



**Hirschvogel
Automotive Group**

Traditionally innovative.

INTEGRATED MANAGEMENT HANDBOOK

QUALITY – ENVIRONMENT – ENERGY –
OCCUPATIONAL HEALTH AND SAFETY

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1 FOREWORD

The Hirschvogel Automotive Group is among the world's largest and most successful manufacturers of forged steel and aluminum parts. Around 5,700 employees worldwide produce forged parts and components for the automotive industry and its system suppliers. Hirschvogel has decades of research experience as well as state-of-the-art production facilities for developing and producing complex components and assemblies.

This Integrated Management Handbook (IMHB) should ensure that all activities which have an impact on product quality, the environment, energy consumption as well as occupational health and safety are planned, controlled, monitored and sustainable. The Handbook is based on customer requirements and the DIN EN ISO 9001, IATF 16949, DIN EN ISO 14001, DIN EN ISO 50001, DIN ISO 45001, and on the VDA/AIAG standards. Each and every employee is called upon to contribute to improving processes with quality awareness, risk-based thinking as well as lean and efficient documentation.

Through market-oriented action and by promoting innovation, we wish to secure our lead among growing international competition. One important way to succeed in this is to ensure that all our employees are qualified and motivated, and that they identify with the company. Open, honest communication and socially responsible, ethically correct behavior are a matter of course for us. We contribute to ensuring that the Hirschvogel Automotive Group remains an independent, international and successful family enterprise.

The Integrated Management Handbook is applicable to all Hirschvogel locations (see Section 27) with their relevant production processes (with the exception of IATF 16949 – Product Development).

Hirschvogel Holding GmbH unites the corporate functions for all subsidiaries. These corporate functions are: Quality Management, Information Technology, Human Resources, Process Design, Development of Production Resources, Design, Procurement, Tool- and Diemaking, Forging, Machining, Finances, Risk Management, Corporate Policy, Strategic Planning, Marketing and Communication, Contract Reviewing, Sales, Continuous Improvement, Hirschvogel Production System, Management of Internal System Audits and Management Review. The functions of Environmental Management, Energy Management as well as Occupational Health and Safety are independently regulated by the plants of the Hirschvogel Automotive Group.



2 CORPORATE PRINCIPLES

As an important factor for sustained success we are committed to achieving

quality

in all areas and functions.

We are committed to preserving the

environment.

We are committed to the careful stewardship of

energy,

resources and raw materials.

To avoid industrial accidents and health hazards, we place great value on

occupational health and safety.

Company risks affect us all. By identifying

risks and opportunities,

we wish to recognize early on any developments that pose a threat to the company in order to promptly initiate appropriate measures for reducing the hazards. In addition, we also wish to exploit any opportunities for contributing to the development of processes and products.



2.1 OUR MISSION STATEMENT

OUR MISSION STATEMENT

VISION

We are one and independent.



MISSION

We are a **reliable partner** to our customers with a core competence in the forging and machining of mechanical components.

Furthermore, we are deepening and broadening our portfolio in a targeted manner with **new products and services** that offer our customers **innovative solutions** and **safeguard jobs** at our sites in times of change.

STRATEGIC THRUSTS

1. Cost Leadership

Competitive costs in the core business

2. Diversification

Expansion of our business with new value-added stages, products and markets

CULTURE & VALUES

Hirschvogel stands for a **caring culture of excellence**, in which we place particular value on

- **Respect**
- **Openness**
- **Cooperation**
- **Responsibility**

All leaders consistently exemplify these values, which are binding for all employees.

3 CORPORATE PROFILE

The lead plant of the Hirschvogel Group in Denklingen was founded in 1938 as a drop forge. Today, the Hirschvogel Automotive Group produces high-tech forgings and components made of ferrous and non-ferrous metals for the automotive industry worldwide. The medium-sized family company has maintained its financial and economic independence. Since 2009, Hirschvogel has continued its international growth under the umbrella of Hirschvogel Holding GmbH, headquartered in Denklingen. The Hirschvogel Automotive Group is represented with companies in Germany, the US, China, India, Poland and Mexico.

With the processes of closed-die forging, warm forging, cold extrusion and swaging as well as soft and hard machining with assembly, a broad spectrum of forged and ready-for-assembly components may be covered. Our expertise allows us to develop modern production technologies for innovative products. These find application in the areas of Engine, E-Drive, Gas and Diesel Injection, Transmission, Powertrain, Chassis and Off-Highway. New application areas are also monitored and served.

When producing and supplying our products, it is our goal to not merely meet the demands and expectations of our customers but to exceed them.

Furthermore, in all our business relationships we cultivate fair and balanced behavior with long-term and solid ties.

Beyond this, we guarantee uniform processes and standards across the company.

OUR APPLICATION AREAS

OUR APPLICATION AREAS
INNOVATION IS IN THE DETAILS

Hirschvogel Automotive Group

FUEL INJECTION COMBUSTION ENGINE ELECTRIC MOTOR TRANSMISSION POWERTRAIN CHASSIS/BODY

© Hirschvogel Holding GmbH Internal

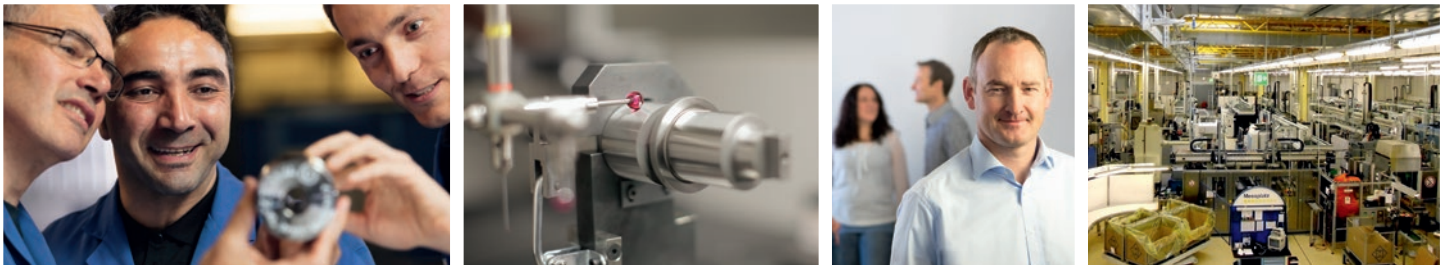
The infographic features a central horizontal band with six automotive components: a fuel injection rail, a combustion engine component, an electric motor, a transmission shaft, a powertrain component, and a chassis/body part. Each component is accompanied by a hand cursor icon and a label. Below this band is a large, detailed image of a square metal mesh component. The background is a soft-focus image of a metal surface.

4 CORPORATE POLICIES

Assured adherence to legal requirements and in-house standards forms the basis of the Hirschvogel Management System. Corporate policy is checked regularly and adapted to new developments. Evidence-based decision-making is the rule. Guidelines and corporate policy are binding for all employees.

Alongside the responsibility of the individual for quality, environment, preservation of resources, safety and security, commitment to these issues is also anchored in various functions and organizational units. The relevant managers are responsible for implementation by deriving appropriate objectives and by monitoring the achievement thereof.

The Hirschvogel Automotive Group ensures implementation of the Hirschvogel Production System, pursues a targeted Market and Product Strategy and maintains a comprehensive Idea Management System for the continuous improvement of all processes.



The applicable version of the principles for Quality, Environment and Energy, Occupational Health and Safety, Risks and Opportunities as well as Information Security is available on the Hirschvogel Intranet (HIT) for all employees.

4.1 QUALITY POLICY

The Quality Policy is defined by the Quality Principles.

Quality Principles of the Hirschvogel Automotive Group

The basis for the common success of our company is the Hirschvogel Mission Statement.

Our Vision

**We supply our customers with products at the highest quality.
Quality informs all that we do across the company in all processes.**



Our Guidelines

- We want to satisfy customers. We achieve this with products and services whose quality meets or exceeds customers' expectations.
- The goal of zero-defect-quality is obligatory for every single person - from Top Management to apprentices.
- Our guidelines and processes are based on international standards, customer requirements, our knowledge and our experience. Awareness of and binding adherence to these guidelines and processes constitute the basis of our quality.
- Error avoidance takes priority over error correction. For us, quality means doing things correctly from the start and continually improving our processes. Process quality reduces costs and increases competitiveness.
- Our suppliers make a significant contribution to the quality of our products and services. We thus demand the same high standards of quality from them as we do from ourselves.

4.2 ENVIRONMENTAL AND ENERGY POLICY

The Environmental and Energy Policy is defined by the Environmental and Energy Principles.

Environmental Principles of the Hirschvogel Automotive Group

The basis for the common success of our company is the Hirschvogel Mission Statement.

Our Vision

**We protect the environment in all processes.
Efficient handling of resources informs all that we do.
Here, we see ourselves as a pioneer in this sector.**



Our Guidelines

- Our goal is to continually improve our corporate environmental performance. Adherence to all laws and regulations forms the basis of our actions. An open dialog with customers, authorities and the public is important to us.
- Environmental protection affects all employees. By means of training we achieve a high level of environmental awareness. Our suppliers are integrated into our corporate environmental protection system.
- We act in a foresighted way. Through preventive environmental protection, we pay attention to given environmental and energy aspects during the entire production process, from the raw material to the finished product. An existing contingency plan guarantees reliable action in exceptional circumstances.
- Through targeted measures, we protect resources, minimize emissions and avoid or recycle waste. Of particular importance is the continual improvement of energy efficiency when planning and implementing our processes.
- Internal and external audits serve to monitor the effectiveness of our Environmental and Energy Management System, and to identify improvement potential.

4.3 OCCUPATIONAL HEALTH AND SAFETY POLICY

The Occupational Health and Safety Policy is defined by the Occupational Health and Safety Principles.

Occupational Health & Safety Principles of the Hirschvogel Automotive Group

The basis for the common success of our company is the Hirschvogel Mission Statement.

Our Vision

**We view the health of each and every employee as our top priority.
We regard prevention in occupational health and safety as our duty.
We design all workplaces to be safe, ergonomic and health-friendly.**



Our Guidelines

- The Management Board/Plant Management/Vice Presidents commit themselves to providing sufficient resources for ensuring safe, ergonomic and healthy workplaces.
- The Management Board/Plant Management and leaders commit themselves to defining and pursuing occupational health and safety goals in coordination with the employees.
- The Management Board/Plant Management and leaders commit themselves to planning and designing all workplaces to be safe, ergonomic and healthy, and to act as role models.
- The Management Board/Plant Management and leaders commit themselves to consulting and involving the employees in occupational health and safety matters.
- Every individual is obliged to minimize or eliminate identified risks and dangers, thus continuously improving occupational health and safety.
- Every individual is obliged to comply with legal obligations, instructions and other requirements.

4.4 RISKS AND OPPORTUNITIES

Risk Management is defined by the following principles:

Risks and Opportunities - Principles of the Hirschvogel Automotive Group
The basis for the common success of our company is the Hirschvogel Mission Statement.

Our Vision

Managing and controlling risks as well as recognizing and exploiting opportunities represent core activities of the company. Efficiently managing risks and opportunities ensures long-term business success.



Our Guidelines

- Risks and opportunities are observed across the entire Hirschvogel Group.
- By means of a routine process, risks are identified, assessed and dealt with.
- The goal is to minimize the occurrence of a risk through suitable preventive measures.
- When dealing with risks, we consider preventive, detective and reactive possibilities, taking into account cost/risk aspects.
- The personal responsibility and awareness of the employees represent a significant factor in identifying risks and opportunities.
- The requirements defined in norms, laws and standards must be taken into account.

4.5 INFORMATION SECURITY

Information Security is defined by the following principles:

Information Security – Principles of the Hirschvogel Automotive Group
The basis for the common success of our company is the Hirschvogel Mission Statement.

Our Vision

**Information security informs our thoughts and actions.
We ensure the confidentiality, integrity and availability of our information in all processes.**



Our Guidelines

- Information security serves to safeguard our competitiveness and to fulfil compliance requirements.
- Responsible handling of information protects personal data, our know-how and the know-how of our business partners.
- Information is accessible only to authorized persons for the authorized purpose.
- Information is complete, trustworthy, reliable and authentic.
- Information is available as needed.
- In our measures and regulations regarding information security, we weigh up the risks and benefits in order to ensure efficient operations.

5 CUSTOMER ORIENTATION

The company is shaped to a large extent by a focus on achieving customer benefit and observing internal requirements. The design of our processes is based on this and defined by the Process Landscape. Particularly in the early concept phase of product creation, it is essential for us to obtain customer requirements and wishes. This allows us to generate efficient product and process design. By carrying out customer surveys, we regularly determine the extent to which customer requirements/expectations are fulfilled with respect to our products and those of the competition. From the results we derive the necessary improvements.

6 PROCESS ORIENTATION

6.1 OVERVIEW OF THE PROCESSES

The processes valid at all sites are defined in the Process Landscape based on the pertinent standards. The structure of the corporate processes and the interaction of the individual sub-processes are thereby described. The first level lists the main processes to which sub-processes are allocated at other levels. Processes which do not exist at a particular site are mapped in the Process Landscape in a transparent way. Additional documents are assigned to the relevant process. These documents may be process descriptions, standards, standard operating procedures, work instructions, inspection and operating instructions, handbooks and the associated forms in each case. Where corporate functions exist for specific processes, the process descriptions of the relevant corporate functions also apply.

6.2 GUIDANCE PROCESSES

Guidance Processes steer the core processes toward achieving corporate goals and they encompass activities for planning, implementation, monitoring and improvement. Example processes here include corporate management, resources or improvement and innovation management.

6.3 BUSINESS PROCESSES

Our Business Processes are a result of logically coherent activities which contribute to added value for the company, have a defined beginning and a defined end, are carried out repeatedly, and which are directed toward customer requirements, e.g. procurement, production and process control or logistics.

6.4 SUPPORTING PROCESSES

These processes support the Guidance and Business Processes for achieving effective rendering of services for the customer, e.g. IT management, inspection processes or project management.

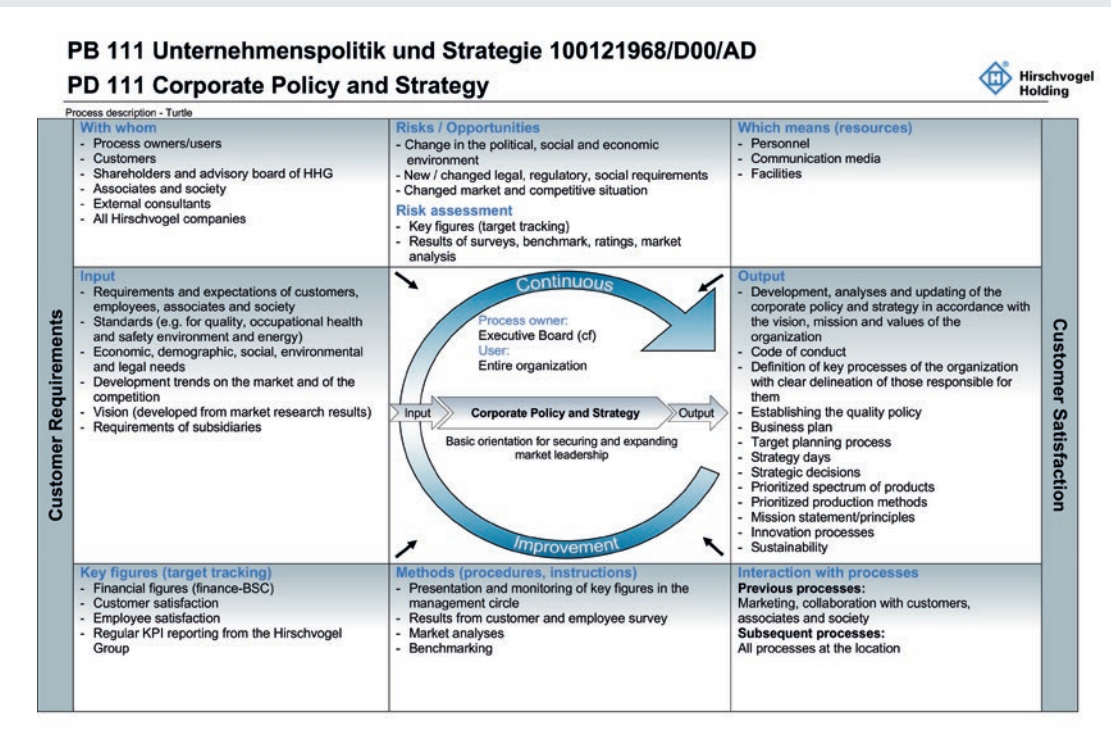
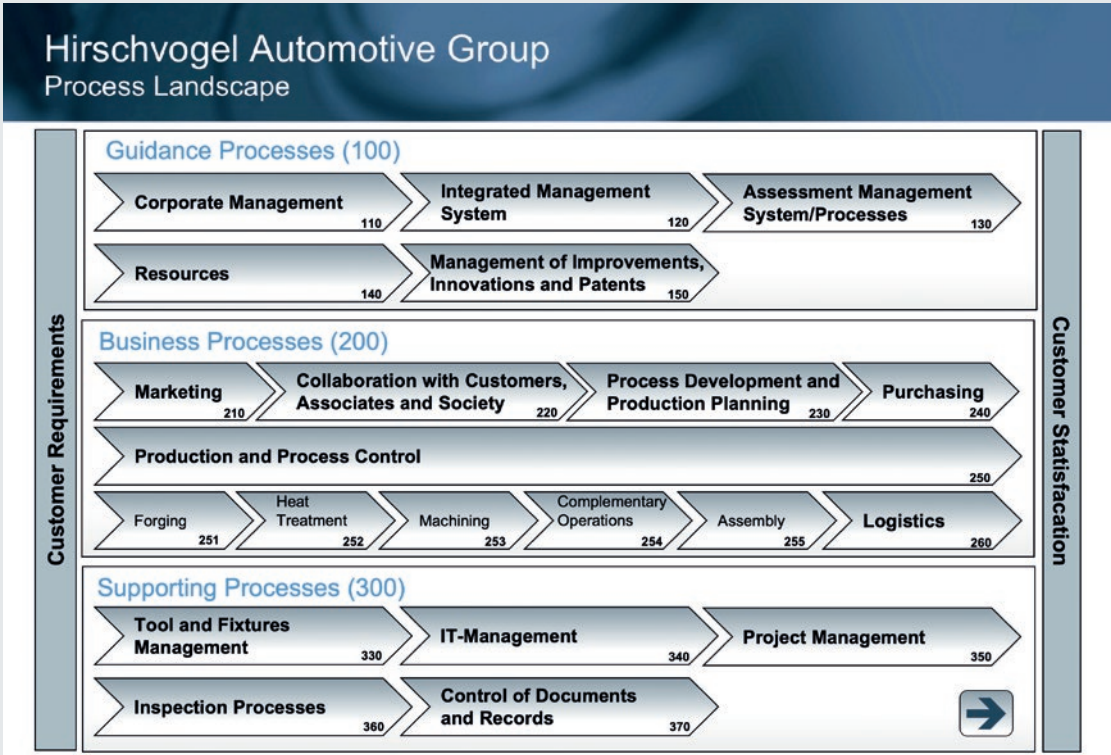
6.5 DOCUMENT STRUCTURE

The set up of the Management System and its documentation are shown in the pyramid on the right.



6.6 PROCESS LANDSCAPE

The valid version of the Process Landscape for each Hirschvogel site is saved on the Hirschvogel Intranet (HIT) and is available to all employees for navigation.



7 HIRSCHVOGEL PROJECT MANAGEMENT

Hirschvogel Project Management (HPM) describes the methods by which projects are processed at Hirschvogel. Different methods are used depending on the scope and complexity of the project. A common feature of all projects is the division into phases, which are delimited by milestones. HPM provides details on the results that need to be achieved for each milestone. Furthermore, the project setup includes various roles, each with defined tasks, powers and responsibilities.



Resource planning as well as risk and change management are taken into account over the entire course of the project – from the order to the finished component. During this process, projects are also continuously evaluated in terms of their maturity and monitored in a steering committee. The steering committee is also the forum for the escalation process in the event of target deviations. After transfer to serial production, not only are the project results documented, but Lessons Learned are also made available for further use in the organization. In this way, the company can benefit from the project in the long term.

All HPM methods and processes are described in the Hirschvogel Project Management Handbook.

8 QUALITY MANAGEMENT

Through targeted, systematic and timely planning of all activities, every preventive action is taken to fulfill our own requirements and those laid down by our customers with respect to products, projects and contracts. Our goal is to achieve zero-defect quality and thus to guarantee maximum customer satisfaction.

We fulfill the requirements with certification according to IATF 16949. Furthermore, the requirements according to the VDA and/or AIAG regulations as well product-related specifications and customer-related directives are implemented.

The effectiveness of the Quality Management System is assessed and improved regularly by means of audits. Quality-relevant specifications and processes are documented. Managers are obliged to make the appropriate documents available to their employees and to inform them of their contents.

Internal communication takes place through goal-oriented meetings, cascaded Shopfloor Management, group and project work as well as through the use of telecommunications media and the Intranet (HIT). The priority in all activities is achieving error prevention in the processes.

With the Inspection Management System, we ensure that all quality-relevant inspection and measurement systems are consistently assessed and monitored according to defined processes. Only calibrated inspection and measurement systems suitable to the inspection task are used.

We continuously strengthen and promote the personal responsibility of our employees for quality-conscious behavior through information and training. To implement this, we exploit the professional development opportunities offered by the Hirschvogel Automotive Group.

9 ENVIRONMENTAL AND ENERGY MANAGEMENT

At the Hirschvogel Automotive Group, protection of the environment and resources is high on the agenda. When it comes to safeguarding the company and jobs, comprehensive environmental protection and economical use of energy are equally as important as the high quality of our products and efficient occupational health and safety.

Using our Environmental and Energy Principles as a starting point, environmental and energy goals are derived for the entire group, taking into account the following environmental aspects.

Our main environmental aspects include:

- Energy consumption
- Natural gas consumption
- Compressed air consumption
- Lubricant consumption
- Water consumption
- Use of hazardous substances
- Emissions



The measures for achieving the set goals are summarized in the Environmental Program and in the Energy Management Action Plans. We view environmental protection as an important leadership task. Responsibilities are clearly defined. Rapid and successful implementation of environmental and energy goals can only succeed with the support of all employees. They are thus informed regularly about the environmental and energy efficiency measures of our company. Within the framework of their duties, they are trained to take personal responsibility and to engage in environmentally aware and energy-efficient behavior at the workplace. Proof of our commitment to the environment is provided by the certification of our Environmental Management System according to DIN EN ISO 14001 and our Energy Management System according to DIN EN ISO 50001. We also pass on our high expectations with respect to environmental protection to our suppliers.

10 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT

VISION: ZERO ACCIDENTS

Health and safety are top priorities at the Hirschvogel Automotive Group. Within the context of prevention, keeping everyone healthy is just as important as avoiding accidents. Accordingly, all workplaces are designed to be safe, ergonomic, healthy as well as age- and aging-appropriate. The basis for all occupational health and safety measures is the risk assessment, which is people-centered. Risk assessments are generated consistently for each activity/workplace and updated on an ongoing basis.

The company management provides all the necessary resources for the safe and healthy design of workplaces. Leaders know and accept their responsibilities, and act as role models. At each site, occupational health and safety specialists provide support in all relevant issues and advise on everything from the planning phase through to workplace setup.

The Health Manager at the German plants offers assistance and advice when it comes to selecting measures for improving health parameters as well as maintaining or increasing performance. All those involved are aware of their responsibility for themselves and for their colleagues. Everyone is obliged to comply with statutory regulations as well as instructions and other obligations that serve occupational health and safety.

The Occupational Health and Safety Management Systems at the Hirschvogel plants are certified according to DIN ISO 45001.

11 RISK MANAGEMENT

By means of defined processes and regulations in the Risk Management System, risks are identified, analyzed, assessed and, where necessary, measures for preventing or reducing them are derived.

Risk assessment is part of every process description, thereby ensuring product conformity.



The risk aspects, such as customer and market risks, technological risks, production risks, quality risks, environmental risks, procurement risks, financial risks, personal risks, information security risks and compliance risks, are taken into account.

12 PERSONNEL

The Management Board has appointed people with special organizational, leadership and personnel responsibility, such as Officers for Energy, Information Security and Risk Management. In job and task descriptions, the fundamental qualification requirements, tasks and responsibilities of all relevant employees are laid down. Established professional development management ensures that these people have the relevant competence on the basis of suitable vocational training, instruction or experience.

13 RESOURCES

The financial, technical and personnel means required for rendering customer-oriented services are planned and made available. The selection and integration of new employees is achieved using specified requirements. The relevant leader ensures a targeted induction period. Every employee has the opportunity to take part in professional development training measures. Leaders regularly analyze which qualifications are needed and initiate appropriate actions. The effectiveness of professional development measures is assessed.

Besides the infrastructure requirements with respect to workplaces and process equipment, Hirschvogel also makes the necessary boundary conditions available for economic and stable processes using the design principles of the Hirschvogel Production System.

14 SUSTAINABILITY

Sustainability has always been a guiding principle of corporate activity at Hirschvogel. Factors which are taken into account include the economic, ecological and societal dimension, the aspects of which are treated equally. This means that in our business operations we place value on ensuring that economic profitability always goes hand in hand with environmental protection and social fairness. We base the optimization of all our processes on results analyses and market trends.



15 BUSINESS DEVELOPMENT

In the Corporate Policy and Strategy process, we define the strategic thrusts and thus the medium-term alignment of the company to the Market and Product Strategy. This forms the basis for our internal actions, our dealings with external partners and, above all, the development and exploitation of market opportunities.

16 CONSULTING, INQUIRY AND ORDER PROCESSING

Via the areas of Sales as well as Product and Process Development, we make our consulting know-how available to our customers. Upon request and on the basis of the data made available to us, we plan high-tech, economic solutions and present the results of these to our customers. During the contract review, a feasibility study is carried out. By means of our order processing system, timely delivery is managed and agreed upon with the customer.

17 PRODUCT AND PROCESS DEVELOPMENT

We offer our customers professional project management with competent supervision as well as timely, high-quality and cost-optimized execution for product and process development. Depending on the level of complexity, customer-specific product developments are carried out as a customer project, customer program or as a new part/change process.

Product and process development relies on our professional Hirschvogel Project Management (HPM) System. The specific requirements of IATF 16949, APQP (Advanced Product Quality Planning), VDA 4 "Ensuring Quality in the Process Landscape", VDA 6.3 as well as customer-specific directives are observed.

Customer requirements are defined and then documented in the requirement specification sheet. The Project Leader is responsible for the transfer to project planning as well as for subsequent realization together with the project team. During product realization and adjustment of the manufacturing processes in the case of new or changed parts, all activities relating to advance product and quality planning are documented. The Project Leader is also responsible for documenting the progress of the project, the specifications, the final report and the results of verification and validation.

New products are released by the customer by means of initial sampling according to VDA Volume 2 "Ensuring the Quality of Deliveries" or PPAP (Production Part Approval Process).

The development scope focuses on the production processes and procedures used. Hirschvogel is not responsible for the product development of products which have been delivered (section "Development" IATF 16949).

18 PROCUREMENT

Interdisciplinary teams, led by Corporate Purchasing, work within the Hirschvogel Procurement Process to select, qualify and periodically assess suppliers in the categories of quality, environment, occupational health and safety, delivery reliability and service. New or changed production materials undergo a sampling process.

Contracts are awarded within the framework of our procurement process with precise procurement documents. Spot checks are carried out on incoming deliveries during the incoming inspection to ensure that they comply with technical and environmental specifications. Quality agreements with relevant suppliers ensure compliance with our standards. We promote the supplier/customer relationship and develop this according to our high commitment to quality.

19 TOOL AND FIXTURE MANAGEMENT

The Hirschvogel Tool and Fixture Management System ensures that production is supplied on time with the tools and fixtures necessary to manufacture the products. Hirschvogel makes all resources available for the development, production, procurement and supply of tools and fixtures.

20 PRODUCTION

Within the framework of production planning, all production materials, tools, fixtures, inspection facilities and work documents needed to manufacture the products are planned and ordered, taking into account pertinent regulations and customer requirements. All working documents required for production are available at the relevant workplace.

Our production processes and procedures are based on many years' experience and documented technical process competence. Production processes are assessed with respect to their ability to perform in series. Processes are monitored systematically and improved continuously.

21 INSPECTION PROCESSES

In order to safeguard product quality and to meet the zero-defect goal, inspections are in place during all phases of the manufacturing process, from incoming inspection, production and final inspection to checks carried out during dispatch. First and last part inspections, inspections during production as well as capability analyses are planned and undertaken. Inspection results are documented and archived. Only capable measuring equipment which is subjected to the Inspection Equipment Management Process is used.

22 DISPATCH, LOGISTICS

We generate transparency for mid- to long-term capacity issues and generate a complete overview of the current and future capacity situation, with the aim of rapidly supplying meaningful information as well as achieving timely reactions and optimum utilization of our existing and planned machinery.

Only products whose quality has been assured using suitable measures are warehoused. By means of an IT-aided component labeling system as well as a storage and administration system, all products may be identified, and they are controlled according to the FiFo principle. Unless otherwise specified by the customer, standard packaging is used. The traceability of the batches is designed in such a way that a clear allocation of everything from supply dates to production and inspection batches is guaranteed. A functioning tracking system that extends to the subcontractor is ensured.

23 MAINTENANCE

By organizing maintenance centrally, we can guarantee the sustained availability of all machines at the Hirschvogel Group. Preventive and condition-based maintenance of the production and measuring facilities ensures the suitability and high availability of production processes.

24 CONTINGENCY PLANNING

Hirschvogel has generated contingency plans for possible emergency situations. The procedures outlined guarantee a rapid reaction to situations such as missing production material, production standstill, failure of part transfer/energy supply/IT system, labor shortage, field complaints as well as environmental and occupational safety incidents, and ensure the ability to deliver to the customer. Within the framework of risk assessment, risk analyses are carried out and, where necessary, processes improved, instructions compiled and employees trained.

25 MANAGEMENT ASSESSMENT

To assess the effectiveness of the Management System and the achievement of goals in terms of process, environmental and energy performance as well as occupational health and safety performance, product conformity and customer feedback, regular management assessments are carried out by the Plant Managers at the various Hirschvogel sites, and an overall review is conducted by the Management Board of Hirschvogel Holding GmbH. The documented result outlines the need for action and decisions regarding improvement possibilities, change requirements in the Quality Management System as well as resource requirements, and is part of long-term corporate planning.

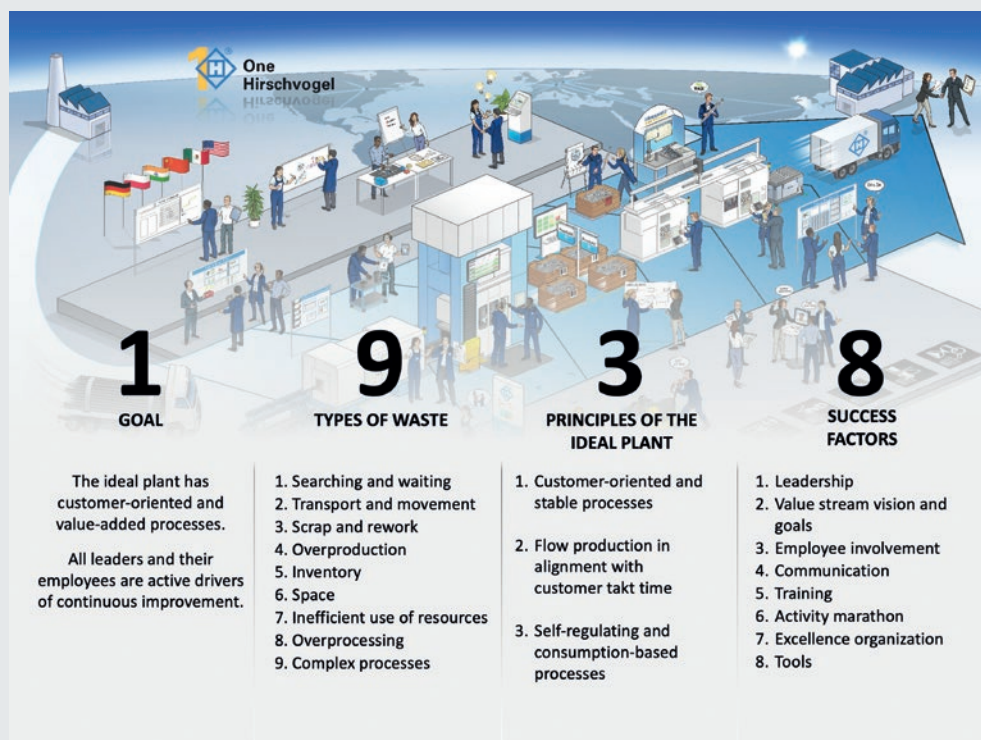
26 CONTINUOUS IMPROVEMENT PROCESS (OPEX 1-9-3-8)

OpEx 1-9-3-8, the program for Operational Excellence at Hirschvogel, represents the way that we perform work in a customer-oriented and value-added manner as well as how we continuously improve processes and avoid waste.

Continuous improvement is aligned with the common goal of OpEx, i.e. with the vision of the ideal Hirschvogel plant. The ideal plant is based on customer-oriented and value-added processes. All leaders and employees are active drivers of continuous improvement. Hirschvogel pursues this 1 goal by continuously working on eliminating the 9 types of waste, aligning processes according to 3 principles, and focusing on 8 success factors. These elements of OpEx, summarized in the form 1-9-3-8, are communicated and visualized at all plants.

The process of continuous improvement is designed and implemented as part of the corporate culture. Methods and tools of lean, process and change management are primarily used here: Idea Management, Value Stream and Process Management, Shopfloor Management, Time Management (method of time and motion studies – REFA) as well as Industry 4.0 methods.

The continuous improvement and implementation of OpEx 1-9-3-8 is organized in a control loop. The evaluation of how far the organization has progressed in implementing both the continuous improvement process as well as the methods and behaviors defined for Hirschvogel is carried out at each site in the form of an OpEx Assessment. From this, the plant derives the next steps on the way to Operational Excellence.



27 HIRSCHVOGEL WORLDWIDE



Hirschvogel Komponenten GmbH
Schongau, Germany
Processes: machining and ready-to-install assemblies



Hirschvogel Aluminium GmbH
Marksuhl, Germany
Processes: aluminum forging



Hirschvogel Eisenach GmbH
Marksuhl, Germany
Processes: hot, cold and warm forging



Hirschvogel Components Poland
Sp. z o.o.
Gliwice, Poland
Processes: warm forging as well as machining operations



Hirschvogel Umformtechnik GmbH
Denklingen, Germany
Processes: hot, cold and warm forging and combinations thereof, as well as machining operations



Hirschvogel Components Mexico
S.A. de C.V.
San Juan del Rio/Querétaro, Mexico
Processes: cold and warm forging as well as machining operations



Hirschvogel Incorporated
Columbus/Ohio, USA
Processes: cold and warm forging as well as machining operations



Hirschvogel Components
India Pvt. Ltd.
Sanaswadi, India
Processes: hot, cold and warm forging as well as machining operations



Hirschvogel Automotive
Components (Pinghu) Co., Ltd.
Pinghu, China
Processes: hot, cold and warm forging as well as machining operations



**Hirschvogel
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