



**DILLINGER** 

# Integrated Management Manual

# Integrated Management Manual (IMM)

## Revision 1.0 (D150)

March 2023

This Integrated Management Handbook (IMH-D150-0001) is revision 1.0.

It replaces the IMM Rev. 5.0 of 2019 (IMH-D450-0001).

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**Aktien-Gesellschaft der Dillinger Hüttenwerke**

**[www.dillinger.de](http://www.dillinger.de)**

## Content

<b>1</b>	<b>Basic Information</b>	<b>4</b>
<b>2</b>	<b>Declaration of intention and company policy</b>	<b>5</b>
<b>3</b>	<b>Company portrait</b>	<b>6</b>
3.1	The company DILLINGER	6
3.2	Historie von DILLINGER	6
3.3	Organisation of the DILLINGER Group	7
3.4	Products	8
3.5	Corporate social responsibility, environment and sustainability	9
<b>4</b>	<b>Context of the Organization</b>	<b>11</b>
4.1	Understanding of the organization and its context	11
4.2	Understanding the needs and expectations of interested parties	11
4.3	Determining the scope of the quality management system	11
4.4	Integrated management system and its processes	12
<b>5</b>	<b>Leadership</b>	<b>13</b>
5.1	Leadership and commitment	13
5.1.1	General	13
5.1.2	Customer focus	13
5.2	Policy	13
5.2.1	Establishing the Quality Policy	13
5.2.2	Communicating the Quality Policy	13
5.3	Organizational roles, responsibilities and authorities	13
5.4	Consultation and participation of workers	14
<b>6</b>	<b>Planning</b>	<b>16</b>
6.1	Actions to address risks and opportunities	16
6.2	Company objectives and planning to achieve them	16
6.3	Planning of changes	16
<b>7</b>	<b>Support</b>	<b>17</b>
7.1	Resources	17
7.1.1	General	17
7.1.2	People	17
7.1.3	Infrastructure	17
7.1.4	Environment for the operation of processes	17
7.1.5	Monitoring and measuring resources	17
7.1.6	Organizational knowledge	17
7.2	Competence	18
7.3	Awareness	19
7.4	Communication	19
7.5	Documented information	20
7.5.1	General	20
7.5.2	Creating and updating	20
7.5.3	Control of documented information	20

<b>8</b>	<b>Operation.....</b>	<b>21</b>
8.1	Operational planning and control .....	21
8.2	Requirements for products and services .....	21
8.2.1	Customer communication.....	21
8.2.2	Determining of requirements for products and services.....	21
8.2.3	Review of the requirements for products and services .....	21
8.2.4	Changes to requirements for products and services.....	21
8.3	Design and development of products and services .....	23
8.3.1	General.....	23
8.3.2	Design and development planning .....	23
8.3.3	Design and development inputs .....	23
8.3.4	Design and development controls .....	23
8.3.5	Design and development outputs.....	24
8.3.6	Design and development changes .....	24
8.4	Control of externally provided processes, products and services.....	25
8.4.1	General.....	25
8.4.2	Type and extent of control.....	25
8.4.3	Information for external providers.....	26
8.5	Production .....	27
8.5.1	Control of production .....	27
8.5.2	Identification and traceability .....	35
8.5.3	Property belonging to customers or external providers.....	37
8.5.4	Preservation .....	37
8.5.5	Post-delivery activities .....	37
8.5.6	Control of changes .....	37
8.6	Release of products and services.....	38
8.7	Control of nonconforming outputs.....	40
8.8	Aspects of occupational safety, health and environmental protection, of energy efficiency and safety of facilities.....	42
8.8.1	Assessment of working conditions (risk and stress factors).....	42
8.8.2	Placing orders with externals.....	42
8.8.3	Environmental aspects .....	43
8.8.4	Organization for emergencies and prevention of danger .....	44
8.8.5	Improvement of the energy related performance, including energy efficiency, energy use and energy consumption.....	44
8.8.6	Binding commitments and the review of their compliance .....	45
<b>9</b>	<b>Performance evaluation .....</b>	<b>46</b>
9.1	Monitoring, measurement, analysis and evaluation.....	46
9.1.1	General.....	46
9.1.2	Customer satisfaction .....	47
9.1.3	Analysis and evaluation.....	47
9.2	Internal Audit .....	47
9.3	Management review .....	47
<b>10</b>	<b>Improvement .....</b>	<b>48</b>
10.1	General.....	48
10.2	Nonconformity and corrective action.....	48
10.3	Continual improvement .....	49

## 1 Basic Information



This Integrated Management Manual (IMM) describes the essential building blocks of the Integrated Management System (IMS) as well as basic organizational structures regarding duties and responsibilities.

It also describes the applicability and scope of application of the Integrated Management System.

The scope of applicability covers:

- AG der Dillinger Hüttenwerke (DILLINGER)
- Roheisengesellschaft Saar mbH (ROGESA)
- Zentralkokerei Saar GmbH (ZKS)
- Saar Industrietechnik GmbH (SIG)
- DILLINGER France SA
- Steelwind Nordenham GmbH
- Steel Service Centers, marketing companies, shipping companies and other companies of the Dillinger Hütte Group

This IMM also applies to Stahl-Holding-Saar (SHS) insofar as instructions are given or services are rendered for DILLINGER.

The majority of the processes, programs, functions and committees described in this IMM relate to the conditions at the Dillingen site. Especially in the areas of occupational health and safety, as well as environmental protection and energy management, the subsidiaries have adjusted and harmonized rules in place that are defined on site in their own documents.

Detailed organizational processes are described in internal manuals and process instructions.

The basis of this Integrated Management Manual are the respective applicable standards ISO 9001 (quality management), ISO 14001 (environmental protection), ISO 45001 (occupational health and safety), ISO 50001 (energy management), and safety management in accordance with Germany's Twelfth Ordinance on the Implementation of the Federal Immissions Control Act (12. BImSchV), Appendix III (Ordinance on Industrial Incidents [StörfallV] – applicable to the operations subject to the incident provisions, ZKS and ROGESA).

All employees are required to observe and apply this Integrated Management Manual. It is subject to regular evaluation by the Board of Management.

**This Integrated Management Manual (IMH-D150-0001) is Revision 1.0. It replaces the IMM Rev. 5.0 from 2019 (IMH-D450-0001).**

The content structure of this Integrated Management Manual is based on the High-Level Structure of the ISO Directive for Management System Standards, and in particular, ISO 9001:2015. Aspects of occupational safety, health and environmental protection, energy efficiency and safety of facilities are summarized in section 8.8.



## 2 Declaration of intention and company policy

As Europe's leader in heavy plate production, DILLINGER competes worldwide with its products and services and strives to achieve long-term corporate success. The corporate policy is accessible to all employees at all times on the intranet in the form of a corporate vision and corporate principles in their latest version.

The corporate policy is regularly reviewed and adjusted if necessary.

### *DILLINGER,*

*Europe's leading heavy plate producer, is committed to achieving top-class performance in steel together with its customers.*

*On the solid foundation of our employees' skills and commitment, we continue to increase our strong performance on each site, in order to manufacture top-quality and economically competitive products, while maintaining the necessary balance with our environment and safety.*

In addition to our vision, DILLINGER has defined general corporate principles. Moreover, specific guidelines have been formulated for quality management, occupational health and safety management, environmental management, energy management and security management.

In this context, the corporate management has committed itself and the company to:

- At least comply with the legal and official requirements, with the aim of exceeding these requirements.
- Continuously improve the Integrated Management System.
- Eliminate hazards and minimize occupational health and safety risks.
- Consult with and involve employees and their representatives as defined in the German Co-Determination Act for the Coal, Iron and Steel Industry (Montanmitbestimmungsgesetz).

### 3 Company portrait

#### 3.1 The company DILLINGER



DILLINGER was founded in 1685 by entrepreneur Marquis de Lenoncourt and has since developed into Europe's leading manufacturer of high-quality heavy plate.

An average of 1.7 million tons of heavy plate is manufactured each year by more than 4,000 employees at the main locations in Dillingen an der Saar (Germany) – also home to the affiliated companies Zentralkokerei Saar (ZKS) and Roheisengesellschaft Saar (ROGESA) – and in Dunkirk (France).

ZKS, one of Europe's most important and modern coking plants, and ROGESA are companies without employees that delegate operation of the facilities to Aktien-Gesellschaft der Dillinger Hüttenwerke.

#### 3.2 Historie von DILLINGER

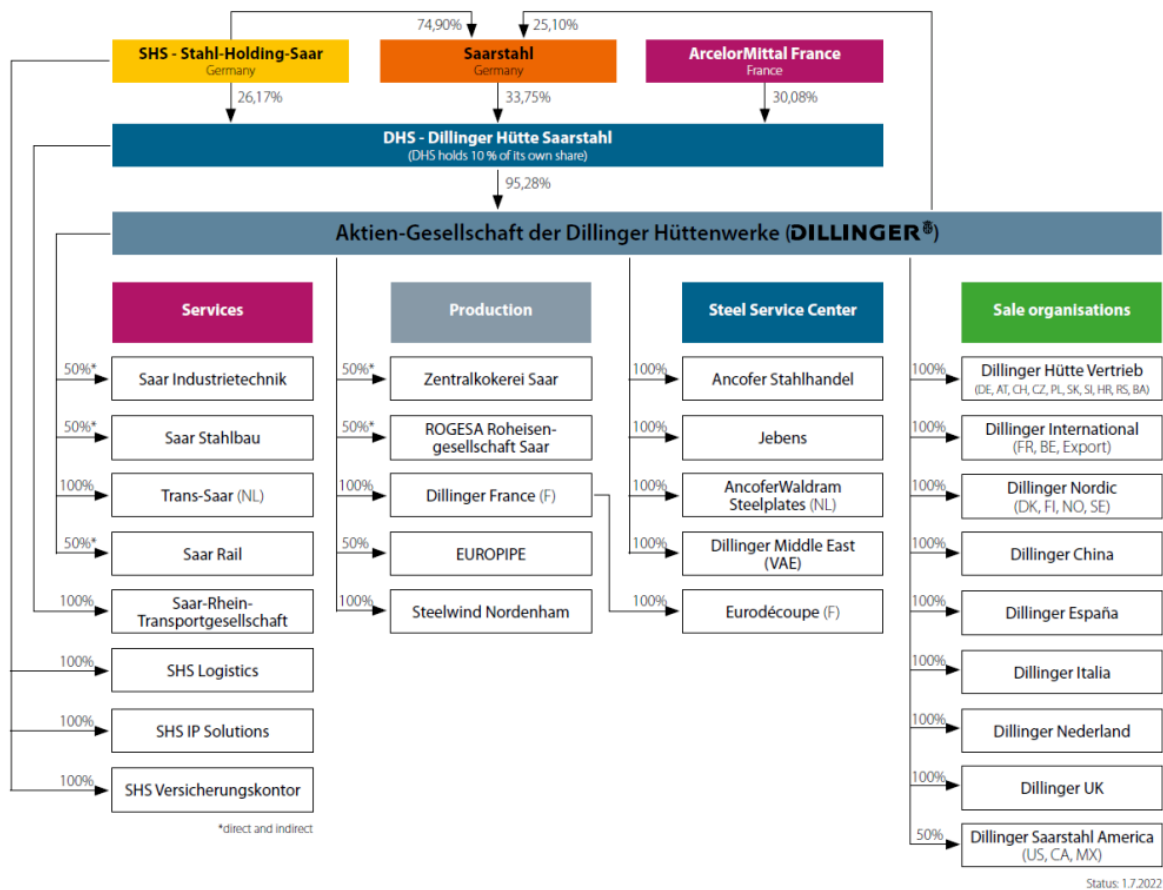
DILLINGER is one of the oldest companies in Europe. The requirements, processes and technologies have changed over the centuries, but we have remained true to our values to this day. Reliable, cooperative and dynamic, we are continually setting new milestones:

<b>1685</b>	Established by Marquis de Lenoncourt by order of Ludwig XIV.	<b>1992</b>	Integration of the heavy plate rolling mill at GTS Industries
<b>1804</b>	The first rolled plate in Dillingen	<b>1998</b>	First continuous slab caster in the world with 400 mm slab thickness and soft-reduction
<b>1809</b>	The first joint stock company in Germany	<b>2010</b>	The thickest continuously cast slab in the world: 450 mm!
<b>1835</b>	The "Dillingen Blechlehre" ( <i>plate gage</i> )	<b>2014</b>	Opening of Steelwind Nordenham
<b>1948</b>	Dillinger Hütte is co-founder of SOLLAC	<b>2014</b>	GTS Industries changes its name to Dillinger France
<b>1961</b>	The world's first continuous slab caster goes into operation	<b>2016</b>	Commissioning of the new CC6 vertical continuous-caster with a 500 mm thick slab.
<b>1971</b>	Commissioning of the heavy plate rolling mill	<b>2017</b>	The thickest continuous casting slab in the world, with a thickness of 600 mm is produced on the new CC6.
<b>1981</b>	Founding of ROGESA and ZKS		
<b>1985</b>	Commissioning of a 5.5 m quarto high-stand line		
<b>1991</b>	Establishment of Europipe, in cooperation with Mannesmann and GTS Industries		

### 3.3 Organisation of the DILLINGER Group

The following basic principles apply in line with a common Integrated Management System (IMS) and the group certification of DILLINGER:

- Organization is based on the following structure
- Cross-company sharing of responsibility for all concerned organizational units by the Board of Management members of Dillinger Hütte
- A common Integrated Management Manual (IMM)
- A common Integrated Management Officer (DILLINGER IMS Coordinator), supported by local IM officers (IMB)



#### DILLINGER company structure

The above structure shows the most important shareholdings of DILLINGER. Our heavy plate is used all over the world in a wide variety of projects. This is why DILLINGER is positioned worldwide with its specialized processing centers and sales agencies.



### 3.4 Products



## Tailor made heavy plate products

- *Non-alloy structural steels*
- *Normalized fine-grained structural steels*
- *Thermomechanically rolled fine-grained steels*
- *High-strength quenched & tempered fine-grained steels*
- *High-temperature steels*
- *Cryogenic steels*
- *Weather-resistant steels*
- *Case-hardening and quenching and tempering steels*
- *Security steels*
- *Tool and mould steels*
- *Wear-resistant steels*
- *Sour-gas-resistant steels*
- *Offshore steels*
- *Linepipe steels*



## Applications

- *Steel construction*
- *Hydropower Engineering*
- *Pressure vessel and boiler construction*
- *Construction machinery and mining*
- *Mechanical engineering*
- *Offshore Oil & Gas*
- *Large-diameter pipes*
- *Shipbuilding*
- *Plastics & Concrete Moulds*
- *Wind and tidal energy*
- *Protection*

### 3.5 Corporate social responsibility, environment and sustainability

Responsible action and sustainable management are firmly embedded in the DILLINGER corporate culture.

DILLINGER assumes responsibility toward its employees, customers, business partners and the environment. It is the aim of DILLINGER to produce steel in the most advanced and sustainable way and to help achieve more environmentally friendly production of steel.

We stand by our responsibility to current and future generations of employees and stakeholders.

We support the ten principles of the **UN Global Compact** with respect to human rights, labor standards, environmental protection, and anti-corruption. We have confirmed this to the UN in a Letter of Commitment on behalf of SHS – Stahl-Holding-Saar.

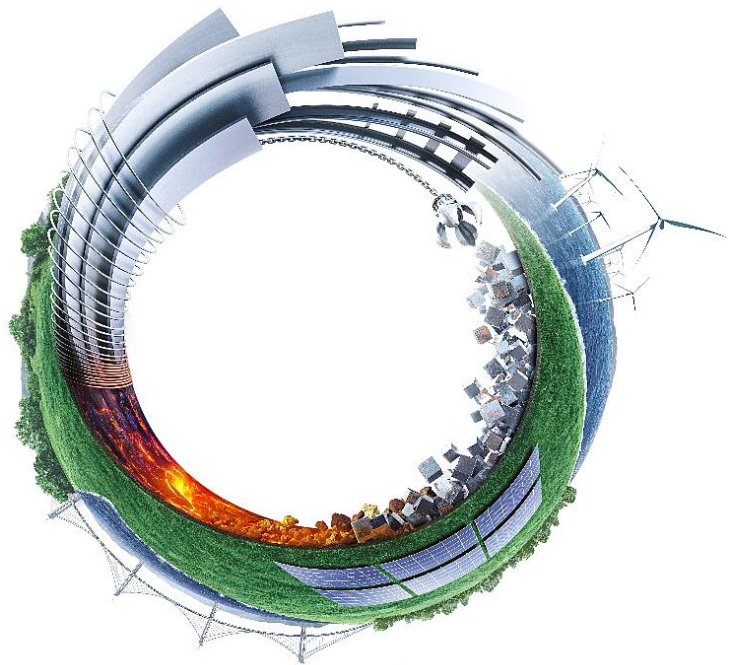
SHS – Stahl-Holding-Saar (SHS) and its companies Dillinger and Saarstahl have successfully participated since 2020 in the **Carbon Disclosure Project (CDP)** rating. The leadership score by CDP confirms that responsible action and sustainable business are central components of the SHS Group corporate policy.

Since 2018, DILLINGER's sustainability management has been assessed annually by **ecovadis**, an international provider of sustainability ratings. Over the years, DILLINGER has steadily improved its performance.

With our successful certification according to the **BES 6001** framework standard for responsible sourcing, we have proven that we take our responsibility in the supply chain seriously.

Our wide-ranging measures and activities in the areas of environmental protection, sustainability and social responsibility are summarized and examined in detail in the SHS – Stahl-Holding-Saar **Sustainability Report**.

Important KPIs from this area are presented in the associated **fact sheet**.



## CO2-neutral steel production by 2045

The steel industry in Saarland is committed to the Paris Climate Agreement and to Germany's tightened targets, and wants to contribute in a decisive way to the political and social goal of cutting carbon emissions. The aim of Saarland's steel industry is to reduce process-related carbon emissions to a technically necessary minimum in the future by incrementally installing and integrating climate-friendly steelmaking technologies.

By transforming from the existing blast furnace/converter route to direct reduction plants and electric arc furnaces, as well as by using hydrogen and CO2-free electricity in production, the goal of CO2-neutral steel production can be achieved by 2045 at the latest.

To present the transformation visually, we have developed our own brand for our green steel: "Pure Steel+". The message of "Pure Steel+" is that Dillinger and Saarstahl will maintain the long-established global quality of their products, innovative capacity and culture during the transformation. The "+" stands for the carbon-neutrality of the products.



[www.pure-steel.com](http://www.pure-steel.com)

## 4 Context of the Organization

### 4.1 Understanding of the organization and its context

### 4.2 Understanding the needs and expectations of interested parties

### 4.3 Determining the scope of the quality management system

In a continuous process, internal and external topics of importance for the company as well as the requirements and expectations of interested parties are analyzed, assessed and pursued.

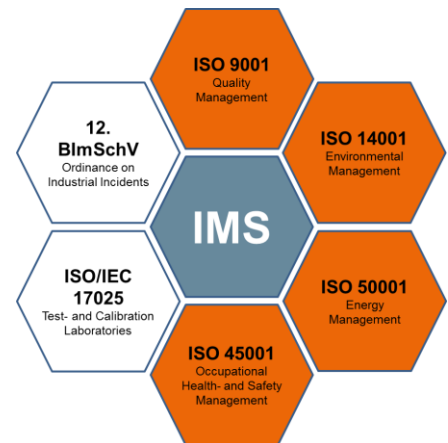


### 4.4 Integrated management system and its processes

DILLINGER has an Integrated Management System (IMS) in which the quality management, environmental protection management, occupational health and safety, and energy and safety management are consolidated. The system governs the strategic responsibility and the operational practices in these fields of work across all operative plants within the company.

The IMS also fulfils the requirements of various other international and national standards and regulations.

Moreover, DILLINGER products and production processes are approved and/or certified by numerous national and international companies.

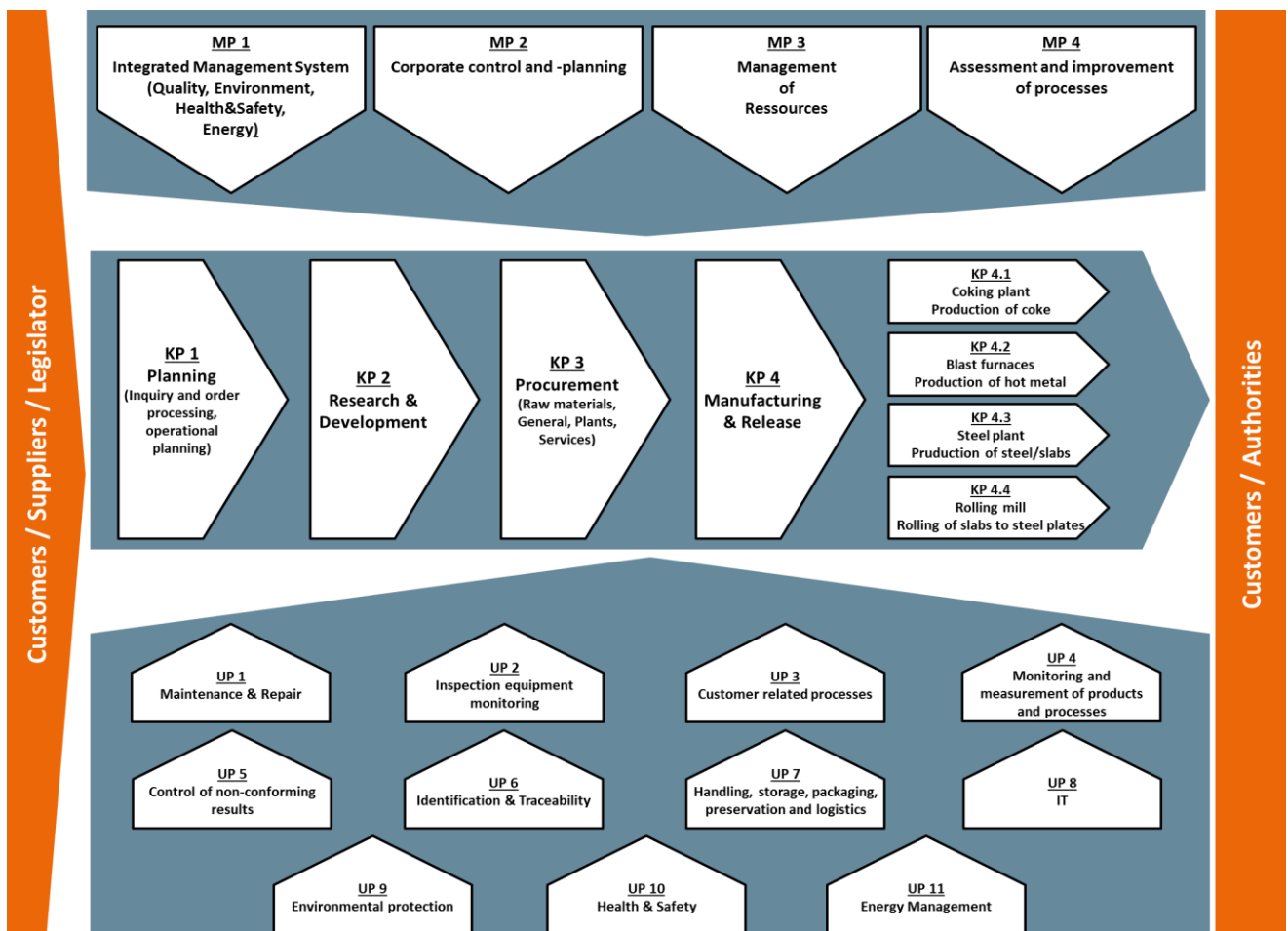


#### Process orientation

The process structure and the resulting process variations in an iron and steel plant such as DILLINGER are quite extensive.

Due to their value creation, the core processes are of central importance. They are strengthened through support processes. The management processes are employed for control and continuing development purposes.

Further and detailed process descriptions exist for all processes. The process structures of the subsidiaries are adapted to the respective circumstances and described at the location.



DILLINGER Process landscape



## 5 Leadership

### 5.1 Leadership and commitment

#### 5.1.1 General

The Board of Management takes full responsibility for the effectiveness of the IMS. It defines the corporate policy and ensures that the requirements of the IMS are incorporated into the business processes. The requirements of customers, authorities and laws as well as the requirements of the IMS are communicated throughout the entire company. The Board of Management furthermore defines overarching objectives that are broken down for the local conditions at the plants, and it performs regular management assessments. The Board's duties also include ensuring availability of the necessary resources and assigning responsibilities, accountabilities and authorities.

#### 5.1.2 Customer focus

DILLINGER's success depends on the immediate recognition of the needs and expectations of its customers. Special attention is paid to the technical and deadline requirements of customers. Maintaining and improving our customers' satisfaction with our products and fulfilling their needs for advice and information is our top priority.

### 5.2 Policy

#### 5.2.1 Establishing the Quality Policy

#### 5.2.2 Communicating the Quality Policy

The Board of Management defines the corporate policy with respect to quality, occupational health and environmental protection, energy, and facility safety. This is regularly reviewed and communicated within the company.

### 5.3 Organizational roles, responsibilities and authorities

The Board of Management has full responsibility for the Integrated Management System. The Chief Technical Officer is the Board of Management's representative for quality, environment, safety and energy management. The representative for occupational health and safety is the Chief Human Resources Officer. To fulfill its duties, the Board of Management delegates certain tasks and responsibilities to specific executives. Its overall responsibility and duty of supervision remain unaffected.

#### Management officers

The central coordination of the IMS within the DILLINGER Group is the responsibility of the IMS coordinator at the Dillingen site. Depending on the locally applicable certifications, responsible persons are appointed at each site within the Group to carry out the tasks relevant for the management system. The designation "management officer" continues to be used for these persons within the Dillinger Group.

These include:

- *Quality Management officer (+ IMS-Coordinator)*
- *Occupational health and safety management officer (Main safety engineer)*
- *Environment management officer*
- *Energy management officer*

In addition, the respective authorities and responsibilities with respect to the main requirements of the IMS are stipulated and known, particularly for personnel with managerial, executive, and auditing duties. This ensures that the IMS achieves its intended results.

The respective legally required officers or “designated persons” are appointed at all locations in the Group.

These include:

- *Occupational safety specialists*
- *Company doctor*
- *Hazardous incident officers*
- *Immission control officers*
- *Water protection officer*
- *Waste management officer*
- *Hazardous materials officer*
- *Dangerous goods officer*
- *Radiation protection officer*
- *Plant fire department*
- *Plant security officer*
- *Works council*

#### **5.4 Consultation and participation of workers**

As a steelmaking company, DILLINGER is subject to the mining and steel industry’s codetermination system and thus to the Employees’ Codetermination in the Mining, Iron and Steel Industries Act (MontanMitbestG).

This ensures the employee representatives on the Supervisory Board have significant influence on important business processes and on the appointment of the Chief Human Resources Officer.

The interests of our employees are additionally represented by unions, works councils and other forms of worker representation.

The employees and/or their representatives are specifically involved in and/or consulted regarding company processes relating to occupational health and safety.

Overview organization chart of DILLINGER



## 6 Planning

Company management ensures that the planning (conception) of the Integrated Management System follows a manner in which

- all applicable laws, regulations, standards, etc., are acknowledged and complied with.
- the requirements of customers, interested parties and standards can be realized. For this, the essential required processes concerning objectives, implementation, interactions, control, measurements, and monitoring must be defined.
- the goals are (can be) achieved.

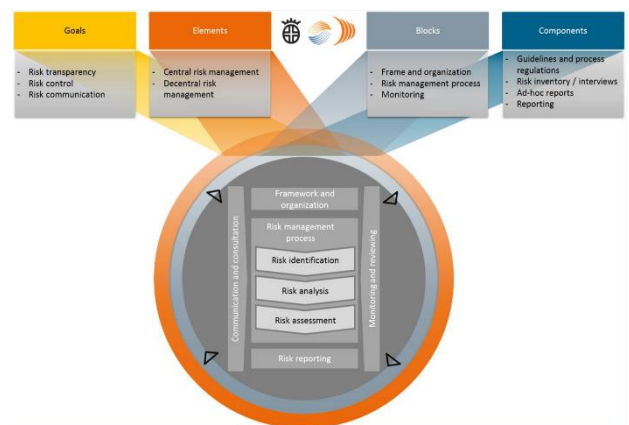
The Board ensures that all necessary resources (personnel, infrastructure) are available.

### 6.1 Actions to address risks and opportunities

With the Risk Management System (RMS), we pursue compliance with the risk management requirements demanded by legislators (Section 91 (2) of the German Stock Corporation Act (AktG)). The primary objective is to identify material risks associated with business activities at the earliest possible point and to consistently assess them.

The following target components are derived from this:

- Risk transparency (risk identification, risk assessment),
- Risk manageability (risk control, risk monitoring),
- Risk communication (risk reporting)
- Risk-bearing capacity.



To meet the requirements and objectives of the RMS, the overarching task is to create and set uniform framework conditions. This includes coordinating, supporting, and consolidating activities. All risk-related documents are archived as written material for at least ten years.

### 6.2 Company objectives and planning to achieve them

The annual objectives are set at the beginning of the year for all upper divisions by the division heads. The objectives are defined according to predefined templates. The templates contain specifications on measurability (KPIs), presentation of the degree of objective achievement, milestones, deadlines, etc.

At the annual objectives conference, the objectives are presented by the division heads and are discussed and confirmed together with all division heads and the entire Board of Management.

The objectives are then communicated by the division heads to the lower levels of the company and broken down accordingly.

During the course of the year (usually in the third quarter), an “Annual Objectives Conference – Review” is held with the same group of participants to jointly review and discuss the respective degree of objective achievement and the current implementation status for the defined objectives.

### 6.3 Planning of changes

Any changes to the Integrated Management System are carried out according to a plan, in the course of which the integrity, availability of resources, and all responsibilities and competencies are given particular consideration.

## 7 Support

### 7.1 Resources

#### 7.1.1 General

##### Provision of resources

The executive management provides the resources necessary to realize the goals, functions and measures defined in the Integrated Management System.

#### 7.1.2 People

Skilled employees are essential to the success of our company. This basis is achieved through consistent training of all employees and managers. The requirements for the individual persons are defined in job charts or job specifications as well as in relevant rules.

#### 7.1.3 Infrastructure

The infrastructure required to produce heavy plate is provided and maintained. This includes, among other things, the production facilities and equipment, media supply, transport and logistics systems as well as corresponding hardware and software.

#### 7.1.4 Environment for the operation of processes

The process environment is understood as a combination of people and environment-related conditions.

The required measures, in particular for realizing and maintaining compliant product characteristics, include:

- Approved, authorized and released products, processes, facilities, and equipment
- Ergonomic, clean and hygienic working conditions
- Rooms and storage spaces appropriate for their purpose
- Measures that protect people, machines, products and the environment

#### 7.1.5 Monitoring and measuring resources

All necessary monitoring and measuring devices are chosen for their specific use and are regularly tested according to the stated instructions.

With respect to testing equipment, marking, identity, adequate measurement accuracy (usage and acceptance criteria), handling, protection and storage (ambient conditions) and protection from improper adjustment are guaranteed at all times.

Calibration of measurement and testing installations is carried out according to the applicable regulations and according to national and international standards. This ensures metrological traceability.

#### 7.1.6 Organizational knowledge

The knowledge of an enterprise is the basis for successful operation in the market. Due to DILLINGER's many years of doing business, the company possesses the knowledge required to carry out the processes and to ensure the conformity of the products. For the transfer of this knowledge, traditional instructional and professional development training measures are applied as well as modern measures for knowledge transfer from one employee to another. The latter serves the purpose of preserving knowledge, as does continuous documentation of corporate knowledge in databases, regulations and reports.



## 7.2 Competence

In general, employees are chosen and assigned to their position according to their vocational training, experience and professional competence.

### Training



Dozens of young people are trained as skilled workers every year in DILLINGER's training facilities.

Special industry-specific and company-specific information is taught within this framework alongside general vocational knowledge.

The company has also maintained partnerships with universities for many years to foster future employees with academic qualifications.

### Training Courses

Job profiles are created in the plant operations and the resulting requirements are compared to the qualifications of the employees. Where a need for training is identified, training is planned, organized and completed with the involvement of the Professional Development department and the other specialist departments. The training courses are documented and evaluated.

### Briefings

Briefings are an important means of preventing accidents and hazardous incidents. Attendance of briefings is documented.

### Special qualifications

If certain tasks require personnel with specific qualifications, these activities are only performed by people who possess those required qualifications.

Examples: Materials testing, non-destructive testing, welding, operation of cranes or forklifts, the functions of legally appointed officers as part of the occupational work and safety and environmental protection systems, plant safety, and energy management.

The qualification requirements for officers are legally stipulated, as are the obligations for professional development.



### **7.3 Awareness**

Employees are regularly informed through various channels and media to ensure they are familiar with the corporate policy and objectives and are aware of their contribution to improving the Integrated Management System.

Programs for continuous improvement foster the quality concept and call for active participation in improving performance.

Special tools and programs are used to promote awareness of occupational safety, environmental protection and energy efficiency.

### **7.4 Communication**

#### **Internal Communication**

The inclusion of all company employees through regular information and communication is an important component of the management system. This includes the exchange of information between managers, employees, work groups and specialist departments.

#### **External Communication**

The Communications department has exclusive responsibility for communicating with the public (press, etc.).

The Sales department is the primary contact for customers. The Marketing department is in particular available for in-depth advice (pre- or after-sales) or for technical discussions.

The facility operators of AG der Dillinger Hüttenwerke, ZKS and ROGESA, employees of the Occupational Safety department, the company physician, the environmental officer, the energy manager and the hazardous incident officer maintain contact with the relevant ministries and authorities as part of performing their duties.

Information relevant to the Occupational Health and Safety Management System is communicated from the Health and Safety department to external bodies.

Communication with authorities and the neighborhood in the event of emergencies and hazardous incidents that affect people living nearby is stipulated in the company emergency and hazard prevention plan (BAGAP).

Complaints from the neighborhood are handled by the Environmental Protection department in coordination with the Legal department.

The quality management officer is responsible for communication with the certification and approval bodies in matters relating to approvals and certifications. The quality management officer is the contact person for all external audits relating to the Integrated Management System.

Further stipulations regarding internal and external communication are described in detail in internal process instructions.

## 7.5 Documented information

### 7.5.1 General

The documented information required by the standard and necessary for the effectiveness of the IMS is created, updated and controlled.

Documented information from the IMS is created and controlled in electronic document management systems (DMS).

Customer- or order-related documented information such as the customer inquiry, quotation, and specifications are managed by the Sales department in software solutions provided for this purpose.

### 7.5.2 Creating and updating

When creating and updating documented information in the electronic document management system (DMS), the information is suitably identified. The identification includes, among other things, the title, date, author, reference number. Changes to the documents can be tracked.

The subdivision of the system documentation is shown in the adjacent figure.

In the case of customer or order-related document information, the Sales department ensures that the current documents are provided and identified accordingly.

#### Documents other than the IMS requirements

Other documents include: standards, laws and regulations, internal specifications, safety reports in accordance with the Hazardous Incident Ordinance, rules and regulations of BG (German Employers' Liability Insurance Association).

Maintenance and control of such documents is the duty of the areas involved. Regardless of the type and extent of the control measures for individual documents, the principle that only valid documents are used always applies.

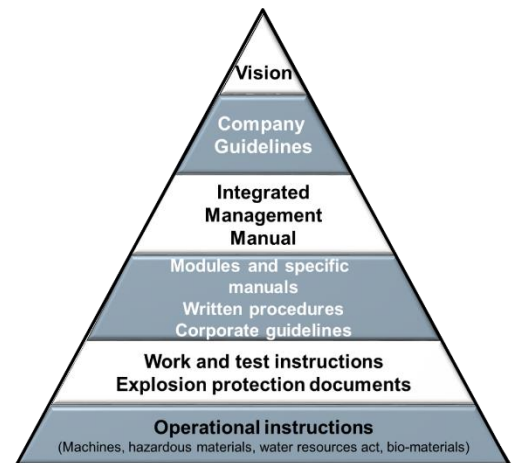
### 7.5.3 Control of documented information

The control of the IMS documents such as manuals, process instructions, work instructions, audit instructions and operating instructions is carried out with the support of electronic Document Management Systems (DMS). This kind of control ensures continuous and controlled distribution including confirmation of receipt.

Documented information that constitutes proof concerning the fulfillment of requirements as well as the effective operation of the Integrated Management System is archived. The areas responsible for their creation or execution are generally responsible for archiving. The duration, medium, location and responsibility for archiving are defined.

The responsible departments must ensure that the documented information remains suitably filed/stored, protected from loss or damage, readable, easily identifiable and retrievable for the entire archiving period.

Ensuring data preservation is the responsibility of the IT department, which prevents data loss through redundant systems and regular data backup.



## 8 Operation

### 8.1 Operational planning and control

The specifications and measures for realizing customer orders in their sequence form a “quality plan”. This includes the main specifications such as: the requirements, the design, the flow charts in the production units (e.g. day program, production plan), the quality inspections and the test and measurement procedures, and equipment.

All quality plan data are saved in databases and are selectively retrieved at the individual production sites.

In internal orders, all order-specific details and specifications are defined, including:

- Requirements for product properties (physical, chemical, geometrical) surface quality and internal condition
- Manufacturing and testing processes
- Required verification, monitoring, and release measures
- Deadlines, quantities, logistics
- Labeling, documentation

### 8.2 Requirements for products and services

#### 8.2.1 Customer communication

Communication with customers primarily takes place through the Sales department. In the case of in-depth advice (pre- or after-sales) or technical discussions, the Marketing, Research and Development, and Technical Service departments in particular are available. The necessary communication media and processes are described in detail in internal process instructions.

#### 8.2.2 Determining of requirements for products and services

#### 8.2.3 Review of the requirements for products and services

#### 8.2.4 Changes to requirements for products and services

External requirements affecting the company are identified by the specialist departments concerned, checked to ensure they are up to date, introduced into the organization, and communicated and made available to the areas and persons affected with their relevant activities, products, processes or facilities.

#### **Sales**

The representation of DILLINGER with respect to its customers is carried out by the Sales department. The Sales department is also responsible for handling inquiries and offers, forwarding orders into the internal IT system, confirming orders for customers, and processing commercial orders.

#### ***Inquiry and offer processing***

Incoming inquiries are recorded and the technical part is processed by the responsible departments. A quotation is prepared, stating price and deadline, on the basis of the technical opinion. If the requested product is beyond the technical feasibility, no technical offer is made.

## **Purchase order processing**

### ***Orders***

Incoming orders are given an order number. The assignment of the purchase order number to the customer order is always clear and consistent.

### ***Commercial purchase order processing***

All purchase orders undergo checking immediately after they are received. A review is performed first and foremost of the elements of the purchase order (grade, standards, specifications, etc.), the commercial boundary conditions, deadlines, prices, credit rating, transport, completeness of the purchase order documents, and consistency with the offer (contract review).

### ***Technical purchase order processing***

After the commercial purchase order has been created, the technical purchase order is created. It contains all the technical specifications and boundary conditions required for production from, for example, the commercial purchase order, technical regulations or specifications, standards, etc. It serves as the basis for the complete manufacturing process.

### ***Standards office***

To support inquiry and order processing, the standards and regulations necessary for heavy plate supply are analyzed and interpreted by the standards office. The result of these activities is made available for further processing in the form of standardized information sheets and computer files.

### ***Review, release, order confirmation***

After entry into the IT system, an automatic plausibility check of the data in the technical order is performed. The initial entry into the system and significant changes are reviewed by a second person.

Based on the technical purchase order and facility availability, a schedule is calculated and synchronized with the agreed delivery date. This is followed by a release for production. Following successful commercial and technical contract reviews and release, the order confirmation is sent to the customer as a conclusion and documentation of the contract review.

### ***Changes and additions to the order***

Significant changes to the order are recorded through identifiable changes to the commercial purchase order. Acceptance or rejection of the changes is dependent on the content of the changes and the processing-status of the order.

### ***Creation of the production documents***

For production, the specifications from the customer purchase order as well as the design and test requirements are implemented as part of the work planning process. In the course of this, standardized processes are defined for standard products and both rolling mills use the same metallurgic design.

Production documents for the production plants are compiled from this.

### ***Project coordination***

The project coordinator coordinates and optimizes the internal processes and activities within large-scale projects, from the inquiry down to the delivery of the plates. Apart from the Sales department, the project coordinator is the first contact for the customer for technical questions.



## **8.3 Design and development of products and services**

### **8.3.1 General**

In-house Research and Development and Technology departments work continuously on the further development of products and processes. This includes further development in the areas of hot metal production, steel production and heavy plate production.

State-of-the-art technology and feasibility is incorporated into the internal processes through cooperation with external research institutes and universities.

### **8.3.2 Design and development planning**

The highest authority for the permitting and release of design projects and their results is the executive management. The Research and Development departments are responsible for guiding design projects. They plan in collaboration with other concerned departments, including Marketing, Manufacturing, and Production Planning:

- Goal, means, time frame, feasibility studies
- Responsibilities, authorizations, other participants involved/interfaces
- Planned phases (including, if needed, assessment, verification, validation)
- Documentation (e.g. procedural regulations, material data sheet, design definition, report)

### **8.3.3 Design and development inputs**

The specifications take into account, for example:

- Material properties (chemical composition, mechanical and technical properties, processing at the customer's premises, etc.), as a requirement from customer specifications
- Internal and external product qualities, tolerances and dimensions
- Facilities and process for manufacturing
- Testing procedures, scope of testing
- Licenses, regulations, bodies of rules and regulations, laws, patents, etc., to be observed
- Quantity, deadline, costs

### **8.3.4 Design and development controls**

Activities and procedures for development can include:

- Comparison with proven design (basis: evaluation of reference orders)
- Use of artificial intelligence models and methods (neuronal networks)
- Trials in the laboratory or plant
- Initial sample/prototype (if needed through testing with a processor or user)
- Production of a sample

### **Product managers and experts**

The steel grades supplied by DILLINGER are divided into multiple groups. One product manager is responsible for each group. This product manager is supported by product teams composed of specialists from various departments.

Experts from various operations (steel plant, rolling mill, research, development and design, inspections, chemical lab, etc.) are available for specific questions concerning feasibility.

**8.3.5 Design and development outputs**

The design and development output is authorized prior to release and made available and documented appropriately, such as in the form of requirements, instructions, specifications, reports, or data.

**8.3.6 Design and development changes**

Changes made in the development are identified and documented, and the concerned development activities (such as assessment, verifications, validation) are redefined or newly defined prior to their authorization.

## **8.4 Control of externally provided processes, products and services**

### **8.4.1 General**

As a rule, there is no external procurement of input material for semifinished products and heavy plate production. Hot metal, steel and slabs are manufactured in the Dillingen plant, and plates are produced in the plant's own rolling mills.

Supplies of quality-relevant products and external services are provided only by qualified suppliers. A supplier assessment is performed for quality-relevant and other major products and services to verify that suppliers fully meet the requirements. Alongside the quality criteria, occupational safety, energy efficiency and environmental protection criteria are firmly embedded in the purchasing policies.

Quality- and process-relevant purchased materials as well as quality-relevant equipment are procured within the company's holding company (SHS).

The Purchasing department of ROGESA is responsible for raw materials purchasing in the area of the blast furnace (ROGESA) and ZKS. In addition, the subsidiaries have their own departments for specific purchasing at their locations.

### **8.4.2 Type and extent of control**

Quality-relevant products and services used for manufacturing products and the accompanying documents undergo a receiving inspection.

These products are used only after their release, even in the unscheduled situation of an urgent production job. In the case of non-conformities, operations are carried out as described in section 8.7.

#### **Supplier rating**

A supplier rating is performed as both an initial rating and as a repeat rating of an already qualified supplier.

For quality-relevant and other important products, an initial sample testing and a trial shipment on a smaller scale is always performed prior to the first order.

The results and changes to the supplier assessment are documented and taken into account for purchasing.

Supplier audits are performed as needed at a national or international level in conjunction with the specialist departments.

#### **Procedures for construction projects**

The planning responsibility belongs to the builder or project manager. The builder or project manager is obligated to involve the relevant specialist departments in a timely manner in the planning process – such as Occupational Safety, Health Services and Environmental Protection as well as the hazardous incident officer and the energy manager. The builder or project manager is also obligated to comply with legal and governmental regulations as well as those of the Employers' Liability Insurance Association, including the appointment of suitable coordinators or compilation of a safety and health protection plan.

#### **Purchasing of hazardous materials**

Purchasing of hazardous materials is done exclusively through a central office. This procedure ensures that the hazardous materials are controlled and achieve access to Dillingen via only one, defined path. For new purchases, the procedural regulations for purchasing hazardous materials through the Purchasing department apply.

**8.4.3 Information for external providers**

Purchasing from external suppliers is generally carried out with the following processes or instructions: Needs determination, provision requests, inquiry, supplier instructions, order/request, delivery, review, modalities in the case of changes or, respectively, non-conformity, documentation.

The order documents are stored in the purchasing departments and the supplier documents (e.g. shipping notes, bill of delivery) are stored in the offices responsible for the respective incoming goods.

## 8.5 Production

### 8.5.1 Control of production

DILLINGER is an integrated mill that covers the complete production chain, from the production of coke and hot metal to steel and plate production. This enables all decisive factors to be controlled, optimized and perfectly coordinated. At the same time, technologies from Industry 4.0 are being used in more and more areas to make the processes faster, more efficient and more flexible.

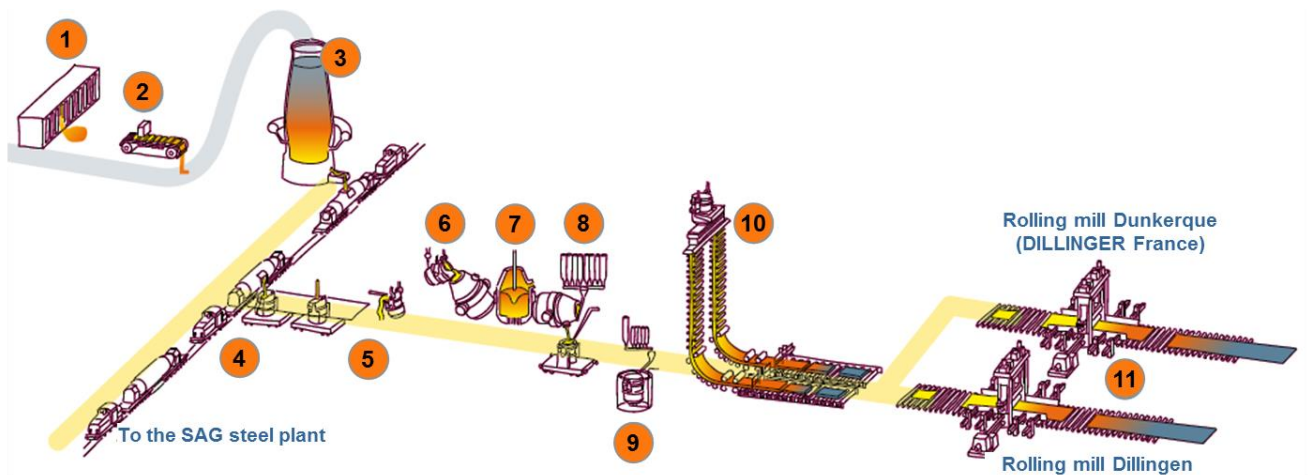
#### Production planning und -control

Production planning and control involves specifying and coordinating order scheduling and capacity planning as well as controlling production in the rolling mill and steel plant production areas.

Specifically, this means:

- Scheduling
- Slab supply
- Steel plant production control
- Rolling mill production control

#### Production process



- |                               |                          |
|-------------------------------|--------------------------|
| 1 Cokerie                     | 7 Oxygen blowing process |
| 2 Sinter plant                | 8 Alloying of steel      |
| 3 Blast furnace               | 9 Vacuum treatment       |
| 4 Desulfurization of pig iron | 10 Continuous casting    |
| 5 Skimming of the Slag        | 11 Rolling               |
| 6 Filling converter           |                          |

Diagram: Production process of DILLINGER



**Coking plant**



Zentralkokerei Saar GmbH (ZKS) is a joint subsidiary of Aktien-Gesellschaft der Dillinger Hüttenwerke, Dillingen, and Saarstahl AG, Völklingen, with each directly or indirectly holding 50% of the company’s shares. ZKS produces in continuous operation with two coke batteries, whose total capacity is approx.

1.3 million tons of coke per year. Aside from the coke, which is produced exclusively for use in the blast furnaces of the affiliated company, ROGESA Roheisengesellschaft Saar GmbH (also a joint subsidiary of Aktien-Gesellschaft der Hüttenwerke and Saarstahl AG), the production program also includes resulting by-products such as raw tar, crude benzene, and pure sulfur. The coke oven gas produced is used as fuel in the production plants of Dillinger and SAG.

**Production facilities**

- Coal preparation (blending beds, grade stores, coal mills, coal moistening, metering and day bunkers).
- Coke ovens (2 batteries: battery 1 with 40 ovens and battery 3 with 50 ovens)
- Oven operating machines (ramming, charging- and discharging machine, coke and filling gas transfer machine, quenching car)
- 2 extinguishing towers + 3 coke ramps
- Production of coal derivatives

**Blast furnace**



Roheisengesellschaft Saar mbH (ROGESA) is a joint subsidiary of AG der Dillinger Hüttenwerke and Saarstahl AG, with each directly or indirectly holding 50% of the shares.

The blast furnaces produce up to 4.6 million tons of hot metal per year from iron ore, coke, coal and aggregates for DILLINGER and Saarstahl AG. Two sintering plants are located upstream of these blast furnaces. The blast-furnace process is being continuously optimized to achieve higher efficiencies and quality, by means of, for example, extremely high coal-injection rates.

**Production facilities**

- 3 Blast furnaces
- Crushing and screening plants for ores
- Mixing and storage yards for ores
- 2 sintering plants
- 40 coal bunkers
- Coal pulverizing plants
- Plants for unloading trains and barges

Sustainability is also of great importance, however, and by-product gases are converted to electrical energy in a blast furnace gas power plant located at the Dillingen site. In addition, hydrogen-containing coke oven gas is injected, which leads to a reduction in CO2 emissions. The production of hot metal also yields a by-product – slag – which is used as an ecologically safe building material in highway construction and, in the form of ground granulated blast-furnace slag (GGBFS), in the cement industry.

## Steel plant



Hot metal is refined with the addition of recycled scrap to make crude steel using the basic oxygen process in two 193 t converters in the LD steelmaking plant. This process converts the high-carbon iron into low-carbon steel.

Secondary metallurgical treatments such as vacuum treatment of the liquid steel constitute an important operation in the steelmaking plant's process. VD vacuum degassing installations make it possible to adjust extremely low residual content of undesirable tramp elements such as sulfur in the steel and to calibrate the alloy to the downstream rolling process. The capacity of the vacuum systems is dimensioned to permit treatment of the entire production quantity to achieve ultra-clean steel.

The main product of the steel mill is continuous cast slabs, which are cast in formats of up to 600 x 2,200 millimeters, making them among the thickest continuous cast slabs in the world.

Both the vertical bending and the vertical process are used in Dillinger's steel plant. These processes achieve a level of cleanness throughout the entire cross-section of the slab that is far superior to other continuous-casting systems.

Other products of the steelmaking plant include conventionally cast ingots of up to 60 tons gross weight, and steel castings.

### Production facilities

- Hot-metal desulfurization system with deslagging stand
- Two basic oxygen converters, each 193 t, with Ar/N<sub>2</sub> bottom bubbling
- Secondary metallurgy:
  - Ladle-bottom bubbling (1 to 3 bubbling bricks)
  - Lance bubbling
  - Vacuum treatment/ladle degassing
- Ingot casting (up to 60 t ingot weight)
- Continuous casters
  - Quantity: 4
  - Type: Twin-strand vertical-bending caster
  - Slab thickness: up to 600 mm
  - Slab width: up to 2,200 mm

**Heavy-plate rolling mills**



Dillinger's heavy plate rolling mills, located at Dillingen and Dunkirk (Dillinger France), are among the most efficient in the world. They are used to transform slabs and ingots into heavy plate with lengths of up to 40 m, widths exceeding 5 m, and thicknesses of up to 500 mm. The steel plant, rolling mill and product development work closely together to produce customized heavy plate: chemical composition, rolling process and heat-treatment parameters are optimally matched to the steel's specified requirement profile.

Two four-high reversing stands are used for rolling. The long roll-body lengths allow the production of very wide plates and high unit weights. The enormous rolling force enables high formability to be achieved even with very thick plates.

Production in the rolling mills is largely automated and computer-based. The process parameters are determined beforehand on the basis of mathematical models and transferred into the operation computer.

Through the use of cooling systems and heat treatment furnaces as well as a quenching and tempering plant, heavy plate can be supplied in any desired delivery condition.

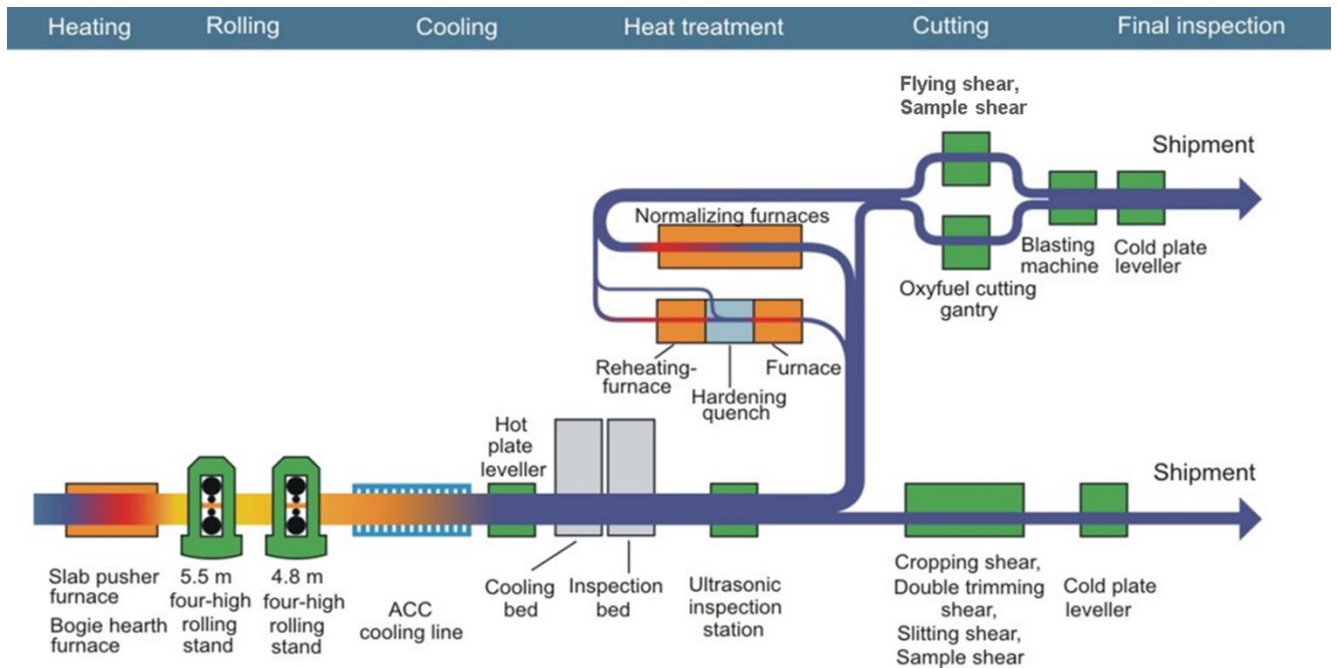
Prior to shipping, each plate is inspected by the plant's Internal Inspection department according to the customer's specifications.

Large loading and transport capacities (truck, rail or barge) are available for shipping.

Production facilities	
Rolling mill Dillingen	Rolling mill Dünkirchen
<ul style="list-style-type: none"> <li>▪ 3 slab pusher + 3 bogie hearth furnaces</li> <li>▪ 5.5 m Quarto: roughing stand</li> <li>▪ 4.8 m Quarto: finishing stand</li> <li>▪ Dimensions of heavy plates:                             <ul style="list-style-type: none"> <li>- 6 - 450 mm thickness</li> <li>- up to 5,200 mm width</li> </ul> </li> <li>▪ MULPIC-cooling section (ACC, direct quenching)</li> <li>▪ Flame cutting and shear line</li> <li>▪ Automatic ultrasonic testing machine</li> <li>▪ Heat treatment furnaces</li> <li>▪ Water quenching facility</li> <li>▪ Shot blasting and priming facilities</li> <li>▪ Treatment methods: TM, normalizing rolled, normalized, tempered, water quenched</li> </ul>	<ul style="list-style-type: none"> <li>▪ 3 slab pusher furnaces</li> <li>▪ 4.3 m Quarto: roughing stand</li> <li>▪ 5.0 m Quarto: finishing stand</li> <li>▪ Dimensions of heavy plates:                             <ul style="list-style-type: none"> <li>- 6 - 200 mm thickness</li> <li>- up to 4,700 mm width</li> </ul> </li> <li>▪ ACC-cooling section</li> <li>▪ Flame cutting and shear line</li> <li>▪ Automatic ultrasonic testing machine</li> <li>▪ Heat treatment furnaces</li> <li>▪ Shot blasting and priming facility</li> <li>▪ Treatment methods:                             <ul style="list-style-type: none"> <li>TM, normalizing rolled, normalized, tempered</li> </ul> </li> </ul>



The figure below schematically represents the production route for the Dillingen location as described above:



**Measurement equipment in the mother plate production process**

During production of the mother plate, many parameters are measured within the various production steps including length, width, thickness, flatness, contour, and internal properties.

To calibrate the thickness gauges, reference units are built into the systems and moved into the measuring gap at regular intervals.

Furthermore, for cyclical testing of the measurement equipment, reference test units are passed through and measured.

**Temperature measurement**

Temperature measuring devices such as thermocouples, pyrometers and resistance thermometers installed in the production systems or in the heat treatment furnaces are checked, maintained and calibrated on the basis of defined schedules.

**Quality monitoring during heating and heat treatment**

Roller hearth furnaces as well as other heat treatment furnaces are available for heat treatment. The measurement equipment in the furnace is subject to continuous quality assurance and is regularly reviewed.

Comprehensive tests are carried out at regular intervals with prepared test plates and slabs heated in the furnaces under production conditions.

Reproducibility of the thermal process steps is confirmed and assured through continuous monitoring of the mechanical and technical properties of the heat-treated products.

**Tolerances of dimension and form and surface properties of the heavy plates**

DILLINGER heavy plate is produced according to international standards and technical delivery conditions. Higher requirements can be implemented upon customer request.

**Surface treatment**

Automatic shot blast descaling equipment and production coating equipment (shop primer) are available for treating the surface of the plates in order to temporarily protect them from corrosion.

**Maintenance**

The Maintenance department ensures the sustainable availability and functionality of the production, transport, communication and testing facilities as well as the energy and media supply systems.

Regular maintenance of the plant units relevant for the environment, energy and safety (safety devices, exhaust air filters, heat exchangers, etc.) minimizes the risk of harmful environmental impacts, energy losses, accidents or damage to health resulting from defects that occur. Preventive maintenance measures include, among other things, regular expert inspections carried out, for example, on pressure vessels or systems for handling substances hazardous to water, the risk assessment of the facilities, and the inspection of the facilities using state-of-the-art diagnostic procedures (e.g. vibration measurement of the bearings).

**New construction**

New construction of facilities at DILLINGER is centrally controlled by the New Construction department. The project process includes the steps of project organization, rough concept planning, execution planning and project management for new construction projects.

Purchasing is carried out in cooperation with the Operational Safety and Environmental Protection departments as well as with the energy managers, with the aim of obtaining safe facilities and facility components that protect the environment and are energy-efficient.

The approval process with public authorities is accomplished in cooperation with the Environmental Protection department. The entire procedure is described in internal process instructions and manuals.

## Subsidiaries of DILLINGER

### **Saar-Industrietechnik GmbH**

Saar Industrietechnik GmbH, founded in 2020, is a wholly owned subsidiary of AG der Dillinger Hüttenwerke and Saarstahl Vermögensverwaltungs- und Beteiligungs-OHG.

As a central workshop service provider, its task is to provide specific maintenance services for companies in the steel industry. The main focus is on the mechanical and welding production, repair and distribution of components for general mechanical and facility engineering, electrical engineering, and electrical and vehicle maintenance.

### **Steelwind Nordenham (SWN)**



The manufacturing concept of SWN is based on the complete production of foundation elements for offshore wind generators consisting of monopiles and transition pieces, including all necessary onshore works and services such as coating or assembly of the secondary steel components or technical installations.

#### **Products**

Mega Monopiles consist of a foundation pile which is rammed, drilled or vibrated deep into the seabed and extends up above sea level, and transition pieces mounted on the foundation pile.

Steelwind Nordenham manufactures Mega Monopiles which can be used in water depths of up to 80 meters and with unit weights of up to 2,400 tons, lengths of up to 120 meters and diameters of up to 10 meters with wall thicknesses of up to 150 mm.

In addition, fully equipped, coated and installation-ready transition pieces of up to 500 tons can be manufactured, as can conical shell sections and piling pipes.

### **Jebens**



Jebens specializes in flame-cut steel parts, cut-to-size plates and ready-to-install welded components for exacting requirements in the heavy machinery and plant construction sector.

#### **Products and services**

Flame-cut parts and cut-to-size plates with unit weights of up to 55 tons – with the support of a mobile crane, up to 70 tons. Moreover, ready-to-install welded components can be produced with unit weights of up to 160 tons. With the in-house annealing furnace, for example, components of up to 160 tons can be job-annealed. Additionally, Jebens operates a plate warehouse for trading heavy plates with unit weights of up to 55 tons.



### **Ancofer Stahlhandel**



As a steel trader, Ancofer supplies a comprehensive range of heavy plate, flame cut parts and hollow structural sections with extensive fabrication options.

#### **Products and services**

Ancofer Stahlhandel (steel trading) supplies heavy plate ex warehouse with unit weights of up to 50 tons.

Additionally, flame-cut parts with up to 600 mm thickness can be manufactured via CNC-controlled flame-cutting machines and a plasma facility. With respect to length and width, flame-cut parts can be produced with a width of up to 9 meters and a length of 30 meters.

### **AncoferWaldram Steelplates**



AncoferWaldram Steelplates is a steel trader from the Netherlands. It serves customers in the Netherlands, Belgium, France and worldwide. In addition to oxyfuel and plasma cutting, edge processing and shot blasting can also be performed.

#### **Products and services**

AncoferWaldram Steelplates distributes, among other things, structural steels, shipbuilding grades, offshore plates, TM grades up to 100 mm thickness, ultra-high-strength DILLIMAX and sour gas-resistant DICREST.

### **DILLINGER Middle East**

DILLINGER Middle East supplies heavy plates ex warehouse and is responsible for sales in the Middle East and India.

### **Saar-Rhein-Transportgesellschaft und Trans-Saar**

The focus of the transport companies Saar-Rhein and Trans-Saar is the transport of heavy plate and raw materials via rail and truck as well as inland barges and seagoing ships.

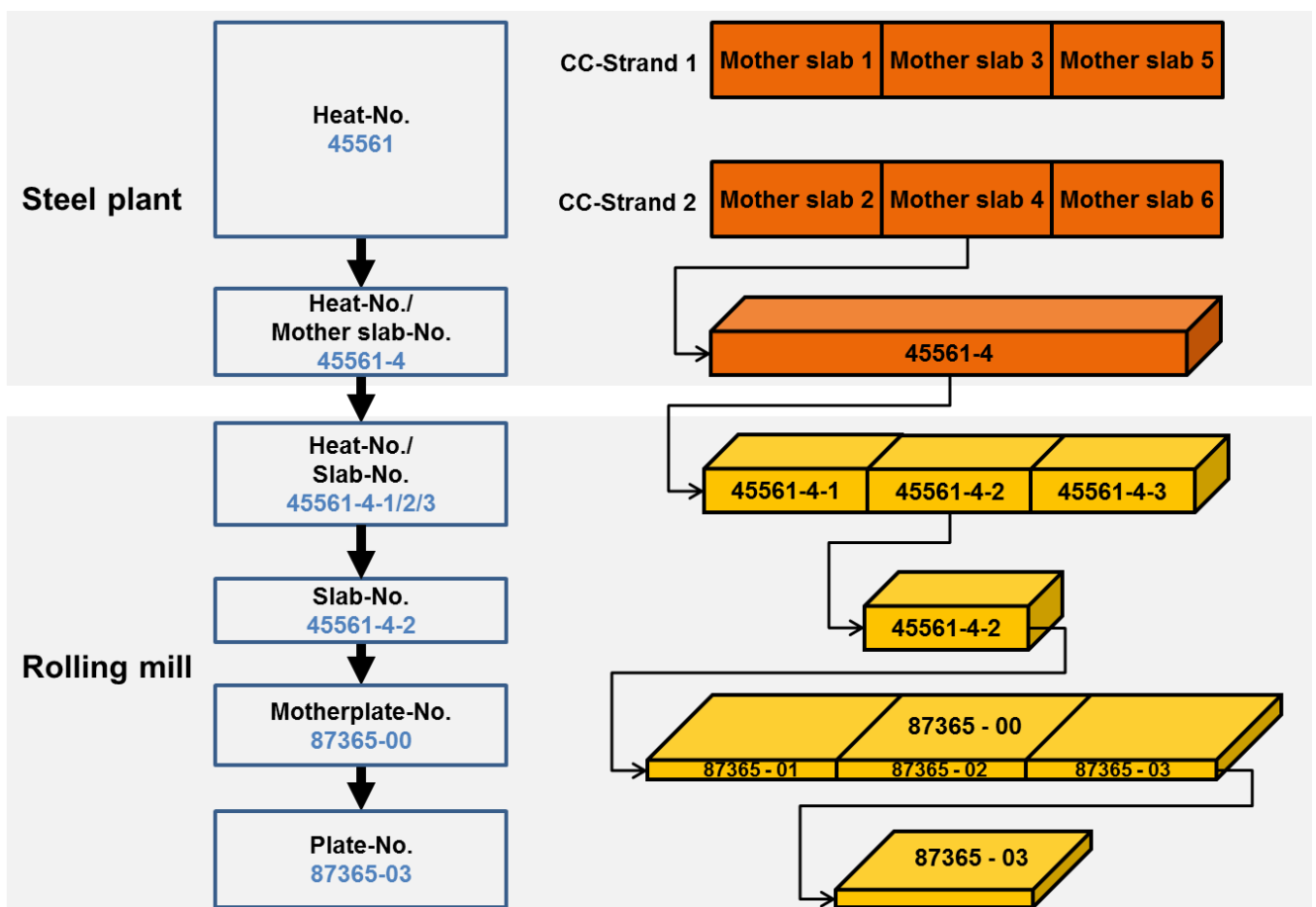
**8.5.2 Identification and traceability**

The products can be identified and linked with their documents and data throughout the entire order process (manufacturing, storage, transport) and traced all the way back to their origins.

The identity and traceability of the products are ensured through physical markings on the products or through appropriate substitution measures with accompanying papers or computer programs.

Particularly when the markings on the products are themselves temporarily inaccessible or lost, specific substitution measures such as furnace charging plans, rolling flow charts and transfers to other areas ensure that the right product is again furnished with the proper markings before further processing.

According to specification, possible marking types include: (hard) stamping, dye stamping, labels. The following flow chart shows the sequences of each processing step and the associated markings, identity safeguard and traceability.



Identification and traceability

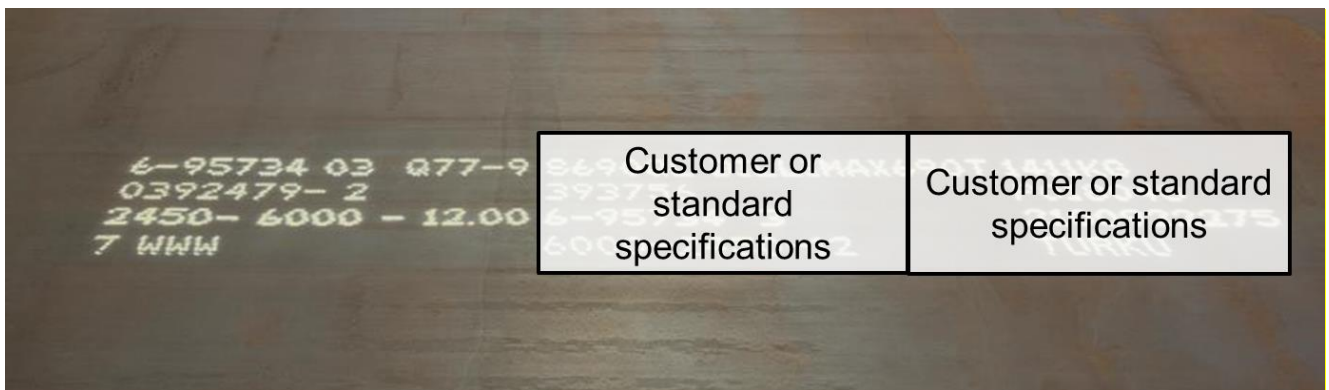
### Plate marking

DILLINGER heavy plate is marked by default with a steel stamp – dot-style, low stress – and/or paint marking. Other types of marking are possible on agreement.

Steel stamping includes the indication of steel grade, melt number, mother plate and individual plate number, rolling direction, manufacturer's mark as well as the mark of the final inspection officer and other agreed data.

The standard color marking contains the mother plate and individual plate number, the works order and position number, as well as the order dimensions with plate width, length and thickness.

An additional marking specified by the customer can be attached to the upper surface of the plate. Paint bar code markings can be agreed on for the paint marking of the plate edge.



Example for a plate marking

### Material tracing

Material tracking is ensured through software that is programmed in-house (Platerouter). Platerouter is based on a Local Positioning Radar (LPR) system.

Each crane in the rolling mill and the slab preparation yard is equipped with LPR. Each plate movement is confirmed with a receipt stating the place and time.

Each required process step is defined in the production plan by the systems technology. Process steps that have been carried out are systematically confirmed with a receipt.

Through the combined use of the production plan and the Platerouter, it is possible to determine the position of each slab and each plate at all times.

**8.5.3 Property belonging to customers or external providers**

Products provided by the customer become part of delivered products only in exceptional cases such as in contract rolling services.

In these cases, customer property (including intellectual property) is treated with the same care as DILLINGER property.

Further measures such as quality tests and certificates are carried out according to prior agreements. Loss, damage or impairment of customer property are documented in the process and a solution will be worked out together with the customer.

**8.5.4 Preservation**

The products are transported, handled and stored at each of the plants/mills according to the applicable and relevant regulations during production and until shipment so as to avoid any impairment in the condition. The products are delivered according to the shipping specification defined in the customer purchase order.

The product's condition is assessed before use or processing in order to find and prevent further use of any products and parts that are or have become defective.

**8.5.5 Post-delivery activities**

For technical questions or claims, customers receive in-depth consultation and support from Technical Service, supported where needed by various specialist departments.

**8.5.6 Control of changes**

Process changes in production are verified and validated as a matter of principle, so that conformity with the requirements is ensured.

## 8.6 Release of products and services

Quality inspections are carried out by qualified and authorized personnel from the Inspection department, the chemical laboratories and the production plants. The monitoring of “company self-inspection” procedures, the qualification of employees for “company self-inspection” and the final release of the plates is carried out by the Inspection department, which is independent of the production plants.

Certain examination steps or monitoring measures may be carried out, depending on an agreement at the time of ordering, in the presence of the ordering party or their representative (“third-party inspection”). If a product does not meet the requirements, the examining department identifies and documents the deviations.

### Inspection department

The Inspection department is accredited in accordance with EN ISO/IEC 17025 in its essential fields of activity (testing laboratories, operational acceptance and non-destructive testing in the rolling mill). The organization, activities and procedures for maintaining the validity of the results are described in the QM manual for acceptance and the associated instructions.

The tasks of the inspection department are:

- Identity-, visual- and dimensional inspection as well as sampling
- Ultrasonic-testing on heavy plate, manually and automatic
- Eddy Current testing on heavy plates (by machine and manually) to detect hard spots
- Special tests on heavy plate (magnetic powder, hardness, US thickness measurement etc.)
- NDT testing technology (e.g. creation of procedures, development of new test methods)
- Production of specimens incl. simulating specimen heat treatment
- Mechanical-technological material testing
- Metallographic examinations as well as chemical corrosion material test
- Third-party inspector control and compiling of certificates
- Reassessments and additional requirements
- Anomaly handling
- Testing technology destructive material tests (including the preparation of test specifications,)The primary tests and techniques used are:

Destructive	Non-destructive
<ul style="list-style-type: none"> <li>▪ Tensile test (round, flat)</li> <li>▪ Hot tensile test</li> <li>▪ Charpy impact test</li> <li>▪ Crack Tip Opening Displacement (CTOD) - test</li> <li>▪ Hardness test</li> <li>▪ Drop weight tear tests</li> <li>▪ Weld bead bend tests</li> <li>▪ Examinations of welding seams</li> <li>▪ Corrosion tests (HIC, SSC)</li> <li>▪ Metallographic investigations</li> <li>▪ Determination of the segregation behaviour</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ultrasonic testing</li> <li>▪ Eddy current testing</li> <li>▪ Magnetic particle testing</li> <li>▪ Hardness test on the product</li> <li>▪ Visual inspection</li> <li>▪ Various dimensional test</li> <li>▪ Measurement of residual magnetism</li> <li>▪ Spectrometer measurements</li> </ul>



**Non-destructive testing of plates**

DILLINGER steels are always tested for compliance with the parameters stipulated in the respective norms, standards, materials sheets and customer specifications.

For this test, among others, non-destructive testing is performed within the production flow.

Inspection of the surface properties and form and dimension is carried out according to the conditions of valid international standards as long as no other conditions have been agreed.

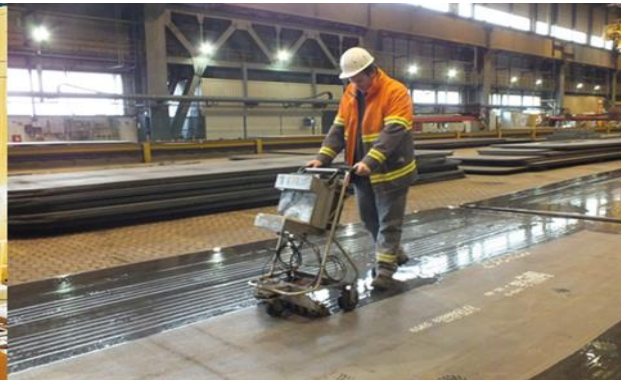
**Ultrasonic testing /eddy current testing**

Testing personnel are qualified and certified both for automatic and manual testing, and certified according to Level 2 DIN EN ISO 9712 and, if applicable, according to SNT-TC-1A.

Furthermore, several qualified and certified UT Level 3 testers according to DIN EN ISO 9712 and, if applicable, according to SNT-TC-1A, are available as test supervisors.



Ultrasonic heavy plate testing line for plate thicknesses up to 55 mm in the shear line



Manual ultrasonic testing for plate thicknesses up to 400 mm

**Destructive testing**

Investments in the area of destructive testing primarily serve to maintain testing capability and to ensure the validity of test results while incorporating the latest state of the art. There is a high degree of automation in the production and testing of specimens. The tests are carried out exclusively by qualified testing personnel who have been trained as materials testers.



Automated tensile testing machine (1200 kN)



CTOD testing machine



## Chemical analyses and chemical-physical examinations at the Dillingen location

The chemical laboratories of Dillingen are accredited according to EN ISO/IEC 17025.

The activities of the testing lab are:

- Sampling and processing of the essential metallurgical substances
- Inorganic chemical analysis of steel, hot metal, coke and production materials, raw materials and byproducts of steel, hot metal, and coke production
- Inorganic, organic-chemical analysis of waters, wastewaters, soils, sludges, dusts, gases and air
- Chemical-physical determination as well as chemical analysis of lubricants
- Inorganic and organic chemical contract analysis
- Contradictory inorganic chemical analysis from purchase contracts.



### Release for dispatch

The Inspection department examines the conformity of the quality characteristics of the products to the agreed specifications.

In the case of undisputable conformity of the quality characteristics to the order requirements, the products are released for dispatch. The final release is granted after feedback from all individual specific release steps.

Release is made visible through the release code in the IT system and, externally, through the test stamp of the Inspection department on the plate.

In the case of an agreed third-party inspection, the Inspection department at first carries out the agreed inspections and/or examinations in cooperation with the “third-party inspector”; then release is granted by the third-party inspector and, finally, by DILLINGER.

Released and dispatched products are registered in order documents (IT, dossier). The Inspection department issues statements and inspection test certificates and collects the relevant inspection documents into a dossier.

## 8.7 Control of nonconforming outputs

The production of the products in its complete process from order to shipping is subject to a planned succession of quality tests. Like the production steps, they are defined in production documents specific to the order (e.g. in the Technical Order or Fabrication Plan).

All official quality tests are based on standards, process instructions, test instructions, work procedures or IT programs.

Standard controls and holding points are integrated into the production plan so that production can be continued only after the nominal values as defined through the regulated tests have been reached. The performance and the result of the quality tests are documented. The respective status of production and tests is continuously updated in the production plan. It can therefore be traced at any time (“order tracing”).

A majority of the non-conformities (e.g. products, processes) and their possible errors are differentiated according to error type with “error keys/codes”; specific further measures are often attached to this standardization.

If necessary, non-conformities (e.g. defective products) are specially labelled, blocked or separated. Non-conforming results are documented with respect to type, actions, releases and the responsible unit. If a process/product is identified as deficient, countermeasures will be taken so as to eliminate the deficiency.

Plates showing non-conformities are marked with a blocking note in the production plan. Planned subsequent production steps can no longer be carried out. For example, the system cannot print out delivery papers for blocked plates.

If elimination of the deficiency is possible, additional testing steps are automatically inserted for reworking. If necessary, permissions for release are required from a relevant office and/or the customer (concession request, special releases).

The objective of all the activities mentioned is that non-conforming products, processes or facilities are not used unintentionally, delivered, or further operated.

## 8.8 Aspects of occupational safety, health and environmental protection, of energy efficiency and safety of facilities

### 8.8.1 Assessment of working conditions (risk and stress factors)

#### Occupational Risk Assessment

The employer is bound by various laws, ordinances and regulations (e.g. Industrial Safety Act (ArbSchG), Operational Safety Ordinance (BetrSichV), German Hazardous Substances Ordinance (GefStoffV), Accident Prevention Regulation 1 of the German Social Accident Insurance (DGUV V1) to assess the working conditions in its company from the perspective of occupational safety and to take the required safety measures.

The most important tool for the implementation of the obligation is the occupational risk assessment.

The result of the risk assessment is documented centrally and accessible to all employees.

Necessary actions are allocated to the responsible persons by name. The processing status of the actions is continuously updated and regularly reported to the responsible person via Outlook notification.

Additionally, the actions resulting from the risk assessment are subjected to implementation and efficiency monitoring and are conclusively verified through internal audits.

Potential emergency situations (near-miss situations) are registered in an Intranet-based central registration module and are documented and correspondingly evaluated. Where necessary, the potential hazard is included in the occupational risk assessment and corresponding measures are initiated.

Non-routine work, which is performed for the first time or only rarely, can be included in the operational risk assessment only partially or not at all. For this reason, it is analyzed for potential risks in the context of a "short risk assessment" performed immediately prior to the start of the work. If necessary, the occupational risk assessment is modified.

#### Occupational risk assessment – hazardous substances

Hazardous substances that do not meet the criteria of being carcinogenic, mutagenic, toxic to reproduction (CMR) or toxic are assessed using a checklist in a "simplified" procedure. If even one criterion on the checklist is not met, an extended risk assessment must be carried out, as is the standard procedure for CMR and toxic substances.

The risk assessment of self-generated hazardous substances is always carried out as part of the extended procedure due to the large quantities and the often relatively high-risk potentials.

#### Explosion protection

A risk assessment in accordance with Section 6 of the Ordinance on Hazardous Substances (GefStoffV) must be performed if there is a possibility of the occurrence of an explosible atmosphere in or around, for example, gas holders, gas-fired systems and equipment, storage facilities for gases, etc.

The result of this risk assessment is the drafting of explosion-safety documents in which the hazards and the necessary provisions are described.

### 8.8.2 Placing orders with externals

Alongside the economic aspects, the upholding of occupational health and safety protective regulations must also be taken into account when placing orders to external companies. An extensive external company management system exists for this purpose which governs dealings with outside companies as well as their obligations with respect to industrial safety and health protection.



### 8.8.3 Environmental aspects



The assessment of the environmental aspects of the company which have a significant impact on the environment is important for the formulation of an applicable environmental policy. Environmental goals are derived from the environmental aspects and serve to minimize environmental impacts of business activities. These goals are also in harmony with the company's environmental policy.

The environment must not be impacted by the company's activities over and above the unavoidable. This is why environmental protection measures are an important part of the manufacturing processes and are preferred over taking action after the fact.

#### **Facilities requiring approval/approval management**

As a part of new facility construction or renovation measures, there are constraints on specific facilities as determined by legislation, such as the Federal Pollution Control Act (BImSchG), state building regulations (LBO), the Twelfth Ordinance on the Implementation of the Federal Immission Control Act (12. BImSchV), the Energy Industry Act (EnWG), and the Buildings Energy Act (GEG). The contracting entity or project manager must ensure that all legal permissions requirements are processed in time prior to the start of construction.

#### **Dangerous goods transport**

All transportation of dangerous goods on public streets and railways is regulated by the Law on the Transportation of Dangerous Goods (GGBefG) and given a concrete form by the Ordinance on the Transport of Dangerous Goods by Road, Rail and Inland Waterways (GGVSEB) in conjunction with the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR and RID).

#### **Handling of waste**

All waste that accumulates on the mill grounds is compiled for central documentation by the Environmental department. This is required for the legally prescribed creation of proof of disposal, waste reports, waste register, waste statistics and proof of disposal books. The filling of containers and all internal company waste transports are the responsibility of the discharging operations (waste producers).

#### **Handling and storage of water-polluting substances**

The handling of water-polluting substances (storage, handling, bottling, filling, using) is carried out according to the applicable regulations of the Water Resource Act (WHG) and the Ordinance on Installations for the Handling of Substances Hazardous to Water (VAwS), and their administrative regulation and technical rules.

#### **Handling and storage of hazardous materials**

DILLINGER maintains a hazardous materials register according to the Ordinance on Hazardous Substances (GefStoffV). The maintenance and revision of the hazardous substances register is carried out centrally and is amended in the event of legal changes or as needed. In addition, up-to-date safety data sheets are available.

Employees who work with hazardous materials are given oral instructions before taking on their work, and annually thereafter.

#### 8.8.4 Organization for emergencies and prevention of danger

Emergency preparedness and emergency measures are stipulated by the Corporate Emergency Organization, which consolidates all emergency measures organizationally. A safety management system has been introduced for ZKS and ROGESA as required by the Major Hazardous Incidents Ordinance (StörfallV).



A central part of the central emergency organization is the alarm and response regulation of the emergency personnel, the emergency and hazard prevention plan (Sec. 10 of the Major Accidents Ordinance [StörfallV]), the safety report according to Sec. 9 of the Major Accidents Ordinance (StörfallV), the emergency evacuation and rescue plans, company fire department, company security and health service, complemented by the company regulations and special additional regulations (e.g. crisis team, on-call service, ZKS hazardous incidents, qualified fire protection organization, etc.).

#### Requirements to prevent accidents

During normal operation, measures are taken to prevent fires and explosions in the operating areas and to protect the safety-relevant parts from tampering by unauthorized persons. In addition, a high level of safety is ensured by regular and documented maintenance of safety-relevant facility components and by equipping them with reliable warning, alarm and safety devices.

The necessary safety precautions are taken to avoid operating errors. Employees are regularly trained in the implemented operating instructions and procedural regulations in order to prevent operating errors.

#### 8.8.5 Improvement of the energy related performance, including energy efficiency, energy use and energy consumption

DILLINGER conducts a systematic energy planning process that includes a review of the activities of the organization that affect energy-related performance. The energy plan is in line with the energy policy and leads to activities for the continuous improvement of the energy-related performance.

This serves to minimize greenhouse gas emissions, other environmental impacts and energy costs resulting from business activities.

The basic idea here is that we constantly improve the energy efficiency of our systems and processes in order to reduce our specific energy consumption and sustainably conserve resources.

Actions implemented to improve of the energy-related performance include the following:

- Optimal distribution and use of self-generated energies to minimize external energy requirements
- Enhancing transparency of energy flows and energy costs
- Reducing the specific energy consumption of the plants
- Optimal levels of efficiency in steam generation and distribution and, associated with this, the examination of increasing the heat recovery potentials
- Increasing the share of external electricity generated from renewable sources

**8.8.6 Binding commitments and the review of their compliance**

Compliance with legal and other obligations is regularly assessed and documented as part of the management review.

Information about changes to requirements is communicated through intensive contact with authorities and the Trade Association, through publications and through an external database that is continuously updated, and internally through various committees such as the Occupational Safety and Health Committee (ASA).

Adhering to requirements, legal and otherwise, is of the highest priority while carrying out any activity.



## 9 Performance evaluation

### 9.1 Monitoring, measurement, analysis and evaluation

#### 9.1.1 General

DILLINGER has an extended system of measurement, monitoring and analysis procedures with subsequent assessment and specification of actions and improvements.

The following can be cited as examples:

- Product testing through company acceptance tests, as well as through external test and inspection bodies
- Risk analysis and risk assessment
- Feedback from customers and authorities
- Internal and external audits
- Certifications, licenses, supplier assessments
- Committees and work groups concerned with analysis and improvement of processes
- Qualification/validation of processes, products, machines/facilities, personnel

#### **Measurement of occupational health and safety, environmental protection, plant safety and energy**

Measurements and calibrations of equipment are carried out according to applicable rules and with regard to national and international standards.

In order to protect employees, compliance with legal and professional trade association regulations must be ensured by the area of occupational health and safety. The environmental protection area must comply with the requirements for operations relevant to the environment. Systematic monitoring is therefore utilized.

#### **Data observation/key-figure monitoring**

##### ***Occupational safety***

All incidents (accidents, first-aid book entries, partly also near-accidents) are reported, recorded, investigated and documented.

The key figures are recorded statistically and published in the safety report.

Depending on the severity/potential of the event, the Safety and Health department initiates an accident investigation (according to the "Systematic Accident Investigation" standard: Ishikawa or 5W method).

##### ***Environmental protection***

The monitoring of environmentally relevant data serves as a control to determine whether the facilities are in operational compliance, and as a monitoring of the effectiveness of realized environmental actions. Energy and water consumption data are collected on a monthly basis. Testing is done quarterly.

##### ***Energy management***

Energy consumption is measured through continuous measurement systems directly at the relevant consumers, recorded in databases, and systematically evaluated and balanced in monthly and yearly reports. Key figures provide a basis for tracing energy consumption.

### **9.1.2 Customer satisfaction**

Customer perception and satisfaction are subject to ongoing qualitative and quantitative monitoring.

Market, customer, process and product information is collected, analyzed, evaluated and, if necessary, transferred as measures to the respective defined organizational unit.

A significant component here is the customer satisfaction analysis generally carried out with the help of external institutes.

### **9.1.3 Analysis and evaluation**

Inside the company, data is identified, collected and analyzed in various ways.

The use of statistics provide a basis for the need to determine, analyze, ensure and further develop the quality of processes and products. Quality criteria for relevant processing and testing steps are continuously identified and statistically assessed.

The results of these assessments are used for improvement as a part of research and development, quality planning and assurance, and process development. A variety of statistics and reports are used for information and assessment of the Integrated Management System by the Board of Management.

## **9.2 Internal Audit**

The internal audits are carried out periodically at all certified locations of the Dillinger Group. The IMS coordinator is responsible for the program of internal audits at the Dillingen location and for the internal audits carried out centrally at the subsidiaries. Furthermore, the larger subsidiaries carry out additional internal audits at their own locations.

Performance of internal audits and the necessary qualifications of the auditors are defined as “documented information”. The criteria for performing the audit and the auditors’ qualifications conform to the respective guideline for the standards.

Auditors have no responsibility in the audited area and cannot audit their own activity. The auditors are regularly trained and further qualified.

## **9.3 Management review**

The Board of Management of DILLINGER carries out a review of the Integrated Management System (IMS) in a yearly cycle.

The purpose of the assessment is to determine the ongoing suitability, adequacy and effectiveness of the IMS to achieve the established objectives and principles of the policy, and to ensure that the IMS complies with the requirements of the underlying standards.

The review reveals the possibilities for improvement and any need for changes in the IM System.

A regular management review is carried out in all certified companies of the DILLINGER Group.

## 10 Improvement

### 10.1 General

There are various concepts for continuously improving the process of the company and the efficiency of the Integrated Management System. For example:

- Using data analysis to evaluate and improve processes, products, and facilities.
- Implementing overarching innovation projects with the participation of all divisions.
- Implementing internal and external audits and resulting measures.
- Implementing specific, corrective measures through eliminating given or possible weak points.
- Involving employees within the framework of special programs for continuous improvement.

### 10.2 Nonconformity and corrective action

Procedures are in place for identifying non-conformities to ensure the continuing efficiency of the Integrated Management System. Non-conformities are identified, for example, during:

- Quality tests
- Analysis of quality indicators
- Complaints
- Assessment of customer satisfaction
- Complaints from authorities
- Internal and external audits as well as inspections
- Operational disruptions, accidents, or emergencies
- Deviations of analysis results in environmental protection
- Tips from employees regarding deficiencies or suggestions for improvement
- Analysis and assessment of the energy balances

### Complaints

Customer complaints are received by Sales and controlled and documented through the CRM system (CCM module; Customer Complaints Management).

Each customer complaint receives a distinct identity.

For each technical complaint, a response is given which is passed on to the customer by Sales.

As a final step, an analysis and assessment is carried out for each technical complaint.

If necessary, corrective actions are developed, implemented, and reviewed regarding their effectiveness.

### **10.3 Continual improvement**

DILLINGER must maintain its position in the strongly competitive world market in the future. Locational disadvantages compared to competitors must be offset through continual further development and improvement. To come closer to achieving this goal, the locations execute ongoing programs as well as projects and initiatives of limited duration which provide a basis for continual and sustainable improvement.

The management of the programs and projects is the responsibility of internal committees.

#### **Lean and Shop-floor Management**

DILLINGER's Lean and Shop Floor Management serve to assure holistic structural and process optimization, and thus support the continuous improvement process.

In this context, Shop Floor Management aims to optimize management functions. "Lean" applies to the entire value chain.

The common aims of Lean and Shop Floor Management are:

- Reducing waste
- Faster delivery due to shorter cycle times
- Reducing processing costs
- Increasing competitiveness by increasing customer satisfaction

"Lean" is a cultural transformation that starts in the mind and is guided by a clear mission statement that is uniformly understood.