Developing Innovative and Attractive CVET programmes in industrial shoe production

Task Analyses (TA)

- Results from Germany

IO 1

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Content

1 DESIGN / How to create a shoe collection

Venue	Date
ISC Pirmasens	August 2021
Qualification for the sphere of activity	
Shoe maker apprenticeship with focus on model department, shoe technical school: shoe technician (2 years) with focus on design	
Legal framework	
Means of order: Training framework; Framework curriculum	
Working environment	
Products	Prototypes and sample shoes
Users	-
Interfaces internal	Material purchasing (internal supplier) Technical development Sales manager Product manager
Interfaces external	Trend and material fairs
Organization	Alone
Production steps that already took place	-
Level of autonomy	Independent, in coordination with product manager, technical development (operations manager)
Workplace	Office (Photoshop software, hand drawing, CAD, 3-D programs), workshop
Tasks	
• Identify trends and material innovations at trade fairs • Finding topics and developing creative concepts • New graphical development of models • New ideas for lasts, outsoles, heels, jewelry parts /accessories and their developments. • 3D printing of prototypes of, for example, heels, outsoles, in medium sizes ladies: 37 or 4.5; men: 41 or 7.5 • Ornaments development • Submission of the sketches to the product manager who, in cooperation with the sales manager, decides which models are to be produced as physical model/prototype • Production of a physical prototype, modifications, if necessary, after consultation. • Production of the representative samples/collection (entire model selection) • Visit to key accounts with selection of sales samples to check attractiveness • Handing over the prototype to technical development for duplication of the products for representatives and trade fairs • Visits to trade fairs with model to check acceptance of the series and competitor products	
Required knowledge and skills	
• Creativity • Feeling for price calculation • Experience with material purchasing for the reasonableness of the choice of material for the planned use of the shoe	
Others	
-	

2 Production Planning

Venue	Date
ISC Pirmasens	August 2021
Qualification for the sphere of activity	
Commercial training, in-house shoe-technical training with specialization in planning	
Legal framework	
Technical regulations	
Working environment	
Products	Daily/weekly schedules of the models with different efforts
Users	-
Interfaces internal	Technical development Purchasing of materials Operations Manager
Interfaces external	-
Organization	Two people, one person must be present during production
Production steps that already took place	Design, technical development
Level of autonomy	Independently, in consultation with plant manager
Workplace	Office (PC work), workshop
Tasks	
• Link between sales and production • Participation in morning meetings with plant management, executive management, head of development, head of sales, head of materials purchasing, head of planning as well as the accounting department • Checking the sales figures • Checking delivery dates of the models • Checking the availability of materials • Checking model availability from technical development • Production decision - based on availability and cost of models (aiming for "good mix": NOS articles (never out of stock) simple models with fast production times as well as complex models with long production times) • Production planning, daily/weekly schedules • Model definition / division into different production sites e.g., foreign plants • Entering the data into a data processing program • Passing on the order to production • Regulatory intervention in the production process in the event of supplier delivery problems or technical failures (best possible utilization of production)	
Required knowledge and skills	
• Organizational skills • Mathematical knowledge • Sense of time	
Others	
-	

3 Technical Development

Venue	Date
ISC Pirmasens	August 2021
Qualification for the sphere of activity	
Shoe maker, shoe technician or graduate engineer in leather technology	
Legal framework	
Technical guidelines	
Working environment	
Products	Ground development outsoles, insoles Heel development Shank development (with toe-back cap)
Users	-
Interfaces internal	Designer, plant manager, production planning, production foreman Refa department (time recording and calculation of production costs of one pair of shoes)
Interfaces external	-
Organization	Soil team: leader and one employee Shaft team: leader and one employee
Production steps that already took place	Design
Level of autonomy	Independent, in coordination with plant manager, production planning manager
Workplace	Desk with good lighting (CAD and 3D program), workshop (CNC mill).
Tasks	
(Identical for soil, heel and stem development) • Development of series samples/group sizes in small, medium, large sizes on the 3D printer. • For outsoles: Production of e.g., aluminum molds for direct injection (Desma machine). • Development of injection molds for women's shoe heels, cutting molds for confection soles for women's and men's shoes and men's shoe heels. • Data transfer/size assortment to shoe last factory for series sampling and production of production lasts • Preparation of serial samples /group sizes in small, medium, large sizes (preparation for production) • Parallel grading of all sizes /assortment of soles and shafts • Sending the series sample/group sizes to the plant manager • If necessary, make corrections to grading after feedback from production. • Determination of the production price of a shoe with the Refa department and product management • Determination of the final price with the management	
Required knowledge and skills	
• Current CAD and 3D programs • Spatial imagination for mold making • Material knowledge for outsoles and heel developments in connection with mold making e.g., rubber soles need iron molds, PU soles need aluminum molds Footwear manufacturing stages and technologies	
Others	
-	

4 Training Management

Venue	Date
ISC Pirmasens	August 2021
Qualification for the sphere of activity	
Industrial shoe makers with further training or master craftsman's title, most of whom have many years of experience in the company AEVO (trainer aptitude certificate) or master craftsman course (includes AEVO)	
Legal framework	
AEVO Contents: • Examine and plan training requirements (advantages and benefits of training, legal framework conditions, vocational training systems, possible training occupations in the company, trainees' suitability for training, preparation of vocational training, tasks of those involved). • Select applicants and assist in recruitment (draw up training plan, determine need for cooperation, select applicants, prepare training contract, check possibility of vocational training abroad) • Carry out training (create conditions conducive to learning, organize the probationary period, develop learning and work tasks, select training methods, identify learning difficulties and provide assistance, promote additional qualifications, promote social and personal development, evaluate performance, promote intercultural competences). Regulatory resources: • Training framework • Framework curriculum	
Working environment	
Products	Operational framework
Users	Apprentice
Interfaces internal	All departments involved in training Operations Manager
Interfaces external	Vocational schools Chamber
Organization	A training manager and supportive colleagues in the departments
Production steps that already took place	Design
Level of autonomy	Independently, in consultation with plant manager
Workplace	Office, workshop
Tasks	
Complete training (preparation for the final examination, registration for the examination, model selection, workflows, processing instructions, preparation of written certificates, information about further training opportunities). • Check whether all materials relevant to the training are available in the company. • Distribution of trainees to the departments based on framework plans • Coordination and exchange with the foremen of the specialist departments • Control of report books and school certificates • Support or organization of support for trainees with deficits • Exchange meetings with vocational schools and chambers to optimize training • Contact with chambers to register for training and examinations • Preparation and provision of the test documents for example model specifications, workflows	

• Contact with vocational schools on the status of the apprentice • Instruction of colleagues involved in training • Instruction of trainees on machines
Required knowledge and skills
• Leadership and management competence • Competence to settle disputes and disagreements • Social competence • Patience • Organizational skills • Empathy • Expertise • Good ability to communicate content
Others
-

5 Maintenance Management

Tasks of this sphere are not part of local work processes.

6 Quality Management

Venue	Date
ISC Pirmasens	August 2021
Qualification for the sphere of activity	
1-week basic training as auditor Relevant further training, e.g., on ISO 9001 (quality management) and on shoe-specific topics	
Legal framework	
Issuance of certificates as an accredited certification body	
Working environment	
Products	Certificates
Users	Companies, especially from the footwear sector, and their suppliers
Interfaces internal	-
Interfaces external	Visit the companies also on site
Organization	Responsible employee in the field, a deputy
Production steps that already took place	Design
Level of autonomy	Independent, within the framework of the rules for auditors
Workplace	Office, on site
Tasks	

- Certification of other companies on request
- Advising the company on the certification process, not on the creation and optimization of the QM system
- The company creates its processes according to the standard and documents them (including process descriptions), often in cooperation with external consultants
- Auditing of the processes, not the products
- Time span from initial contact to on-site certification ~1/2 year
- Review of the companies on site, criteria e.g.:
- Analysis of production processes and optimization options.
- Unexpected event handling strategies, e.g.: Failure of an expert.
- Assessment of the structures, transparency and objectives.
- Are there internal annual audits?
- Is the achievement of objectives documented?
- Are the documents complete and clear?
- Are safety trainings conducted and documented?
- Continuous improvement approach to goals in place? - Not necessarily necessary with concrete time frame.
- The audit results confirm either the
  - Conformity with the requirements of ISO 9001, 13485, 14001, 27001, 50001 or the
  - Non-compliance with ISO 9001, 13484, 14001, 27001, 50001 requirements.
- In case of conformity, re-certification takes place after 3 years (if desired).
- In case of critical non-conformity, there is an option to correct the deficiencies within 14 days
- Independent of the certification process:
  - Training/education on QM.

Required knowledge and skills
• Detailed knowledge of the standards, • Ability to understand and assess processes, • Being able to distinguish between what is written on paper and what is really "lived", • Judgment on (over)-ambition and realism of QM targets, • Communication skills.
Others
-

7 New Materials

Tasks of this sphere are not part of local work processes.

8 Supply Chain Management

Tasks of this sphere are not part of local work processes.

9 Social Responsibility Management

Venue	Date
ISC Pirmasens	August 2021

Qualification for the sphere of activity

1-week basic training as auditor
Relevant further training, e.g., on ISO 26000 (social responsibility), on SA8000 (social and labor standards) and on shoe-specific topics
Training as sustainability manager by IHK
OEKO TEX Step trainings

Legal framework

Issuance of the Green Button (together with UM) as a recognized certification body

Working environment

Products	Certificates
Users	Companies, especially from the footwear sector, and their suppliers
Interfaces internal	-
Interfaces external	Visit the companies also on site
Organization	Responsible employee in the sector, a deputy
Production steps that already took place	-
Level of autonomy	Independent, within the framework of the rules for auditors
Workplace	Office, on site

Tasks

- Head of Certification Body SV/Sustainability
- Advice to the company on the certification process, not on optimization
- The company creates its processes according to e.g., the ISO 26000 standard or the Green Button or similar and documents them (process descriptions), often in cooperation with external consultants
- Auditing of the processes, not the products
- Time span from initial contact to site visit ~1/2 year
- Review of the companies on site, criteria e.g.:
  - Complaint management
  - Social management at subsidiaries abroad
  - Handling overtime/vacation.
  - Regulated employment relationships?
  - Compliance with the rate?
  - Compliance with the minimum age/special protection of minors?
  - Working conditions analysis.
  - Occupational safety, e.g., clothing complied with?
  - Is lighting, posture, etc. appropriate?
  - Emergency exits available, open and signposted?
  - Is freedom of association accepted?
  - Is the achievement of objectives documented?
  - Are the documents complete and clear?
  - Consultation of the works council, if necessary
  - Continuous improvement approach to goals in place? - Not necessarily with time frame.
  - Assessment of structures, transparency and objectives.

- The audit results confirm either the
  - Conformity with the requirements of ISO 26000/ Green Button or similar or the
  - Non-compliance with ISO 26000/ Green Button or similar. Requirements.
- Regardless of the support process:
  - Participation in the 2-week shoe-specific training courses on sustainability management (offered by the IHK, completion with certificate). Trainings last 2 weeks, 80% attendance and case study - no grades, only pass/fail.

Required knowledge and skills

- Detailed knowledge of standards,
- Ability to understand and assess processes,
- Being able to distinguish between what is written on paper and what is really "lived", especially with subsidiaries abroad,
- Judgment on (over)-ambition and realism of SV goals,
- Communication Skills.

Others

-

10 Sustainability Management

together with

11 Environmental Management

Venue	Date
ISC Pirmasens	August 2021
Qualification for the sphere of activity	
1-week basic training as auditor Relevant further training, e.g., on ISO 14001 (environmental management) and on ISO 50001 (energy management)	
Legal framework	
Issuance of certificates according to ISO as an accredited certification body or the Green Button as a recognized certification body	
Working environment	
Products	Certificates and recognized lists
Users	Companies, especially from the footwear sector, and their suppliers
Interfaces internal	-
Interfaces external	Visit the companies also on site
Organization	Responsible employee in the field, a deputy
Production steps that already took place	-
Level of autonomy	Independent, within the framework of the rules for auditors
Workplace	Office, on site
Tasks	

- Certification of other companies on request
- Advice to the company on the certification process, not on the optimization and consulting of the management system
- The company creates its processes according to the standard and documents them (process descriptions), often in cooperation with external consultants
- Time span from initial contact to on-site certification ~1/2 year
- Review of the companies on site, criteria e.g.:
  - Analysis of production.
  - Handling hazardous materials or hazardous waste.
  - How is research and development organized?
  - Discussions with company environmental representatives.
  - Further training offers available on the topic?
  - Environmental goals clearly and realistically formulated?
  - Continuous improvement approach to goals in place? (E.g. water or heat consumption, risk assessments, use of waste heat, involvement of neighbors?) - not necessarily with fixed time frame.
- The audit results confirm either the
  - Conformity with the requirements of ISO 14001 or the
  - Non-compliance with ISO 14001 requirements.
- In case of conformity, certification takes place. Re-certification takes place after 3 years (if desired)

• In case of critical non-conformities, there is an option to correct the deficiencies within 14 days
• Independent of the certification process:
  o Collaboration in the development of standards, e.g., ECO label,
  o Prequalification of service providers for medical aids.

Required knowledge and skills
• Detailed knowledge of the standards, • Ability to understand and assess processes, • Recognize attempts at green-washing, • Judgment on (over)-ambition and realism of environmental targets, • Communication skills.
Others
-

12 STEM in the Footwear Industry –New Technologies

Venue	Date
ISC Pirmasens	August 2021
Qualification for the sphere of activity	
Educational background in STEM fields at DQR/EQF level 5 or 6, experience in applied fields such as robotics, design via 3D CAM or similar.	
Legal framework	
-	
Working environment	
Products	3D design software, improved IT tools, e.g., for processing larger data sets, automation approaches
Users	Employees, especially in the planning and design departments
Interfaces internal	All departments Management
Interfaces external	Research partners, customers from footwear industry (design, scanning)
Organization	Some collaborators covering different STEM aspects (engineering, computer science, biomimetics).
Production steps that already took place	-
Level of autonomy	Independent, in coordination with plant manager
Workplace	Office, workshop
Tasks	
• Development/customization of 3D software for design and scanning • CAM programming • Image recognition, AI • Development of IT tools • Trace the evolution to robots that can handle soft materials; e.g., as needle grippers, adhesive grippers, freeze grippers. • Repairs • Intelligent sensors (e.g., in rehab shoes) • 3D printing of patterns • Robotics training courses • Training on the relevance of STEM • Research applications	
Required knowledge and skills	
• Technical competence • Frustration tolerance • Expertise • Good ability to communicate content • Advocating for technical innovations in a partially structurally conservative industry	
Others	
-	

13 Health and Safety at Work

Venue	Date
PFI/ISC Pirmasens	August 2021

Qualification for the sphere of activity

Advanced training at the Employer's Liability Insurance Association (BG) to become a specialist for occupational safety (within a period of 2 years). Exemplary curriculum:

Learning field	Seminar	Self-organized learning time	
		Accompanied learning time	Internship
LF1: Introduction to the training and tasks of the Occupational safety specialist		1 day	
	4 days		
		1 day	
LF2: Work system and operational organization	2,5 days		
LF6: Industry-specific part	1,5 days		
LF2: Work system and operational organization			3 days
		3 days	
	1 day		
LF3: Assessment of working conditions	3 days		
		10 days	
		LUC1	10 days
	1 day		LUC2
LF6: Industry-specific part	1 day		
LF4: Work system design	2 days		
		10 days	
	4 days		
			12 days
LF5: Integration of occupational health and safety into the operational structure and process organization		10 days	LUC4
	0,5 days	LUC3	
	2 days		
LF6: Industry-specific part	1,5 days		
LF5: Integration of occupational health and safety into the operational structure and process organization			10 days
	2 days	LUC5	
LF6: Industry-specific part	2 days		

Legal framework	
Passing the course outlined above; incl. teaching practice.	
Working environment	
Products	Regulation-compliant equipment, machinery, work processes and organization
Users	Employees
Interfaces internal	All departments Management
Interfaces external	BG, TÜV, public utilities, government agencies
Organization	One employee responsible for routine tasks (e.g. checking fire extinguishers) and one-time tasks (e.g. risk assessment of new machines) ~25% of a full position (by law: with 100 MA 50 h/year)
Production steps that already took place	-
Level of autonomy	Independent, but in compliance with various specifications and documentation requirements
Workplace	Office, all workshops
Tasks	
• Risk assessment of new machines • Research on materials (e.g., technical instructions) • Assessment of workplaces from the perspective of occupational safety; however, only advisory function, hall foreman decides • Documentation for the responsible authorities (e.g., trade supervisory office, TÜV) • Participation in internal company meetings on occupational safety • Analyze accidents/near accidents and develop measures to prevent them • Check that minor injuries are recorded in the injury book • Control that in case of absence of >3 days: BG has been informed by head office • Checking escape routes, fire extinguishers, etc. • Supervision of the extensive testing and documentation requirements at the biogas plant • Instruction on new machines • Annual instruction of the employees together with department management • (Too) much paperwork	
Required knowledge and skills	
• Technical competence • Frustration tolerance • Expertise • Good ability to communicate content • Insist ability	
Others	
-	