has already changed in recent years. The share of combustion engines fell by 15% from 2020 to 2022. In 2023, Kuhn Special Steel will add the first fully electric vehicle to its fleet. The companies do not currently have any requirements for employees regarding a certain system of drive when selecting their company vehicle. However, the charging infrastructure already described should motivate more employees to purchase a fully or partially electrically powered vehicle in the future.

Since 2019, every employee at Kuhn Special Steel has had the opportunity to conclude a leasing contract for a company bicycle. Since then, the offer has been well received, with around 80 employees currently taking advantage of the bike leasing option. In some cases, employees even use their company bike for their daily commute.

In addition, in 2022 Kuhn Special Steel entered its own team in the nationwide STADTRADELN competition for the first time. The fundamental concept of the competition is to make everyday journeys by bike instead of by car. Employees who are keen cyclists cover as many kilometres as possible on their bikes within 21 days. *Team Kuhn Special Steel* competed against other teams registered in Radevormwald. In 2022, 17 Kuhn Special Steel employees covered a total of 5,381 km, placing third out of 21 teams. The most active employee within the company contributed an impressive 1,005 km to this success.

Legal notice

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Note on gender use:
In the interests of readability, the simultaneous use of the language forms male, female and non-binary (m/f/o) is dispensed with. All references to persons apply equally to all genders.

Preparation:
The collection and preparation of the database through suitable sensor measurements as well as the preparation of the sustainability report is a service provided by Kuhn Innovation GmbH. If you are interested, please contact info@kuhn-innovation.com.