

**Schroedahl / QM/UM - Documentation
Management | Manual**

**for
SCHROEDAHL GmbH**



**CIRCOR
SCHROEDAHL GmbH**

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Legal notices and preface

Pump protection valves and control valves from SCHROEDAHL

SCHROEDAHL is a worldwide orientated company with decades of experience in development and manufacturing of high-class speciality valves for regenerative, nuclear and conventional power stations, industrial plants as well as for production, transport and refining systems in the oil and gas sector.



Power plant and process industry

Long lasting high-end valves for perfected processes, SCHROEDAHL, with its decades of experience, is one of the world leaders for high quality control valve solutions. With our intense, intelligent and highly professional engineering our products contribute to safe, economically optimised processes in power plants as well as to industrial systems.

We see ourselves as sophisticated problem solvers, who think beyond the requirements of the singular control valve to evaluate the entire process. In this way we evoke solutions beyond standards and point a way for the market.

According to the requirements, SCHROEDAHL control valves can be used in pressure, temperature and level-regulator circuits as well as in volume-regulator circuits in all areas of power plant and in many industrial processes.

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SCHROEDAHL products in the power & process segment:

- Automatic pump protection valves
- Control valves for pump protection
- Special high-pressure control valves for water- and steam-circuits
- Steam conversion valves and turbine bypass stations
- Superheated steam cooler

Specialist in the oil and gas sector

We offer you permanent, reliable pump protection for your business, particularly in oil and gas production (upstream) and processing (downstream).

Because our products are used in the toughest conditions, we manufacture to the highest quality level. The entire production and manufacturing chain is aligned to the most important national and international regulations and engineering standards (DIN, UVV, Vd TUV, AD data sheets, TRD, ASME, ANSI as well as DIN ISO 9001 / EN 29001).

Furthermore, only high-quality materials are used, from carbon steel to stainless steel duplex, to ensure permanent reliability through immaculate function.

SCHROEDAHL control valve

SCHROEDAHL has been developing and producing control valves since 1962. Control valves are a conventional form of pump protection. During operation of the pump, the flow rate is continuously measured, and the results are transmitted to the control unit. The control unit regulates the control valve, the corresponding medium (for example oil, gas, seawater, chemicals) is fed to the pump. This avoids any destruction of the pump through cavitation or overheating. At the same time, our experienced mechanics and technicians will be happy to offer any maintenance, servicing or adjustment of the control system on site.

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General remarks and introduction

The manual and the other applicable documents implement the requirements of DIN EN ISO 9001:2015, DGRL 2014/68/EU and DIN EN ISO 14001:2015.

Scope

The management systems described in this MM apply for all areas of the firm of

SCHROEDAHL GmbH

Alte Schönenbacher Straße 4

51580 Reichshof-Mittelagger

It applies together with further management documents for all employees (please refer to the organisational chart).

In the event of a contract, the management system is applied as a performance level pursuant to

- DIN EN ISO 9001 and
- DIN EN ISO 14001.
- The management system also covers the additional requirements of other standards such as KTA 1401
- AVS D100/50,
- EC Pressure Equipment Directive RL2014/68/EU),
- AD 2000 HP0 and
- EN ISO 3834-2.

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Distribution of the management manual

The MM is kept on the network drive and Intranet.

The MM is available as a loose-leaf collection in QM for employees with no access to the central network drive. Specific instructions will be distributed with an ongoing revision service (for internal use), with a temporary revision service and without a revision service. All loose-leaf copies of the instructions are registered in the corresponding distribution lists.

The MB is responsible for the distribution of the loose leaves and the management of the return receipts.

The MM is confidential and is subject to copyright. Its disclosure and handover to customers and/or sub-contractors requires the approval of the management. All copies of the MM remain the property of SCHROEDAHL GmbH

If the employment contract is terminated, if requested by the MB and possibly on completion of an order, the MM and all instructions shall be returned to the MB.

The manual applies for all areas of SCHROEDAHL GmbH within the CIRCOR Advanced Flow Solutions (AFS) Group.

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1. About ourselves

The firm of **SCHROEDAHL GmbH** is located in the Oberbergische District (NRW), municipality of Reichshof, urban district of Mittelagger. It is very conveniently located in terms of transport since the premises are only approx. 4 km from the Reichshof- Eckenhagen motorway access on the A4 motorway Cologne-Olpe.

The site is located on an industrial estate and is split by the Alte Schönenbacher Straße.

The company was founded in 1966 with the construction of production and storage halls. An administrative building was built a little later.

This first phase of building lies between the Alte Schönenbacher Straße and the Breidenbach outfall.

The plot had been used agriculturally up until the start of the construction work.

In the years 2003, 2007, 2009 and 2014 the company was expanded by the construction of a new hall in each case to the east of the Schönenbacher Straße.

These halls are also used as production and storage halls.

The site borders directly on the Steinagger outfall to the north and parts of it are designated as a flood plain.

The premises border on meadows that are used for grazing in the east and south.

The company site covers an overall area of approx. 15,250 m², 5,200 m² of which are built-up.

The nearest residential buildings are approx. 100 m from the production areas.

The Breidenbach and Steinagger outfalls that border on the premises directly are each classified as second order watercourses.

The nearest water protection area (Wiehl valley reservoir catchment area) is approx. 8 km away.

The main production processes that are carried out on the site are:

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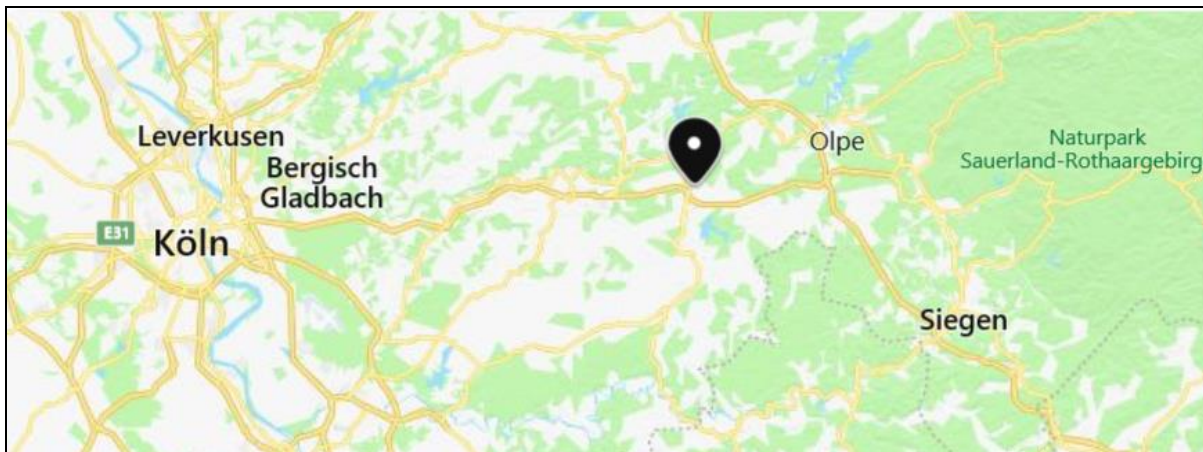
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Mechanical manufacturing (sawing, lathing, milling, drilling), welding, assembly, painting, packaging.

Connection to the CIRCOR Group

In April 2015, the firm of Schroedahl-Arapp was taken over by CIRCOR German Holdings GmbH und Co KG, part of the American CIRCOR group with headquarters in Burlington, MA, USA.

Since the CIRCOR Group is split over several fields of business, the rebranded SCHROEDAHL GmbH was initially assigned to the energy division. In the course of a group reshuffle, the CIRCOR Advanced Flow Solutions (AFS) Group was created in the middle of 2016, to which SCHROEDAHL GmbH has belonged since then. There has been no change in the company's range of products as a result of the takeover.



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2. Our company - philosophy / responsibility / policy

We know that the quality of our products is a very important basis for the further development of our company. Therefore, quality and quality management are key elements in our corporate policy. We pay special attention to the identification and fulfilment of customer and interesting parties and their requirements with regard to satisfy their specific interests. Reliability, flexibility and on-time deliveries are constant objectives of the business policy.

As a certified supplier for the nuclear sector, we pay especially attention to the quality of our personnel and processes in order to ensure the high demands of the KTA 1401 and the QN100 for process reliability and quality throughout the entire process chain. We are aware that our products in this area of application must meet particularly high safety and quality standards. Our processes ensure that "Non-conforming Counterfeit Fraudulent Suspect Items" (NCFSI) are not used in any case. The exact implementation of the special nuclear requirements is constantly reviewed by a specially trained and experienced project manager and supported by trained and selected project specialists over the entire project. This specially selected "nuclear project personnel" is regularly trained, throughout the entire process chain, as part of a project-related nuclear safety culture training to ensure always high safety and quality standards.

The topic of environmental protection has always played a major role in our company. To ensure that we remain a reliable and safe partner for all in future, the next step for us is to maintain an environmental management system. As a result, we are committed to not only observing all environmentally relevant laws and regulations but also to continuously and systematically improving internal environmental protection. We are committed to protecting the environment, which includes preventing environmental impacts.

The health and safety of our employees takes top priority. Human capital is one of our most important investments, which is why it is our job to protect this accordingly. Health and safety objectives are set and monitored on a regular basis. We aim for continuous improvement in this field through further training, instructions, the identification of hazards, protective equipment and other measures.

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The corporate strategy is defined annually insofar as the management sets quality, environmental and safety objectives. These objectives are substantiated in individual programmes in cooperation with the different departments. The programmes that are drawn up and their results are communicated to employees in an open and objective manner.

The management believes that one of its jobs is to encourage the employees' sense of responsibility and quality and their awareness of environmental protection, to define basic responsibilities, corporate processes and procedures, to monitor the efficacy of the defined measures and to ensure the availability of the necessary means. To this end, the management has implemented rules in this management manual (MM) that are anchored in the following standards.

The international standards DIN EN ISO 9001 and ISO 14001 form the basis of the MM. The MM is binding for the company.

We are committed to following the rules set out in the corporate manual and to meet our binding obligations.

All employees are invited to constantly cooperate in improving the management system.

The management's goal is to consolidate and expand the market position with the defined corporate strategy, to spare the environment and its natural resources and to protect and uphold the health of the employees.

The Quality Management (QMB) and Environment Management Officer (UMB) are authorised by the management to ensure that the stipulations laid down in the MM are applied. They report directly to the management on a regular basis after internal audits and on special occasions about compliance with and the efficacy of the M system.

If contractually agreed, we disclose this MM and any M documents that are relevant for the order to our customers and are also prepared to have the application of the M system verified.



Dr. Roger Ingemey
Vice President and Managing Director



Dr. Joachim Krägeloh
Director Quality

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3. Management of resources

Communication, information and exchanges in our organisation take place through personal talks and regular meetings.

The occupational health and safety requirements are looked after by the external occupational safety specialist (FASI). The FASI is supported internally by safety officers and the EHS Manager

Because our company is part of an American group, an EHS system has also been introduced in the German subsidiaries at their instigation. This means that not only are German and European laws and regulations observed, the much stricter intragroup American standards also have to be satisfied.

Environmental protection, energy efficiency and a careful use of resources have long taken priority for us. This is why we believe that it is very important to keep our environmental management system according to ISO 14001 up-to-date at all times.

The management is responsible for compliance with and communication of the statutory/official requirements, and for the infrastructure, working and process environment.

Trained and qualified employees are a key cornerstone for a successful company. Employee qualification and motivation is a natural motor in our organisation. Our employees enjoy regular further training.

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4. Our processes – our landscape

Management processes

The management processes represent a clearly defined structure in our company. To this end, goals are defined, and their achievement monitored systematically in the management review and measures are also derived to ensure the achievement of the goals.

Value-creation processes

Our value-creation processes are based on our customers' requirements. This results in a continuous adaptation to the demands and wishes of our customers.

Support processes

Support processes are provided to ensure the smooth course of the value-creation processes. This guarantees the implementation of the customer requirements.

Documented procedures

DIN ISO 9001 explicitly and without exception calls for documented procedures, also called an obligatory procedure.

These procedures ensure a documented process and that the content of the documentation of all of our activities satisfies internal and external expectations.

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5. Measurement, improvement, deviation, correction

The efficacy of the system is monitored by analysing the customer satisfaction-dissatisfaction as well as the results of both internal and customer audits.

The management system is subject to scheduled and unscheduled audits. Our audits provide objective proof of compliance with the applicable instructions and the efficacy of any measures taken.

Any necessary corrective measures are initiated, and their implementation is monitored. Continuous improvement and a consideration of possible risks form an essential part of planning and changes as well as chances.

The QM system is assessed and improved with the regular management review.

The satisfaction of customer requirements is ensured by measuring and monitoring the processes.

Systematic corrections and improvements are introduced in the ongoing processes and their implementation is monitored.

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6. Other applicable documents

Appendix 1 Process map

Appendix to the management manual:

Appendix 2 Organisational chart for SCHROEDAHL GmbH

Appendix 3 List of other applicable documents

Management instructions (documented procedure)

Environmental management instructions (documented procedure)

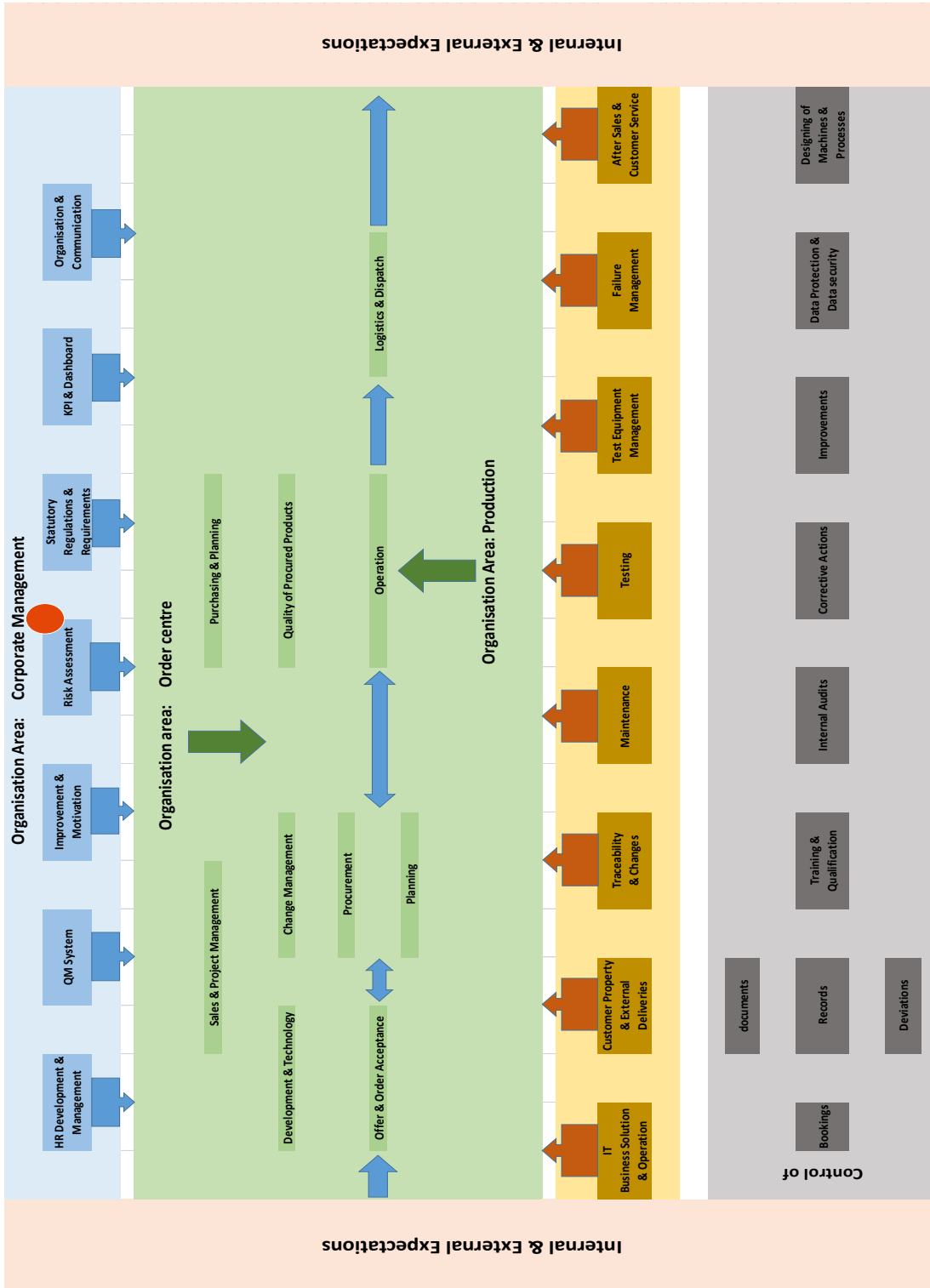
List of abbreviations used

Our processes have proven their worth.

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Appendix 1 Process map



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Appendix 2 Organisational Chart for SCHROEDAHL GmbH

See extra appendix

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Appendix 3 List of other applicable documents

Management procedure instructions (documented procedures)

MPI no.	Title
0Q 100	Control of documents
0Q 101	Control of records
0Q 102	Drafting / amending and structure of instructions
0Q 104	Internal-external communication
0Q 110	Standards office: managing standards, regulations and specifications
0Q 200	Drafting / amending / verifying order-related documentation
0Q 201	Project-related instructions
0Q 210	Drafting and verifying welding documents
0Q 300	Planning the product realisation: supporting, value-creating and management processes
0Q 301	Sales process
0Q 302	Development/engineering/technology D+E process
0Q 303	Quality management QM process
0Q 304	Planning AV process
0Q 305	Purchasing EK process
0Q 309	Customer Satisfaction Analyzation
0Q 311	Operations OPS process
0Q 320	Manufacturing and testing pressure equipment
0Q 330	Identification/marketing and traceability
0Q 352	Coating specification – definition and report
0Q 400	Subcontracting to service providers
0Q 500	Dealing with deviations / control of faulty products
0Q 501	Preventive measures to eliminate possible deviations
0Q 502	Identification of risks and opportunities
0Q 505	Environmental Health & Safety – violation of security
0Q 600	Internal audits – planning, performance and documentation
0Q 610	Subcontractors and service providers – assessment, selection and documentation
0Q 620	Analysis, monitoring and measurement of processes and products
0Q 700	Personnel, personnel development and training
0Q 800	Management review
0Q 801	KAIZEN – Annual planning
0Q 802	Continuous Improvement (CI)
0Q 900	Management Commitment of the management to a safety culture
0Q 901	Handling NPP orders – planning, performance, documentation

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Management work instructions (documented procedures)

MA no.	Title
1Q 305	Incoming goods
1Q 306	Products provided by the customer
1Q 321	Heat treatment of steels
1Q 322	Welding work /welding supervision
1Q 330	Re-stamping
1Q 331	Marking of parts with article number
1Q 340	Cleaning and handling valves
1Q 352	Standard coating specification
1Q 354	Packing valves
1Q 401	Pickling instruction
1Q 621	Using the acceptance dispatch note
1Q 901	Packing valves for the nuclear field
1Q 902	Cleaning and handling valves for the nuclear field
1Q 903	Storage and transport of valves for the nuclear field
1Q 904	Receipt and material flow of filler metals

Management test instructions (documented procedures)

MP no.	Title
2Q 311	Identity check
2Q 320	Dimensional check
2Q 322	Monitoring the welding shop
2Q 352	Checking the nominal film thickness
2Q 601	Checking the measurement and control equipment
2Q 610	External checking of test equipment
2Q 622	Dye penetrant testing
2Q 621	Visual inspection
2Q 624	Ultrasound test instruction for welding ends tests pursuant to AVS 22.2/50
2Q 625	Ultrasound test instruction for welding seam tests pursuant to AVS 22.2/50
2Q 630	Water pressure test of the pressure retaining housing
2Q 631	Leak test of the pressure retaining housing
2Q 632	Seat leak test
2Q 633	Function check
2Q 634	Test bench – check the design of TD valves

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Management instructions for specialist departments (documented procedures)

No.	Title
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Purchasing (EK)

- | | |
|---------|----------------------|
| 1 EK 01 | Inquiry |
| 1 EK 02 | Order |
| 1 EK 03 | Order confirmation |
| 1 EK 04 | Incoming goods |
| 1 EK 05 | Invoice verification |
| 1 EK 07 | Vendor rating |

Sales / Customer Service KD / After Sales

- | | |
|---------|---------------------------------------|
| 1 KD 02 | Order processing |
| 1 KD 03 | Dispatch |
| 1 KD 04 | Invoice generation |
| 1 KD 05 | Warranties |
| 1 KD 06 | Complaints |
| 1 KD 07 | Radiation protection instruction |
| 1 KD 08 | Guidelines for installation personnel |

Planning AV

- | | |
|---------|--|
| 1 AV 01 | Order Processing |
| 1 AV 02 | Processing accruing orders in the AV |
| 1 AV 03 | Controlling the production documents in production |

IT – Infrastructure EDP

- | | |
|----------|--|
| 1 EDV 01 | User data backup in the computer domain SA |
| 1 EDV 02 | User data backup in the development / engineering department D+E |

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Development/Engineering/Technology D+E

- 1 E+K 01 Type code for control valves
- 1 E+K 02 Drawing filing system
- 1 E+K 03 Amending drawings and parts lists in the D+E department
- 1 E+K 04 Filing system for installation reports in the D+E department
- 1 E+K 05 Order processing in the D+E department
- 1 E+K 06 Type code for minimum flow valves
- 1 E+K 07 Drawing filing system for minimum flow valves
- 1 E+K 08 Preparing, changing and distributing the workshop note (WZ) for minimum flow valves
- 1 E+K 09 Preparing, changing and distributing the workshop note (WZ) for control valves
- 1 E+K 10 Preparing calculation sheets using Mathcad (D+E)
- 1 E+K 11 Preparing welding plans
- 1 E+K 12 Filing scheme for the WinWord program
- 1 E+K 13 Working with the P2 program

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Environmental management - (documented procedure)

No.	Title
-----	-------

Procedure instructions

0U 100	Operating report
0U 101	Energy management
0U 102	Environmental aspects (interested parties, risk & opportunities, lifecycle assessment, risk matrix)
0U 103	Schedule of legal provisions
0U 200	Hazardous substances
0U 300	Waste management
0U 400	Emergency precautions and hazard prevention

Work instructions

1U 110	Check and clean the sludge trap
1U 111	Checking various drip trays for hazardous substances and the sludge trap
1U 201	Leak of substances hazardous to water at the chip container
1U 202	Handling the oil skimmer's collecting tank at CNC machines
1U 203	Storing hazardous substances
1U 301	Disposal of the coloured water from the coating booth
1U 400	Issue and assessment of the safety and environmental instructions for external companies
1U 401	Named helpers

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List of abbreviations / initials used

Initial	Title / Description
AV	Job preparation
B/HR	Accounting / personnel management – Human Resources
BA	Company medical officer
BL	Plant management
D+E	Development/engineering/technology
IT / EDP	Electronic data processing
EK	Purchasing
GF	Management
KD	Customer service
L	Stores
MA	Management instruction
MAU	External installation
MM	Management Manual
MP	Management test instruction
M-Plan	Management plan
M-System	Management system
MV	Management procedure instruction
P	Production
QMB	Quality management officer
MB	Management representative
SiFa	Occupational safety specialist
UMB	Environmental management officer
V	Sales
VE	Dispatch
QC	Quality clinic
COS	Circor Operating System
FB	Form sheet