

*Liquids to Value*



# Quality Management Manual of GEA Westfalia Separator

DIN EN ISO 9001:2008



1. edition, April 2011 (INTRANET)

Print date: 11.04.2011

# Table of Contents

<b>4</b>	<b>Concept</b>
<b>6</b>	<b>Management Process</b>
8	QM System
14	Quality Goals
18	Company Organisation
<b>30</b>	<b>Resource Process</b>
32	Human Resources Development
34	Advanced Training
<b>36</b>	<b>Implementation Process</b>
38	Research and Development
40	Procurement
42	Production
48	Repairs / Maintenance
52	Service
<b>56</b>	<b>Analysis Process</b>
58	Risk Management
62	Audits and Process Monitoring
66	Continuous Improvement
<b>70</b>	<b>Appendix: Further Applicable Documents</b>
<b>73</b>	<b>Process Model for GEA Westfalia Separator Group</b>



## Top Goal is to Create Passion about Quality

At the beginning of the 20th century, there were some 70 companies in Germany that built centrifuges. One of them was GEA Westfalia Separator Group. Today, we are the market and technology leader in our field. Our competitors have all but disappeared. This gives us a sense of pride, yet also shows that our products and services have always been able to meet the current "zeitgeist" and allowed us to offer attractive solutions to our customers. However, we also know you cannot bolster quality based on the past because quality is and was never static. This means that today quality no longer simply means a perfect machine, providing promised features, punctual delivery and start-up. The customer requires all this already, and rightly so. Quality is much more multifaceted and sophisticated.

The challenge that GEA Westfalia Separator Group has to solve today is: to ensure the operating results of your customers. Separation. Liquids to value. But what hardware is required, which services are expected and how can we convince our customers?

GEA Westfalia Separator Group asks itself these questions every day – in a structured process, whose motor and control system is our Quality Management in accordance with DIN EN ISO 9001:2008.

The objective behind this approach is to concentrate on the essential: offering our customers highly innovative solutions to meet their needs and challenges. Obviously on a global scale, 24 hours a day, 7 days a week – around the clock

Yet both the power to innovate and quality now extend much further to include a company's social responsibility and sustainable production – and GEA Westfalia Separator Group sets standards in this area, too. Just as important as the implementation of our production in future, examples of this include planned staff development, an environmental management system certified to DIN EN ISO 14001:2004 and occupational health and safety anchored in strategic corporate objectives.

If we combine all of these facets and purposefully coordinate them with one another, the customer experiences the highest form of quality and becomes convinced by the supplier and his products. Consequently, enthusiasm about quality is our declared goal, it is what we strive for in all of our actions, the unerring benchmark of all of our projects. Regardless of whether a member of the Board, employee, administrator or craftsman, everyone at GEA Westfalia Separator Group sees him / herself as a cog in the wheel of this quality process. With this living corporate vision, which is motivation and obligation at the same time, GEA Westfalia Separator Group will continue to operate competitively on the world market in the future and will be there for all of its customers as a long-term reliable and continuously innovative partner.

# Management Process



The highest possible customer satisfaction and quality can only be achieved when a competent team works together efficiently. To this end, the right basic conditions are necessary. These include defined goals as well as a work philosophy followed by all team members, optimised work flows and structures, and transparent job descriptions and competencies. The first and most important task of the QM system from GEA Westfalia Separator Group is to guarantee these management elements for the long term.



### Overview of topics

- Overall Concept
- QM System
- Quality Goals
- Company Organisation

# The process-orientated quality management system

In constant flux

Quality is never static. What is good today is soon a thing of the past if there is no progress. But something good that improves and, in so doing, orientates itself to the desires, needs and dictates of the customer is in line with the market and therefore of sustainable quality. In order to implement this strategy in operations as efficiently as possible, GEA Westfalia Separator Group became DIN EN ISO 9001:2000 certified back in 2000. The result is a customer-oriented quality management system that is constantly being improved in a continuous improvement process (CIP).



The quality management system of GEA Westfalia Separator Group focuses on the process, not on the organisation. With good reason: ultimately, every product, every service is a result of intra-departmental performance. Subsequently, this “performance process,” including its sub-processes, is the centre of all activities within the QM system. These processes have to be shaped as effectively as possible and aligned such that the products and services meet the requirements and expectations of the market. This approach to process orientation automatically means customer focus and therefore, also customer satisfaction.

### **A roadmap through the standards**

So much for theory. Admittedly, it is somewhat grey. But the present Quality Management Manual from GEA Westfalia Separator Group shows that with the process-oriented system, everything is addressed to the recipient, meaning to the customers and the employees – and not only to the auditor. Or, in other words, information geared toward the target group replaces “classic” QM manuals, which are usually overladen with dense text and complicated and multi-clause sentences.

Nevertheless, it is a certified quality management manual: it essentially presents an overview of the processes as stipulated by DIN EN ISO 9001:2008 and is, so to speak, a travel guide through the QM system. It describes the management, resource, implementation as well as analysis and improvement processes.

In the second level, each of the respective sub-processes is documented in the form of procedural instructions. In the procedural instructions, the individual processes include a description of the activities, responsibilities, entries and results, individual process measurement variables and the responsibility for the overall process. To best support individual tasks, a third level provides the appropriate work instructions, checklists and forms (see also Appendix p. 70 ff).



### **A foundation built on eight principles**

DIN EN ISO 9001:2008 is founded on eight quality management principles. These aim toward continuously improving long-term performance by focusing on customers, while also taking into account the needs of the suppliers, employees, company owners and shareholders.

The eight principles of quality management are

- Customer orientation
- Management responsibility
- Involvement of all participating persons
- Process-oriented approach
- System-oriented management approach
- Continuous improvement
- Fact-based decision-making approach
- Mutually beneficial supplier relationships

### **Performance process, management process and support process**

But what is a process-oriented management system, exactly, and how is it structured? In principle, it is very simple: the company is no longer viewed as a group made up of functions or departments, on the contrary, it is seen as a meshing of processes. This meshing is the actual performance process, which is managed by a management process and supported by a support process.

Performance processes include all processes that are used to develop, prepare, sell and maintain market performance. Management processes include all planning processes and more. Information processes, such as document and data control within the company, for example, are classified as support processes.

All these company processes should always be continuously improving. This is the main inherent component of the modern quality philosophy. Knowledge gained from previous processes flows back into planning, where it is analysed and measures are derived from it. This creates a closed loop that consists of the following four elements:

### Quality planning

The actual situation is determined and the general conditions for quality management defined. Concepts and workflows are worked out based on this information.

### Quality implementation

The results from the planning phase are implemented.

### Quality assurance

Qualitative and quantitative information such as cost / benefit considerations or the assumptions themselves are analysed.

### Quality gains

The information gained is used for structural improvement activities and process optimisation. Successes and results are communicated as well as new quality goals formulated. This is where the continuous improvement loop closes.

### **The process – the bridge between supplier and customer**

This process orientation offers the opportunity to maximise performance through department and company-wide processes in which interdisciplinary teams reduce unnecessary interfaces and frictional losses. This increases the throughput speed enormously. Parallel to this, the company process is managed more effectively because suitable variables and methods are introduced as well as clear responsibilities defined. Among other actions, GEA Westfalia Separator Group appoints a special process manager and provides him or her with all the necessary expertise and resources.

#### Quality management tools

- QM system according to DIN EN ISO 9001:2008
- Ideas management
- Quality circle and group work
- Failure mode and effects analysis (in risk management)
- Programs for avoiding errors
- Preventive quality management measures
- Supplier involvement in the QM system
- Company-wide quality policies
- Principle of internal customer-supplier relationships
- System for recording quality-related costs and services
- Auditing of internal organisational units

# GEA Westfalia Separator – A Global Player with World Certification



GEA Westfalia Separator Group is one of the few companies that has a quality certificate with worldwide validity. All of the company's domestic and foreign subsidiaries have been certified according to the highest ISO standard since 2000.

Morover, along with the complete implementation of guidelines from Good Manufacturing Practice (GMP), GEA Westfalia Separator Group offers its customers an accompanying process that can alleviate and even reduce their high qualification expenditures. Also, GMP helps to implement customer specifications as effectively as possible in project development. With complete quality documentation, GEA Westfalia Separator Group explicitly verifies that all quality promises are being complied with – and that means maximum investment security for the customer.

GEA Westfalia Separator Group also places a consistent emphasis on quality in the spheres of environment, occupational health and safety and social responsibility. It is a declared corporate objective to optimise these areas in a continuous process. With this approach, GEA Westfalia Separator Group has already made an essential step in the direction of “integrated quality management.”

# Centrifuge Manufacturer and Process Manager

The state of the art is always being redefined



GEA Westfalia Separator Group has been producing centrifuges since 1893. During this time, the areas of application for separators and decanters has grown dramatically. Over 3000 applications in the field of separation technology are currently being tested and successfully used. Based on its pool of experience, GEA Westfalia Separator Group has expanded its line of products and services far beyond pure centrifuge design and manufacturing: the company's core competencies today are in line with market demands, innovative machine and process engineering solutions for a multitude of applications, combined with a proactive maintenance approach.

The machines produced by GEA Westfalia Separator Group always meet the most current and highest quality requirements. For example, since 1989, GEA Westfalia Separator Group has worked with the quality assurance system DIN EN ISO 9001 and all of the company's domestic and foreign subsidiaries have been certified according to the highest ISO standard since 2000. And in 2001, the introduction of the process-oriented DIN EN ISO 9001:2000 followed, which was later adapted to the 2008 version.

#### **Custom-made and customer-oriented**

Based on the many years of process engineering know-how gained from the worldwide planning and development of processes and plants, the company has developed a multitude of process engineering solutions. The current spectrum ranges from ready-to-connect centrifuge systems to combined centrifuge-membrane-hybrid solutions and even complete processing lines.

Some of these developments have changed the technology on the market and redefined the state of technology. One example is the Westfalia Separator® **frupex**® process for preparing fruit juice in which a continuously operating decanter has replaced the conventional press. The same applies to the Westfalia Separator® **vinex** process. Here, too, the decanter has replaced the grape press. Today, in Spain, over 95 percent of olive oils are extracted using decanters from GEA Westfalia Separator Group and its proprietary 2-phase process developed particularly for this purpose.

GEA Westfalia Separator Group achieved a further milestone in 2001 with its **PROFI**® beer filtration system. With a separator/membrane filter combination, the company was able to meet the need of the worldwide brewing industry for a kieselguhr-free (kieselguhr = diatomaceous earth) beer filtration system, which is impressive both in terms of cost efficiency and quality. Beyond that, GEA Westfalia Separator Group was able to offer yet another process-related benefit with this product: the **PROFI**® filtration works without any kind of filter aid. So it is not just kieselguhr-free, but also dust-free. This is an important factor that is gaining in importance worldwide when it comes to occupational safety management.



### **Service as an important business goal**

GEA Westfalia Separator Group has much more to offer than innovative “hardware.“ Its portfolio includes an efficiency-oriented range of services for which the traditional term “service“ is much too short. The modular concept goes far beyond classic maintenance and repair services. It combines the consulting and engineering knowledge of a technology leader with the worldwide leading quality standard from the original manufacturer. Proactively designed service modules at a fixed price and the option of dynamically adapting the processes to the newest technologies ensure the customer’s sustained competitiveness for the long term. Appropriate personnel training sessions also ensure that the machines are operated and maintained properly.

This new service dimension once again proves that customised service is an absolute business objective for GEA Westfalia Separator Group. And this also means having as much proximity to the customer as possible, regardless of whether in Europe, America, Asia, Africa, or Australia. Consequently, GEA Westfalia Separator Group is a global player with a dense network of distributors as well as sales, service and production companies.

## Sustained manufacturing means conserving resources

The reliance of a company on resources like water, air and soil requires effective measures for consistently improving the environmental situation. Therefore, GEA Westfalia Separator Group guidelines for process-integrated environmental protection have a specification for resource conservation.

The cornerstone for this is environmental management in accordance with DIN EN ISO 14001:2004. This means that production, supply and disposal processes as well as products are routinely reviewed for their effect on the environment using internal and external environmental audits and are improved in a closed loop.

Among other things, GEA Westfalia Separator Group currently records no less than 55 different recyclable materials such as metal scrap, oils, and oil-containing solids, acids, lyes, cooling lubricants, wood, paper, and cardboard. The recycling quota has just reached the 93 percent mark.



# Corporate organisation

Focused on customer value

If a company wants to remain sustainable, it has to keep on developing. Standing still means going backwards, so a sustainable company is always active and adapting to market conditions – or better still, it takes this step in anticipation, like GEA Westfalia Separator Group. In 2008, the company restructured from a decentralised arrangement to a matrix organisation. The company is divided into Business Areas and subordinate Business Lines. Competences are assigned to the relevant Business Areas consistently on the basis of what they practise. This is also reflected in the clear names of these Business Areas.

## **Business Area Sales**

Business Area Sales supports customers with competence and experience in all the phases of preparing and implementing investment decisions. Based on the comprehensive specialist knowledge of the Business Lines, customised centrifuges and process lines are supplied for a wide variety of applications. Complex processes are the main focus of the process-orientated Business Lines. Specialists plan and implement procedures and processes for highly complex separation technology requirements. These include the Business Lines Beverage Technology, Dairy Technology, Renewable Resources and Chemical/Pharmaceutical Technology. The system-orientated Business Lines devote themselves primarily to cleaning and treating large volume flows. They deliver high-performance machines, systems and modules which can be seamlessly integrated in the operation. These include the Business Lines Marine, Energy, Oil & Gas and Environmental Technology

## **Business Area Service**

Business Area Service combines all the company's services under one roof. All over the world, customers benefit from a dense network, rapid reaction times and a high degree of flexibility. The Westfalia Separator® capitalcare proactive service concept makes the manufacturer's specialist knowledge available around the clock. GEA Westfalia Separator Group's international network comprises over 50 sales and service companies offering excellent customer services around the globe – everything from consulting to securing permanent availability of specified machine performance.

**Business Area Production**

This Business Area incorporates all the production activities for separators and decanters world-wide. As well as the main manufacturing facility in Oelde, all other production sites are certified to DIN EN ISO 9001:2008 and DIN EN ISO 14001:2004. Production serves the sales and service units and focuses on optimum production processes in terms of costs and quality. As a consequence, standardisation of components can be driven forward ever more efficiently to the benefit of customers. Here too, therefore, a consistent customer/supplier relationship has been set up, with customer interest always the focus of all our activities. At the same time, the lean structure makes processing more efficient.

**Organisational structure of the GEA Westfalia Separator Group**



# GEA Westfalia Separator Group

A very brief look at the Business Lines



### Beverage Technology

Beverage technology refers to a broad range of separating technologies from GEA Westfalia Separator Group. For decades, separators, decanters, ceramic membrane filters and process plants have been indispensable units in the production of beer, wine, fruit and fruit juices as well as other beverages such as tea, hot chocolate and soy milk. In all key processing steps, continuously operating centrifuges ensure an efficient process sequence and a high-quality end product.



#### **Areas of application in the field of beverage technology are e.g.:**

- Beer and wort clarification in breweries, including kieselguhr-free beer filtration
- Juice extraction from various fruits, including grapes
- Wine, must and fruit juice clarification
- Citrus juice and oil processing
- Instant coffee and tea
- Coffee, tea and soy milk drinks



**Process technology from GEA Westfalia Separator Group supports the following processes:**

- Milk and whey skimming
- Clarification of milk and whey
- Bacteria removal from milk and whey
- Cream concentration
- Standardization of milk, cream and whey cream

**Special processes for the production and recovery of:**

- Butter / butter oil
- Soft cheese
- Whey proteins
- Calcium phosphate
- Phospholipids
- Lactose
- Casein
- Cheese fines

## Dairy Technology

Mechanical separation technology from GEA Westfalia Separator Group has characterized the dairy industry from the outset. Experience gained over the course of more than 115 years forms the basis for production lines and processes which set new standards..

Whether it's butter, yoghurt or quark: there is hardly another natural product from which as many foods can be produced as raw milk. For dairies, this product variety is coupled with a range of different processes used for raw milk preparation and post-processing.

Westfalia Separator® **absolute separation** promises a broad value-addition for our customers:

- It brings together more than 100 years of experience from practical applications carried out by trailblazing, hand-selected technical specialists and the latest technologies
- It creates profit oriented processes – far beyond the centrifuge process itself – which improve added value
- Separators of the Westfalia Separator® **procool** type allow dairies to skim milk by the cold or hot process in one centrifuge.
- The Westfalia Separator® **hyvol® proplus** system permits separators from GEA Westfalia Separator Group to harvest additional valuable protein from solid residue

## Renewable Resources

The worldwide demand for functional starch products, highly pure proteins, oils, fats, fermentation products, biodiesel, bioethanol made of renewable plant raw materials is continually rising. When processing renewable raw materials for foodstuffs as well as biofuels, the centrifugal separation technology from GEA Westfalia Separator Group is taking on a key role in optimising products and production processes.



### Areas of application in the field of starches and proteins are e.g.:

- Corn starch and corn gluten meal
- Wheat starch (A- and B-starch), wheat gluten, pentosan and protein coagulate
- Tapioca / manioc starch
- Potato starch, pulp, gratings and protein
- Rice starch
- Pea starch
- Proteins (e.g. from soy), protein concentrate, protein isolate

### Areas of application for biofuels and the fermentation industry are e.g.:

- Biodiesel production
- Bioethanol production
- Reprocessing of fermentation products, e.g. molasses, mash, stillage, amino acids, citric acid, algae, baker's yeast, yeast extract

### Areas of application for oils and fats are e.g.:

- Extraction of olive oil, avocado oil, nut oils, cocoa butter, jojoba, flax seed, and others
- Extraction of animal fats, dried blood and plasma, gelatin, from animal by-products etc.
- Extraction of fish meal, fish and cod liver oil, protein hydrolysate and surimi
- Processing of flotation slurries in the meat and fish industry
- Purification of chip and cooking fats
- Refining of raw and edible oils, like soy oil, rape oil, palm oil, sunflower oil, cotton seed oil, corn oil



**Areas of application in biotechnology are e.g.:**

- Animal cell cultures
- Human and veterinary vaccines
- Insulin
- Human blood proteins
- Starter cultures

**Areas of application in chemistry are e.g.:**

- Catalyst recovery (PTA)
- Ash leach (P&P)
- Peroxides
- Petrochemical additives

**Chemical / Pharmaceutical Technology**

Diverse separating solutions from GEA Westfalia Separator Group can also be found in organic and inorganic chemistry, in petrochemicals and plastics manufacturing, in raw materials as well as in pharmaceuticals and biotechnology. All have their high requirements in common: conserving fragile cell cultures, process control in accordance with the highest CIP and SIP requirements, comprehensive reliability, for example, in the treatment of concentrated acid compounds or explosive mixtures – the separation technologies and solutions from GEA Westfalia Separator Group stand for quality at the highest level.

**Areas of application in the extraction field are e.g.:**

- Antibiotics
- Statins
- Biopolymers
- Polycarbonates
- Pectins
- Vitamins

**Areas of application in the minerals field are e.g.:**

- Industrial minerals
- Calcium carbonates
- Kaolin
- Metallurgy
- Nickel
- Copper

## Marine

The separators and supply systems from the Marine Business Line have to take into account the economic challenges of maritime logistics as well as the increasingly stringent regulations for the protection of the ocean as well as advances in shipbuilding technology. The system solutions from GEA Westfalia Separator Group ensure the essential treatment of bunker fuels and lubricants as well as oil and aqueous slurries – around the clock. Special supply and cooling systems additionally guarantee that the diesel engines operate efficiently and trouble-free. Moreover, the fresh water generators from GEA Westfalia Separator Group continually extract drinking water from the seawater and thus make fresh water supply tanks redundant. All systems from the Marine Business Line are offered as individual components. Comprehensively tested and certified, they are also available as complete system solutions with which interfaces and planning expenditures can be reduced and considerable savings made in terms of weight and space requirements.



### Areas of application in the marine industry are e.g.:

- Treatment and maintenance of fuels and lubricants
- Treatment of oil, water and solids
- Treatment of waste water containing oil
- Fresh-water recovery
- Optimum setting of fuel parameters, which include viscosity, temperature and pressure in accordance with manufacturer specifications



## Energy

Current energy recovery is based to a large degree on systems that work in all load ranges cleanly and efficiently and without disruption. With the work-related treatment and maintenance of bunker fuels, lubricants and fuels for turbines and diesel engines in power plants, the separators from GEA Westfalia Separator Group contribute considerably to a viable energy supply in the future.

### **Areas of application in the energy industry are e.g.:**

- Treatment and maintenance of fuels for diesel and gas turbines
- Treatment and maintenance of lubricants
- Treatment of oil, water and solids
- Treatment of waste water containing oil

## Oil & Gas

The opening up of new, but more importantly, the complete and efficient exploitation of already tapped crude oil and natural gas fields on all continents and world oceans is becoming increasingly important. Powerful high-speed centrifuges from GEA Westfalia Separator Group are being successfully used in the exploration, promotion and treatment of crude oil and natural gas. They combine efficiency, reliability and environmental protection in one broad product line of highly specialised applications.

The separators and decanters from the Fluids & Water Business Unit also treat just as effectively operating media like lubricants, cleansing agents and lubricating and hydraulic oil in the bypass on a continuous basis, thus extending their service lives by four to five times. This, in turn, drastically lowers disposal expenses.



### Areas of application in the oil field industry are e.g.:

- Processing of drilling fluids and muds
- Removal of oil and water from “produced and drain water”
- Removal of water from crude oil
- Purification and processing of fuels, lubricants and hydraulic oils
- Separation of cat fines from residual oils
- Slop oil: purification and disposal
- Clarification of MEG (monoethylene glycol)
- Processing of lagoon oils

### Areas of application in industrial fluids are e.g.:

- Treatment of cooling lubricants
- Treatment of washing liquids
- Cleaning and dewatering of lubricating oil
- Processing of MARPOL oils and oil slurry
- Processing of oily water
- Processing of used emulsions and used oil



**Areas of application  
in environmental  
technology are e.g.:**

- Processing municipal and industrial waste water
- Dewatering and thickening of sewage sludge
- Conditioning of drinking water
- Recovery of valuable material from production streams

**Environmental Technology**

In environmental technology, GEA Westfalia Separator Group delivers innovative solutions involving separators and decanters for municipalities and industry. Areas of application include, for example, drinking water extraction, waste water treatment and the recovery of reusable materials from production processes. The stationary and mobile plants from GEA Westfalia Separator Group facilitate, above all, process-integrated environmental protection, which is in high demand in the industry. They handle the entire performance range of small, medium and large volume flows efficiently, and, in the process, increase performance and reduce costs. GEA Westfalia Separator Group innovations are even helping to significantly increase efficiency in biogas generation.

### Original Manufacturer Service

Westfalia Separator® capitalcare: with customized service packages, the 24 / 7 manufacturer's service concept for system applications ensures the outstanding performance of our separation technology machines and systems. If necessary, our service technicians can be on site straight away – all over the world.

The reliable availability of maximum system performance is a prerequisite for the highest level of process efficiency. The machines have to run at a constant level of effectiveness around the clock. Our preventive services and measures are designed to comprehensively secure this performance and availability and to avoid unplanned stoppage times.

Here, we keep in mind that our customers plan their repair and maintenance budgets to be as efficient as possible. Customized service level agreements offer numerous options here. These may be agreements for basic services, although premium contracts are also available, which can be defined with specified services for the framework of a budget.



### Our most important services for individual customisation to suit customer-specific installation technology and budget frameworks:

- Field service
- Original spare parts
- Repair
- Training
- Service level agreements are adjusted precisely to the requirements of application conditions

# Resource Process



Resources have to be managed not only in terms of volume and quality. They also have to be at the right place and the right time. And that means today, tomorrow and the day after tomorrow. In brief: for all resources, nothing may be left to chance. In other words, structured processes and precise planning are much more important, as in GEA Westfalia Separator Group.



## Overview of topics

- Human Resources Development
- Advanced Training



# Only Motivated and Qualified Employees Produce Quality

## Getting a chance

The support pillars in the quality process at GEA Westfalia Separator Group also involve encouraging each employee to take the initiative as well as training and developing the specialists and executives required. This kind of training consequently begins as early as possible, during initial training. Visible signs: the apprentice quota from GEA Westfalia Separator Group has been considerably above the industry average for many years.

As part of the training strategy, in turn, a triple-track approach is pursued: apprentices on one track become highly skilled workers or mechanics. Apprentices on the second track have the potential to meet the requirements of becoming company manager or executive. And the third track is used to guide apprentices through the program until they complete the programme at GEA Westfalia Separator Group.

In order to achieve this ambitious goal of strategic human resources development, GEA Westfalia Separator Group purposely uses diverse advanced training and



qualification programmes. These programmes not only teach the employee, but he or she is shown interesting personal development possibilities within the company. This promotes individual motivation and independence. Furthermore, this strategic personnel training and development makes the company interesting for the necessary specialists who are recruited only from the market or higher learning institutions.

Another effective QM tool that GEA Westfalia Separator Group uses in strategic human resources development is ideas management within the operations improvement system. Using this tool, all employees from GEA Westfalia Separator Group – regardless of whether an apprentice or an executive – can submit proposals that are reviewed, assessed and, if relevant, implemented in a defined process.

Improvement proposals can be ideas for optimising existing methods, increasing productivity, reliability and quality. But also proposals with regard to cooperation or increasing motivation are a possibility.

Success justifies the idea: for years, employees from GEA Westfalia Separator Group have surpassed the targeted savings potential of 500,000 Euros. And let's not forget: the operations improvement system is simultaneously an excellent tool not only for promoting employee identification, but also as a measurement tool – because only motivated employees are interested in improving the company.

# A Separate Department for Internal and External Training

Future trend is long a reality

Only by constantly providing its employees with advanced training and personal development opportunities can a company exist over the long term. Success comes from sharing knowledge – that is the new creed in the working world. At GEA Westfalia Separator Group, this vision has long been reality. A separate human resources development department has created the foundations for highly trained and qualified service technicians and sales engineers. Furthermore, the education and training centre offers external training opportunities for customer employees.

## **“Newcomer“ seminars**

Even with advanced training, the following applies: the sooner, the better. That is why all future sales and service employees learn about the company and the company’s products in so-called “newcomer“ seminars, which last for a period of several days.

In addition to machine technology, these seminars also focus on the specific processing technology, which initially helps the employee become reasonably familiar with the company’s process engineering technology and obtain a coherent view of the whole. These seminars are designed for groups of up to a maximum of eight participants and go into detail.

## **Individual coaching**

Individual training sessions are generally more pronounced in their content structure and are almost the equivalent of an additional training programme. As a rule, sales engineers as well as service technicians complete a six-month training programme that is especially tailored to the individual’s previous knowledge and experience. Employees pass through all the essential stations of separator production; these range from production to the central process engineering lab to the acceptance test bench and repair department. This gets them up to speed on the technology to prepare them for detailed customer consultation. The machine and process engineering part of the training is supplemented by coaching on the psychology of sales by external trainers.

### Process engineering seminars

The world of separators and decanters is changing constantly. Consequently, the training department provides annual refresher courses for all sales and service employees in one-day seminars, thus bringing their level of knowledge up to date. Added to this is a process engineering training programme in which new basics, for example, in cooking oil, milk or beverage processing are taught. In practice, this provides support when optimising the centrifuges used in the customer's environment.

GEA Westfalia Separator Group gears its demand-oriented advanced training programmes to the individual and personal needs of the employee. To this end, the need for advanced training is reviewed and the necessary measures implemented once a year in a defined process for each employee. If necessary, the employee is released from his or her daily duties for the purpose of obtaining advanced qualifications.



### Occupational safety is an important quality facet

GEA Westfalia Separator Group's corporate culture, which is geared toward the employees, does not permit their well-being to become subordinate to business interests. Even more, protecting the health and safety of our employees is a solid component of the corporate objectives of GEA Westfalia Separator Group. For this reason, standard specifications as well as management systems ensure comprehensive occupational safety.

In this context, all company locations implement occupational safety measures on an ongoing basis. These include investments in technical equipment as well as diverse activities for making employees more aware of safety. Along with the company physician and the health committee in the works council, the occupational health and safety department also makes routine rounds in the production departments.

Last but not least, work-related and travel accidents are statistically evaluated and, if applicable, necessary preventive measures introduced. Because social responsibility for GEA Westfalia Separator Group does not end at or on the way to the factory gate.

# Implementation Process



Everyone benefits from an optimum implementation process. The suppliers, the manufacturers and, last but not least, the customers themselves. On-time delivery is only one facet in this process. What has long been more important for GEA Westfalia Separator Group is to always be able to offer increasingly complex functionalities and services in line with the market, and therefore at an attractive cost/benefit ratio.



### Overview of topics

- Research and Development
- Procurement
- Production
- Repairs/ Maintenance
- Service

# Individual R&D Management Controls the Development of Products in Line with the Market

From need to product



Identifying the customer's needs represents only one challenge. The other challenge lies in implementing these needs in a real machine. How does a new product or feature really become efficient and user-friendly? Or does it even have a design that is feasible for production? Can it be produced cost effectively? Many questions have to be taken into account in product development. An R&D project management manual directs this process at GEA Westfalia Separator Group.

### **Reaching the goal together**

The head of development and design is responsible for defining and specifying research and development projects. After discussions with the relevant operations units, he or she prepares a requirement catalogue. Key customers as well as suppliers are also involved in this phase of the process.

Planning content from R&D projects includes technical and commercial parameters, but it also includes the cost factors. These factors are also linked with milestone planning. Project planning is consequently adapted to the resources available for development. In this process, the use of standards reduces the processing expenses in preparing a new R&D project.

### **Project-dependent minimum standards for the workflow**

The project progress is reviewed during routinely held workshops. Members of the project team largely consist of project managers, designers, technicians and draughtsmen. Relevant areas like business lines, production and purchasing are involved in the project implementation phases early on. The project manager is responsible for handling the R&D project controlling, maintaining costs and deadlines as well as achieving the project goals.

To implement projects, minimum standards are specified in the R&D project management manual and these depend on the project scope. These refer to the project sequence and the selection of the project team members as well as the responsibilities and competencies of those involved in the project and their scheduling commitment.

The explicit definition of the individual processing steps and their processing depth as well as their link with deadlines and responsibilities ensures that information is provided on a needs basis and that throughout the project, changes are kept to a minimum.

### **The moment of truth**

At GEA Westfalia Separator Group, a development project is not successfully completed until the project goals / requirements specified in the customer requirements specification are proven in the test bay runs. These project goals include technical requirements as well as target costs, project budget and deadlines. At the end of the project, the R&D project manager hands responsibility over to the operations manager in the business line. The door to the customer then opens.

# Everyone Benefits from an Optimum Procurement Process

Satisfied customers with lower costs

How does a company become a successful company? The answer is simple from a quality management perspective: the successful company does not make any errors. In other words, zero error means satisfied customers. But the zero error strategy also actively increases revenue on a sustained basis because the quality cost factor becomes immediately lower with each error prevented. Guaranteed sales and lower costs is every company's dream and one that can be achieved at a relatively low cost by applying this quality strategy.

## **Unnecessary test expenses**

During the quality process, companies accrue a considerable amount of expenses due to test costs for delivered parts that have to be tested and inspected. Because GEA Westfalia Separator Group works together exclusively with the best and also certified suppliers, these expenses can be reduced to a minimum.

For example, if a supplier produces electric motors, that is logically its core competence. The fact that GEA Westfalia Separator Group has this electric motor undergo comprehensive testing later on is therefore unnecessary and results in unnecessary costs. No more testing – that is the consistent approach of GEA Westfalia Separator Group in the procurement process. This means nothing other than: “we have complete trust in the core competence of our suppliers.”

For this reason, whenever possible GEA Westfalia Separator Group works either with suppliers certified to DIN EN ISO 9001 or with those who have built up and implement a quality management system based on this standard. Before starting a business relationship, this QM system may also be inspected in detail. GEA Westfalia Separator Group staff from the quality, procurement and engineering departments perform the inspection on the supplier's premises. A final decision on whether a business relationship can be recommended from a quality point of view is based on the results of this inspection.



### **From supplier to partner**

The lowest bid price is not a prevailing factor when selecting a supplier. On the contrary, during the selection process, the overall process costs, quality, commitment to the environment through the use of existing resources, delivery time and the opportunity to develop a long-term partnership are deciding factors. In general, each supplier has to be committed to complying with the specifications in their entirety as stipulated by GEA Westfalia Separator Group. The procedures necessary for this are defined in the separate “Quality Guideline for Suppliers of GEA Westfalia Separator Group.”

During this process, the goal is for the supplier to become a partner. Accordingly, GEA Westfalia Separator Group also requires its suppliers to actively cooperate in many areas. This means that the suppliers should contribute their know-how to the development phase of the products early on. A good example of this cooperation are the supplier workshops or supplier days on cost reduction that are initiated by GEA Westfalia Separator Group and attended by experts from the supplier, construction, quality assurance, logistics, and purchasing.

Obviously, GEA Westfalia Separator Group also continuously puts itself on the test bench, so to speak. GEA Westfalia Separator Group thus creates the necessary structures for each feasible improvement idea. A cycle that GEA Westfalia Separator Group uses to pursue a clear goal: quality assurance for all members of the supply chain.



## Precisely Accurate and Smooth – the Production Process

In the beginning, there was the project

From the proposal to the finished machine – GEA Westfalia Separator Group has also mapped this route in a structured process. Both in manufacturing as well as for the customer, frictional losses or time losses are thus ruled out right from the start.

The first step from project to product is the proposal. All relevant departments are involved in its preparation early on. This minimises both the technical and legal risks.

### **Rolling production planning for on-schedule raw materials procurement**

An exciting time begins once the proposal is submitted. Will the project become an order? This waiting time is naturally not wasted. Because GEA Westfalia Separator Group spends this time calculating both the project as well as order probability. If both factors are above the 60 percent threshold, then the project goes into rolling production planning.

A central parameter of this planning is the procurement of raw materials that can be decisive for on-schedule delivery. An example: the bowl of a centrifuge requires very special metal alloys that also have to be especially forged in order for the prevailing major forces to be able to be resisted in the bowl. For these reasons, it can take up to two years for the desired materials to be delivered to GEA Westfalia Separator Group. Consequently, production planning takes into account at this early stage the probable orders and the forecast sales during this time frame in order to have all necessary materials delivered on time via call orders.

### **The order has to be sufficient in terms of both technical and commercial criteria**

If GEA Westfalia Separator Group is awarded the contract, the potential contract will be heavily vetted in the next step. In concrete terms, it must meet both technical and commercial criteria.

The technical clarification statement is a review as to whether the selected machine is actually ideally suited to the specialist application in question. The commercial review concentrates on the cost-accounting factors and form of contract. For this purpose, GEA Westfalia Separator Group has also implemented an independent review process. If the commercial and technical reviews reach a positive conclusion, the theoretical needs are converted into order-related production needs. Thus begins actual production.



### **Parts lists break the order down to material stock**

The production process of a separator or a decanter lasts about four months, on average. At the beginning, the machine to be produced is available in the SAP system as a parts list that is further broken down into production phases. Planning consequently extends as far as material stock which is set in relation to requirements daily using a disposition list. Based on this comparison, it is decided which parts have to be purchased or produced by the company.

With the release of the work order, it is sent to a materials requirement planner who accompanies it through production. The starting point for timely processing is the scheduled delivery date or the start of assembly. At this point in time, production is retroactively planned. A group of employees from production who meet daily controls the supply of components. Additionally, a task assignment list is updated daily in which the load capacity of the main machine groups is planned and the processing of the production steps is controlled. All production plans are reviewed on a routine basis. As part of this process, the weekly or monthly schedules are also reviewed. Such reviews indicate early on whether production lies in the specified time window.

### **Work orders control the production process**

The work orders, in turn, control the production process of the parts. These precisely determine how the corresponding component is processed on the individual machines. But the work order describes only the actual processing process. The workflow itself is handled by the employees at the respective stations who are

specifically trained for that task. To train the employees for these specific tasks, internally, qualified foremen and supervisors conduct training workshops. Additionally, should machine-specific training be recommended, this takes place directly at the manufacturer's site.

With the work order, the component with a separate parts number is routed either directly to assembly or sent to the warehouse in order to be ready for assembly start.

At the time of assembly, anonymous production with parts numbers switches to the concrete customer order. The assemblies necessary for this purpose are defined by the construction department in the machine card and are assembled accordingly.

### **Each employee guarantees the quality of his work**

In order to guarantee the highest possible quality across all production steps, GEA Westfalia Separator Group relies on the personal responsibility of its employees. Once processing has been completed, each employee stamps "his" work with a quality stamp in accordance with "his" quality specifications. As the producer, he hands over the component at the desired quality level to the next employee, his customer. With success: the philosophy of being solely responsible for the quality of one's work has long been a part of the work ethic of each employee.

In the end, GEA Westfalia Separator Group performs a final acceptance test on each centrifuge. During this acceptance inspection, a separator, for example, must explicitly perform its function in a practical test run. Moreover, each centrifuge is analysed to see whether it also meets the vibration specifications. That is followed by an inspection for completeness and then it is delivered to the customer.



### DIN EN ISO 9001 reduces customised acceptance tests

The standard test bench run is defined in a GEA Westfalia Separator Group standard. It lasts about one day. Customised final acceptance tests are possible at the customer's request. However, by verifying a DIN EN ISO 9001 quality management system, these customised acceptance tests at GEA Westfalia Separator Group have declined sharply.

### Centre for Process Engineering offers customers a unique investment basis

So that a customer does not have to purchase a "pig in a poke," GEA Westfalia Separator Group GmbH has set up a very special service: the Centre for Process Engineering (ZVT), it is the customer's first stop when it comes to new and modified products. Following analysis of the customer's original product which is subsequently to be treated on a large scale, it issues a recommendation as to which GEA Westfalia Separator Group machine is best suited to this purpose. In addition, the customer can also have trials using his own product conducted in the Centre for Process Engineering or, if in doubt, even borrow a test machine. The customer can thus make absolutely sure that the recommended centrifuge suits his product.

The other purpose of the Centre for Process Engineering is plant optimisation. If a customer requires improvements in results, for example, or an increase in capacity, the Centre inspects the installation in cooperation with the sales companies. Under certain circumstances, process engineering changes are necessary, but also potentially an even more powerful centrifuge.

GEA Westfalia Separator Group uses the Centre for Process Engineering as a lab for further developing and enhancing new processes and procedures. A broad range of activities all in the name of customer satisfaction.



## Customers Can Access Authorized Workshops Worldwide

Quality and reliability

No one would ever think about having a Formula 1 race car serviced or rethreaded tyres mounted by a farm machinery mechanic. The risk to the vehicle, the driver and the fans would be incalculable. The same applies to centrifuges. High-alloyed special purpose steels permit bowl speeds of up to 750 km / h, 13,000 times the gravitational force that would then impact “the driver.” True service specialists are therefore an absolute must. Customers of GEA Westfalia Separator Group can rely on such specialists through a world-wide network of authorized workshops. These repair shops perform service and maintenance work in accordance with the safety philosophy of GEA Westfalia Separator Group.

GEA Westfalia Separator Group chooses its authorized workshops in a very strict selection process. This process is defined in a detailed standard that describes all organisational and technical requirements as well as the certification sequence. The standard is mandatory for all repair shops that offer repair services on behalf of GEA Westfalia Separator Group.

#### **DIN EN ISO 9001 obligatory**

If a repair shop wants to become authorized, it first has to come before the top GEA Westfalia Separator Group authority for safety issues – the Safety Committee. In the first step, however, the shop first has to verify in writing various qualifications. For example, an audit is necessary in order to review the organisational requirements.

The machine equipment and the quality of the work are also put under the microscope. Furthermore, an organigram as well as a shop layout, including machine plan, have to be included in the application, the sequential steps of the current repair processes from order receipt to delivery have to be explained and the scheduled repairs have to be listed precisely.

### **Certified safety officer**

Furthermore, a safety officer has to be appointed who is responsible for implementing the standard and making sure that it is complied with. This safety officer supports the repair shop when it comes to questions ranging from safety to service and repairs. At the same time, the safety officer acts as the contact person for the sales companies and as the interface between the design and technical departments.

The safety officer himself has to prove his technical communications ability with the relevant technical departments such as the design, materials technology and TQM departments. He is also certified to assess safety-related repairs to separators and decanters as well as issuing instructions on performing the necessary work sequences along with the corresponding documentation.

During a three-week training program “Organisation and Safety for Service and Repairs“ in Oelde and Niederahr, Germany, every incoming safety officer becomes familiar with the different technical departments and contact persons who will support him in his later work and help him solve repair problems. This is how he obtains the necessary basic information for his job. After successfully completing the training programme, the Safety Committee officially promotes the applicant to safety officer and presents him with the corresponding certificate.

### **Auditor very carefully inspects everything on site**

So, back to the repair shop: using the application documents, the Safety Committee reviews whether the basic requirements for certification have been met. If they have not, then the application is rejected. The applicant receives written notification including the grounds of rejection, which give the applicant the opportunity to implement the changes specified. Once these improvements have been made, then a repeat certification process is permitted.

If the Safety Committee gives the application a positive evaluation, an auditor selected by the Committee travels to the applicant’s site and audits its organisational and technological conditions. Machine fleet and technical equipment as well as employee qualifications must meet the safety requirements and quality standards that GEA Westfalia Separator Group has stipulated in the mandatory works standard. The auditor documents any obvious deviations in a report so that the repair shop can introduce remedial measures efficiently. Not until all requirements have been reviewed and verified does the repair shop receive the certificate that makes it an authorized GEA Westfalia Separator Group workshop.

### Monitoring audit

The certificate for an authorized GEA Westfalia Separator Group workshop is valid for three years. However, GEA Westfalia Separator Group regularly performs spot checks in the form of a monitoring audit to ensure compliance with the requirements. If a certification requirement changes, the shop must immediately inform the Safety Committee and include the scheduled remedial measures – otherwise the certification issued becomes null and void immediately. A customer of GEA Westfalia Separator Group can therefore be sure that his machine is exclusively in the hands of competent and skilled specialists. This is of decisive importance when it comes to high-performance machines: because only original components and having an authorized team perform maintenance, service and repair work as well as start-up can protect the production process and the customer's employees.



### Materials testing – the best is just good enough

A defective screw can bring even the best systems to a standstill. Consequently, every single minor component has to meet the well-known high GEA Westfalia Separator Group standards. These minor components are inspected in a separate materials lab in which GEA Westfalia Separator Group also performs destructive testing so that nothing breaks in operation.

Additionally, GEA Westfalia Separator Group has at its disposal the equipment to perform quality checks on weld seams. Many of the most important tests ranging from visual inspections with an endoscope, ferrite content measurements and even x-ray analyses, dye penetration testing and magnetic powder indications can be performed using the company's own resources and equipment.

Besides the DIN EN ISO 9001, all main products are subject to the EC Machinery Directive 2006/42/EC along with its subsequent versions. The following directives are adhered to depending on the area of application: low Voltage Directive 2006/95/EC, EMC Directive 2004/108/EC; Pressure Equipment Directive 97/23/EC as well as the ATEX 94/9/EC Directive (explosion protection).

# Original Manufacturer Service Guarantees Availability and Performance

It is our stated objective to deliver customers the best possible professional service for machines and installations and thus support and secure processes to the best of our ability. For it is the machine which provides the basis for the process and service which guarantees the availability and secures the performance of that machine. GEA Westfalia Separator Group takes this dual approach in meeting the requirements and wishes of its customers for the present and the future – because perfectly-functioning service is the key to customer satisfaction.

In order to take service to the next level, to the next highest level, GEA Westfalia Separator Group has implemented a large number of measures. Inspection and maintenance, supply of original spare parts, repairs, training of operating personnel as well as 24-hour access to technicians are services that customers can already rely on.

The Westfalia Separator® capitalcare program provides a new dimension of services which are designed to be preventive and proactive in approach, combined with a massive expansion in our range of services. This assumes individual analysis of existing installations and processes, with specific recommendations for monitoring and maintenance and for the provision of critical spare parts, with concrete training recommendations and specification of a contact chain and of the information flow.



### “Offline“ or “online“

Building on this applied consulting approach, the Westfalia Separator® capitalcare programme with the condition monitoring feature is opening up the option of condition monitoring and the diagnosis of machines, plants and processes in centrifugal separation. With Westfalia Separator® wewatch®, GEA Westfalia Separator Group is offering a monitoring programme that can monitor “offline“ at the customer’s site or “online“ at GEA Westfalia Separator Group. As an outstanding innovation, online technology has now become a solid fixture of proactive service. This attractive technology leads directly to lower costs due to reductions in repair expenses and fewer unforeseen outages. Nevertheless, for necessary repairs, GEA Westfalia Separator Group is linked to an international and extensive network of authorized workshops.

Along with protecting the customer’s investment and ensuring an optimum supply chain on an ongoing basis, the Westfalia Separator® capitalcare programme also supplies original replacement parts equipped with barcodes so that they are easier to identify. For “key replacement parts“ there also exists the option of setting up a consignment warehouse. At the same time, improved global logistics ensure faster delivery times for spare parts, if needed. In the case of necessary repairs or with work-related



modernisation and upgrading of separation plants, customers can also rely on loan bowls and scrolls. Upgrading is a good option for customers who want to improve their earning power and competitiveness and who are looking for an alternative to investing in a completely new separation system. Instead, GEA Westfalia Separator Group upgrades existing plants to the newest state of technology and to the greatest extent possible.

### Global training

Training of the operating personnel in the training centres at GEA Westfalia Separator Group, at the customer's site, if necessary, with a final exam, ultimately rounds off the Westfalia Separator® capitalcare investment protection programme. In addition to the authorized workshops, GEA Westfalia Separator Group is in the process of building up its infrastructure of global training centres and refining its network with mobile training centres, with regional training camps and a large training centre in Oelde, Germany. Following this philosophy, major expansion goes hand in hand with a high qualification process of service personnel.



# Analysis Process



Those who want to be sure that they will achieve their goals must measure whether they are on course, on the one hand, i.e. whether the current position matches the planned one. On the other hand, the course itself also needs to be permanently on the test bench. The result of this continuous analysis process is a control loop leading to continuous improvement.



#### Overview of topics

- Risk Management
- Audits and Process Monitoring
- Continuous Improvement

49.68



# Risk Management Ensures Safety Right from the Start

Safe is safe

“No risk – no fun.” This applies only to a few extreme athletes. This motto has no place in business life. A structured management system minimises risk potential and is therefore a key component of the quality philosophy at GEA Westfalia Separator Group. The contract review is also of central importance in this process. Because it means safety – right from the start.

## **If possible: standard contracts**

The familiar solution is standardisation. The purchasing department at GEA Westfalia Separator Group has on hand the relevant contracts that regulate the relationship between the sub-contractors. In accordance with an ABC analysis it includes the general conditions. This process helps to shape contracts transparently. And clarity prevents errors.

For orders that GEA Westfalia Separator Group receives from a customer, there are also standardised contract specifications. This applies especially to delivery contracts for centrifuges, process lines and plants. If the customer would like to see its own requests included in the contract, the customer's requests are aligned with the internal contract standard and a risk analysis performed.

**From case to case:**

**short risk analysis or detailed risk assessment**

Depending on the order volume, a short risk analysis or a detailed risk assessment is used. In the case of a short risk analysis, the working employee breaks down the main liability risks in a form. One of the questions on the form, for example, is whether consequential damages are excluded. In other words, how a possible delay in implementation is regulated or whether there is an overall upper liability limit.

The second issue looks at assured features. This ensures that the plant performs as stipulated in the customer's requirement specifications. It also prevents follow-up costs that could result, for example, from a delayed acceptance test or necessary machine modifications.

Ultimately, the short risk analysis includes an evaluation of the customer's financial solvency. All of these factors are included in the preliminary costing. With the help of this comprehensive analysis, the risk analyst always takes the main risks into account. This analysis minimises the potential risk both for the customer as well as GEA Westfalia Separator Group.

If the order volume exceeds a defined amount, instead, a detailed risk analysis is performed in which the relevant risk management department is involved. Right during the scheduling phase, this department sets out to exclude the risk-related contractual points. In the detailed risk analysis, the critical contract sections are explicitly queried and a far-reaching risk assessment performed.



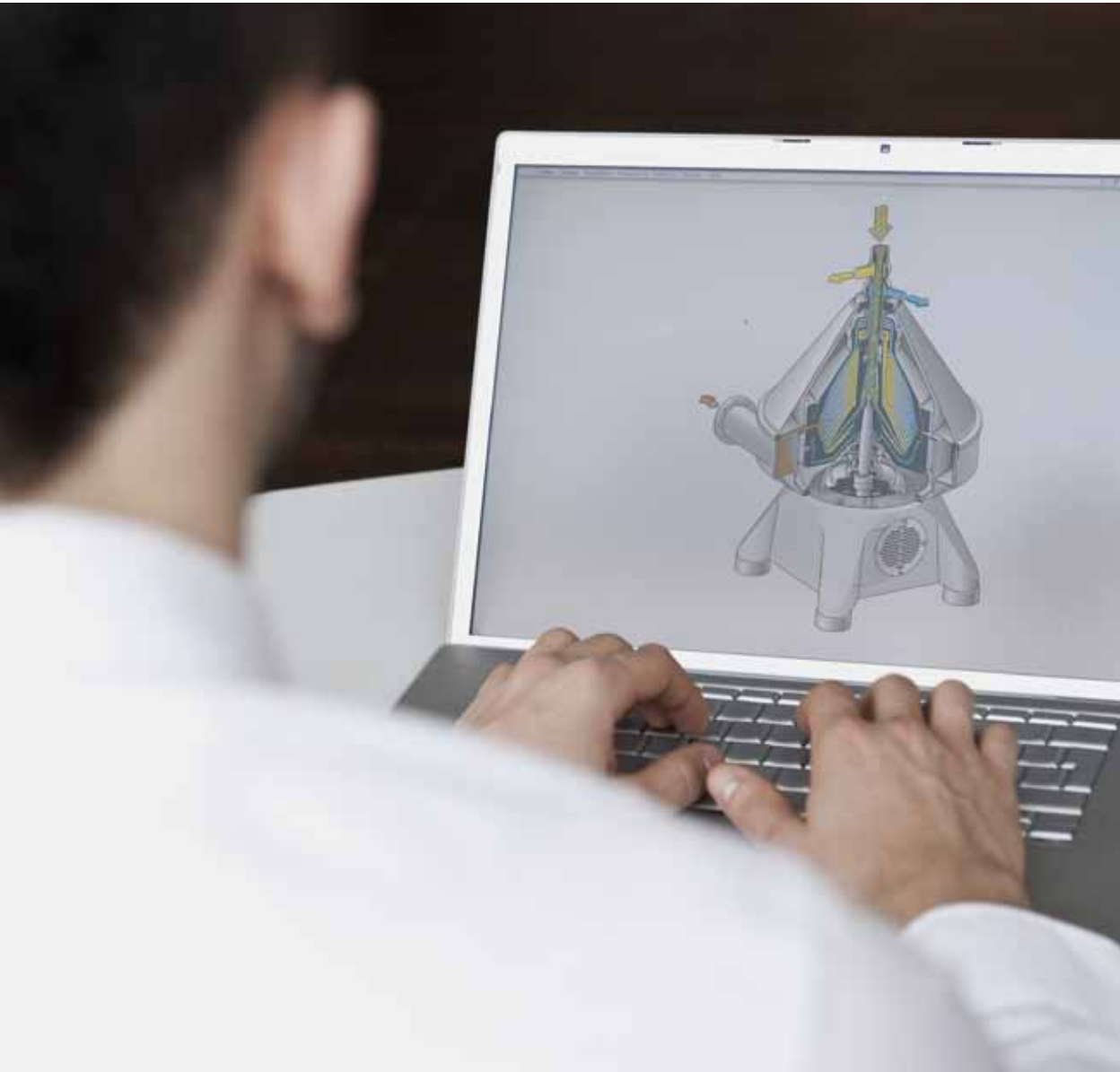
### **Risk factors are gathered worldwide**

The basis of this analysis is the structured gathering of all relevant risk factors, ranging from the political risks, environmental risks and financing risks. This applies not only to the main production facility in Oelde, but also all subsidiaries – the risks are also gathered worldwide. This information is then collected centrally in the controlling department in Oelde. The controlling department lists the individual reports and assesses the respective risk, making it quantifiable in this way.

The Risk Advisory and Assessment Committee meets on a routine basis. This committee is made up of members from different departments in order to be able to analyse the risks from entirely different perspectives. For all measures that the committee comes up with, the customer is always the focal point. Only working with the customer is the optimum solution found. This applies both to project planning and the preparation of the contract as well as subsequent implementation. All key factors are documented along with the relevant responsibility so that it is clearly understood. And that was, is and remains the best foundation for satisfied customers.

# Analysis is the Foundation of the Quality System

Quality can be measured



For GEA Westfalia Separator Group, the quality concept is corporate culture in action. That is why everything is measured, analysed and assessed. This includes the supplier, the system, the process, and last but not least, the quality auditor himself all of which are constantly under close scrutiny. This is not to punish, and not for an end in itself. Ongoing analysis helps to assess the current situation in order to effectively implement remedial measures if the current course no longer leads to the goal, which is the continuous improvement of products, processes and work conditions.

The analysis process begins long before the factory door to GEA Westfalia Separator Group. Through precisely described quality guidelines for external suppliers and the additional individual agreements, test data can be accessed, but costs also enforced.

#### **Shortcomings are identified in the quality report**

If a defect arises, this is identified by the relevant employee using a negative log sheet in a quality report. An example: air pockets or so-called blowholes are found on a support frame made of grey cast iron or ferrous metal casting. These are then described and assessed precisely in the quality report. The report also shows which internal authorities were called upon and which decisions they made, which remedial measures were necessary or whether the part was scrapped. All essential information is obviously also sent to the supplier. Because only when you know where you stand can you improve.

#### **Procurement process analyses cash flow**

Last but not least, the costs incurred in this process are identified. To this end, the times of the individual processing steps are tracked in the SAP system. This enables the company to determine precisely at which work step the defect appeared. The exact amount that the damage caused is calculated for the unmachined part itself and the costs incurred. The result of this calculation is a cash flow that the procurement process describes. Additionally, the analysis shows whether the supplier has a basic quality deficiency. If this is the case, GEA Westfalia Separator Group can immediately ask further targeted questions.

### **Quality costs make production transparent**

A similar system controls the production process. This system is used to accurately determine, via the quality report, the costs for the finishing work or the material for a defective part, internal and external quality costs differentiated from one another. The quality management department identifies and assesses both factors – the component itself and the service rendered – ranging from the cost centre to machine group. In doing so, the entire production chain is transparent and quantifiable from a quality perspective.

### **Quality reports facilitate continuous improvement process**

The quality reports from all relevant departments are collected centrally in the quality management department. Both external information from the customer base as well as internal data are taken into account. Corrections derived from audits or preventative measures complete the data pool. This procedure is used to break down a potential quality deficiency into different levels so that it can be attributed accurately. For example, the detailed reports make the work area, the machine and the cause of a complaint visible. Mistakes, operating errors, programming errors or construction errors are thereby clearly isolated from one another.

In sum, a huge improvement potential emerges from all of the internal and external data. This is analysed in interdisciplinary quality circles and often leads to product improvements.

### **Each department performs an annual audit**

At GEA Westfalia Separator Group, every company department performs an annual audit. These are primarily system audits; process audits are scheduled only in special departments. Product audits are performed seldom; they are broadly covered by the quality circles.

The first step of an audit is advance notice or the so-called audit plan. After the audit, an audit report summarises the result in conformance to the standards, so that they can be compared. If deviations from the target are found, these are mentioned in a separate deviation report that is enclosed with the audit report. The deviation report contains a correction sequence that describes the measures to be taken to correct the deficiency. Furthermore, there is a time line that specifies the time frame for improvement.

### Permanent optimisation

With this quality system, the quality costs can be attributed accurately by breaking them down to the departments that incurred them, such as production, design, suppliers and service.

Those who can best improve the actual situation analysed are those that know it best. Each individual employee is consequently a very important member in the quality optimisation chain. For this reason, the results from the statistical assessments are also displayed to the employees classified according to topic. This allows the employee to see close up the savings and improvements achieved with their help. Quality management thus becomes motivation. The result is a continuous improvement process based on key figures and target values that all employees are responsible for – and this is exactly how GEA Westfalia Separator Group defines quality management.



# The Continuous Improvement Process is Part of the Company's Work Philosophy

## Internal dynamics

Always improving, that is the goal. Because optimised internal operating processes reduce costs. And they increase quality from the customer's perspective. Better delivery reliability, faster order processing and fewer mistakes are only a few of the aspects to be mentioned in this context. The continuous improvement process at GEA Westfalia Separator Group has long taken on a life of its own and for each employee has become a central component of his or her work philosophy. With such a process supported internally, there are no limits. The potential is always there if everyone together wants to make things better.

GEA Westfalia Separator Group uses different tools to identify areas that can be improved. On the one hand, external consultants are hired to prepare potential analyses. They look very carefully at factors like productivity, delivery reliability, set-up time optimisation or warehouse management.

But this external know-how is being used less and less because improvement proposals are coming from inside the company itself. Also, detailed quality reports are resulting in a higher transparency in the quality costs. These can now be attributed to the cost-incurring departments such as production, design, suppliers and service. The bright floodlights light up exactly those areas where quality standards are developed.

The third tool is a global information system. In this case, both data from the customer satisfaction analyses as well as the complaint reports are assessed. If, for example, a customer has difficulties with a machine, this information is reported worldwide and collected centrally. A group of specialists subsequently analyse the error. This analysis process can be used to figure out whether the error is construction-related or whether the machine is being operated incorrectly. If there is a construction-related error, the machine is immediately overhauled. If it is an operating error, GEA Westfalia Separator Group responds, for example, by improving its operating manual. A global idea pool also drives the quality process.





**Working together to make things better:  
workshops work out improvement proposals**

All improvement ideas are collected centrally in the ideas management department. The employees from this department are specially trained to discuss new approaches using defined methodologies. If an improvement potential is identified, these employees conduct a workshop that comprises employees who are involved in the process to be improved. These are therefore interdisciplinary teams that work together in different hierarchical levels as well as across different departments.

Under the moderation of the employee from the ideas management department, the team analyses the actual condition in the first step. Building on that, the workshop works out the necessary improvement approaches, which are summarised in detail in a “workshop storyboard.“ The formulation of an implementation variant follows in which the already measurable factors are defined, thus enabling a monitoring and objective assessment in a closed quality loop.

**Committed to quality worldwide**

Thanks to this workshop system, GEA Westfalia Separator Group works in all important company divisions and departments. This includes production, administration, service as well as within the worldwide subsidiaries. Everyone pulls together to ensure quality.

# Further applicable documents in accordance with DIN EN ISO 9001:2008

Quality Management Systems			
Designation	Produced, revised	Document name	Archive
Organisation manual	TQM/QMO	OM	TQM
Organisational chart	HR	INTRANET	HR/Contr
Quality management manual	TQM/QMO	QMM 2010	TQM
Environmental management manual	TQM/EMO	EMM 2009	TQM
Audit systems	TQM	WSN 76-0095-00	Product Data Management
Employer/ Works Council agreement	Board, MD, i <sup>2</sup> m, Works Council	INTRANET	Product Data Management
Works standard volumes (procedural standards)	TQM/QMB	WSN 72 WSN 76	Product Data Management

Management Responsibility			
Designation	Produced, revised	Document name	Archive
Management review	TQM	MR file	TQM
Organisation manual	TQM/QMO	OM	TQM
Organisational chart	HR	INTRANET	HR/Contr
Quality management manual	TQM/QMO	QMM 2010	TQM
Environmental management manual	TQM/EMO	EMM 2009	TQM
Technology management manual	R&D	TMM	R&D
Project management manual	R&D	PMM	R&D
Risk management manual	Risk management	RMM	Risk management
Audit systems	TQM	WSN 76-0095-00	Product Data Management

Resource Management			
Designation	Produced, revised	Document name	Archive
Quality management manual	TQM/QMO	QMM 2010	TQM
Investment planning	Board, MD, MGR	PL Ko In	Controlling
Cost center planning	Board, MD, MGR	PL Ko In	Controlling
Determination of training requirement	MGR, HR	Various HR les	Personnel development
Function description	TQM	OM	TQM

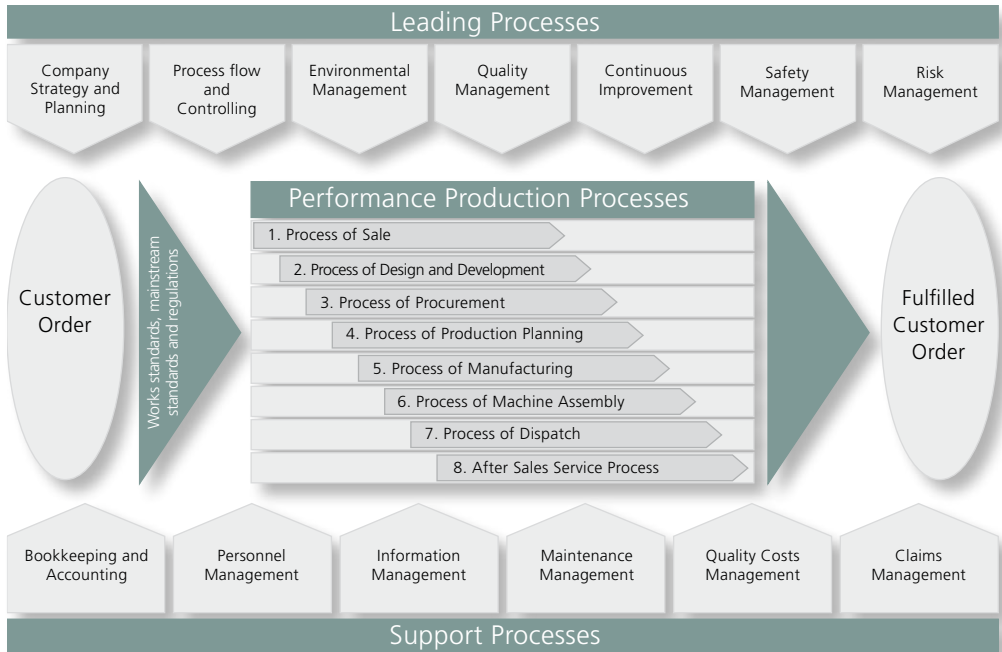
Product Realization			
Designation	Produced, revised	Document name	Archive
Quality management manual	TQM/QMO	QMM 2010	TQM
Environment management manual	TQM/EMO	EMM 2009	TQM
Technology management manual	R&D	Tech MM	R&D
Project management manual	R&D	Project MM	R&D
Procurement manual	Strategic procurement	PM	Strategic procurement
Risk management manual	Risk management	Risk MM	Risk management
Works standard volumes (proc. standards)	TQM/QMO	WSN 72 WSN 76	Product Data Management
Works standard volumes (parts standards)	R&D	WSN 01 to WSN 28	Product Data Management
Works standard volumes (material standards)	R&D Central materials engineering	WSN 60 to WSN 62	Product Data Management
Works standard volumes (Design- and drawing guidelines)	R&D	WSN 71	Product Data Management

Product Realization			
Designation	Produced, revised	Document name	Archive
Works standard volumes (manuf. procedures)	Production	WSN 66, WSN 73 WSN 74, WSN 85	Product Data Management
Works standard volumes (manuf. aids)	Production	WSN 41, WSN 42 WSN 81 to 84 WSN 86 to 89	
Works standard volumes (process materials and auxiliaries)	Production	WSN 63, WSN 65	
Works standard volumes (repair procedures)	Service Repair area	WSN 98	

Measurement, Analysis, Improvement			
Designation	Produced, revised	Document name	Archive
Quality management manual	TQM/QMO	QMM 2010	TQM
Environmental management manual	TQM/EMO	EMM 2009	TQM
Technology management manual	R&D	TMM	R&D
Project management manual	Strategic procurement	PM	Strategic procurement
Procurement manual	R&D	PMM	R&D
Risk management manual	Risk management	RMM	Risk management
Employer/Works Council agreement Ideas management	Board, MD, i <sup>2</sup> m, Works Council	INTRANET	Product Data Management
Works standard volumes (processing standards)	TQM/QMO	WSN 72 WSN 76	Product Data Management

Quality Management Systems			
Designation	Produced, revised	Document name	Archive
Process model of the GEA Westfalia Separator Group	TQM	Process Model	TQM

### Process model of the GEA Westfalia Separator Group



Performance Processes			
Designation	Produced, revised	Document name	Archive
<b>Sales process</b>	<b>TQM/QMO</b>		<b>TQM/QMO</b>
Optimising planning accuracy		WSN 72-1150-10	Product Data Management
Contract review, inquiries		WSN 72-1150-20	
Contract review, orders		WSN 72-1150-21	
Order process for end products		WSN 72-1160-41 WSN 72-1160-42 WSN 72-1160-43	
Changes to orders for end products		WSN 72-1160-50 WSN 72-1160-51 WSN 72-1160-52	
Standard scope customer documentation		WSN 72-1185-00	

Designation	Produced, revised	Document name	Archive	
<b>Development and design process</b>	<b>R&amp;D</b>		<b>R&amp;D</b>	
Technology management manual		Tech MM	Product Data Management	
Project management manual		Project MM		
Works standard volumes (design and drawing procedures)		WSN 71-		
Works standard volumes (part standards)		WSN 01- to WSN 28-		
Works standard volumes (material standards)		WSN 60- to WSN 62-		
Release of drawing, parts list and works standards		WSN 72-1610-20		
Changes to drawing, parts list and works standards		WSN 72-1640-20		
Standards check		WSN 72-1660-30		
Creation of a works standard		WSN 72-1210-30		
Development and design of products in separation technology		WSN 72-1230-10		
Design and acceptance of products in accordance with the Pressure Equipment Directive		WSN 72-1230-20		
Code number ranges for end products		WSN 72-1350-08		
<b>Procurement process</b>	<b>Strategic purchasing</b>			<b>Strategic purchasing</b>
Procurement manual		MM		Product Data Management
Processing of order confirmations of buy-in parts		WSN 72-1180-00		
Drawing up the order texts		WSN 72-1250-10		
Ordering with purchasing notice		WSN 72-1251-00		
Orders through purchasing dept.		WSN 72-1252-00		
New suppliers, selection and approval		WSN 72-1252-10		
Processing of first samples		WSN 72-1223-00		
Ordering, testing and manufacturing load-bearing bowl parts		WSN 76-0009-00		
Heavy-duty bowl parts finished by supplier		WSN 76-0009-04		
Requirements for suppliers' testing systems		WSN 76-0084-00		
"External" individual component testing for heavy-duty material-tested bowl parts		WSN 76-0009-02		
Heavy-duty bowl parts "hardness-tested" by the supplier		WSN 76-0009-03		

Designation	Produced, revised	Document name	Archive
<b>Production planning process</b>	<b>Production</b>		<b>Production</b>
Order process for end products		WSN 72-1160-41 WSN 72-1160-42 WSN 72-1160-43	Product Data Management
Changes to orders for end products		WSN 72-1160-50 WSN 72-1160-51 WSN 72-1160-52	
<b>Production process</b>	<b>Production</b>		<b>Production</b>
Works standard volumes (production procedures)		WSN 66, WSN 73 WSN 74, WSN 85	Product Data Management
Works standard volumes (production aids)		WSN 41, WSN 42 WSN 81 to 84 WSN 86 to 89	
Works standard volumes (consumables and aids)		WSN 63, WSN 65 WSN 68, WSN 69	
Incoming inspection of parts provided by the customer		WSN 76-0080-00	
Incoming inspection Oelde plant (parts provided by customer)		WSN 76-0080-01	
Incoming inspection of parts from external production facilities		WSN 76-0081-00	
Incoming inspection of buy-in parts		WSN 76-0085-00	
Incoming inspection of raw material		WSN 76-0086-00	
Incoming inspection of heavy-duty bowl parts		WSN 76-0009-01	
Establishing job schedules for parts with incoming inspection		WSN 76-0086-02	
Incoming inspection		WSN 76-0087-00	
Incoming inspection Oelde plant		WSN 76-0087-01	
Incoming inspection of ASME material		WSN 76-0085-02	
In-process inspection (guideline/procedure)		WSN 76-0088-00	
Organisational procedure quality report of incoming inspection		WSN 76-0088-20	
Organisational procedure quality report of incoming inspection/Oelde		WSN 76-0088-21	
Organisational procedure quality report of incoming inspection/Niederahr		WSN 76-0088-30	
In-plant transport damage		WSN 76-0088-40	

Designation	Produced, revised	Document name	Archive
<b>Production process</b>	<b>Production</b>		<b>Production</b>
General packing procedures		WSN 76-0200-00	Product Data Management
Rubber products (storage)		WSN 07-0002-09	
Date code		WSN 72-1329-70	
Re-drying of stick electrodes		WSN 73-9100-25	
Non-destructive material testing		WSN 76-0019-00	
Creation and flow of a quality report and registering of internal quality costs at Oelde location		WSN 76-0088-11	
Creation and flow of a quality report and registering of internal quality costs at Niederahr location		WSN 76-0088-12	
Creation and flow of a quality report and registering of internal quality costs at Château-Thierry location		WSN 76-0088-13	
<b>Assembly process</b>	<b>Production</b>		<b>Production</b>
Machine card		Machine card (SAP)	Product Data Management
Sectional drawings		Drawing-No.	COI
Checking accompanying documents for centrifuges		WSN 76-0065-00	Product Data Management
Standard tests for mineral oil separators		WSN 76-0070-00	
Control checks on mineral oil separators		WSN 76-0071-00	
Control checks on industry and dairy separators		WSN 76-0071-10	
Control checks on decanters		WSN 76-0071-20	
Vibration test on decanters (measuring point diagram)		WSN 76-0102-40	
<b>Service process</b>	<b>Service</b>		<b>Service</b>
General packing procedures		WSN 76-0200-00	Product Data Management
Packing procedure I for seaworthy, storage-stabile packing		WSN 76-0200-10	
Packing procedure II for seaworthy packing		WSN 76-0200-20	
Packing procedure for airfreight packing		WSN 76-0200-30	
In-house packing procedure		WSN 76-0200-40	
Procedural instructions for processing China export consignments		WSN 76-0200-50	

Designation	Produced, revised	Document name	Archive
<b>Original Manufacturer Service process</b>	<b>Service</b>		<b>Service</b>
Order processing in technical customer support		WSN 72-1170-00	Product Data Management
Application procedure for being certified "Authorized Workshop"		WSN 76-0025-90	
Decision support: safety-relevant damage to centrifuges		WSN 76-0025-95	
Procedure for reconditioning second-hand separators and repairs in workshops authorised by WSO		WSN 76-0026-00	
Execution of repairs on contaminated machines		WSN 76-0190-00	
Works standard volumes (repair procedures)		WSN 98-	
Decanter service report		WSN 76-0020-50	
Separator service report		WSN 76-0020-60	

Designation	Produced, revised	Document name	Archive
<b>Quality Assurance/ Environment</b>	<b>TQM</b>		<b>TQM</b>
Quality audit		WSN 76-0095-00	Product Data Management
Quality assurance manual, production, issue, distribution, revision, review		WSN 72-1221-00	
Quality assurance procedure at GEA Westfalia Separator Group		WSN 76-0075-00	
Checking measuring instruments		WSN 76-0055-00	
Calibration of measuring instruments		WSN 76-0055-01	
Calibration of measuring machines and testing equipment		WSN 76-0055-02	
Statistical procedures		WSN 76-0083-00	
Duties of the superiors following an occupational accident		WSN 72-1080-30	
Procedural instruction for the execution of environmental audits/environmental testing		WSN 76-1100-00	
Procedural instructions for the disposal of waste		WSN 76-1100-01	
Procedural instruction for storing hazardous materials		WSN 76-1100-02	
Procedural instruction for procuring hazardous materials		WSN 76-1100-03	
Procedural instruction for instructing employees		WSN 76-1100-04	
Procedural instruction on emergency/fault report plan		WSN 76-1100-05	
Procedural instruction on water/effluent		WSN 76-1100-06	
Control of defective products/ corrective and preventive action		WSN 72-1222-50	
Control of documents and data		WSN 72-1222-60	
Processing of claims/insurance claims		WSN 72-1222-30	



- Beverage Technology
- Dairy Technology
- Renewable Resources
- Chemical/Pharmaceutical Technology
- Marine
- Energy
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B\_WS-11-06-0005 EN  
Printed in Germany  
Subject to modification



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