

THE SIMPLE PRINCIPLE

WESTERWALD'S NONWOVENS MANUFACTURER TWE DIERDORF GMBH & CO. KG RELIES ON THE GS-SERVICE OPERATIONS MANAGEMENT SYSTEM AND THE GS-WEB MOBILE SOLUTION FOR MAINTENANCE.

USER STORY



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Increased plant availability, increased production output and optimised product quality. With these three cornerstones of increased productivity TWE Dierdorf GmbH & Co. KG has relied since 2006 on maintenance management with the GS-Service operations management system from GreenGate AG (Windeck/D - Seengen/CH). TWE, manufacturer of high-quality nonwovens, realised the transition from corrective-failure-oriented to preventive maintenance with the market-leading IT solution for maintenance and operations management. TWE is opening up new scope for action through real-time information and agile handling via mobile devices with the Erbkönig in the GreenGate portfolio: the mobile maintenance solution GS-Web.

Sheer size – technological diversity

The TWE site in Dierdorf is one of the key plants within the TWE Group – when looking into the Westerwald's production facility, the whole complexity of the manufacturing process becomes obvious. Because not all nonwovens are the same and, depending on the application, fireproof or formable, lightfast or conductive, thick or thin, in wide or narrow webs, sheer size meets technological diversity in Dierdorf. Lines of up to 100 metres in length and four metres in width are partly made up of aggregates from several plant manufacturers.

TWE works with suppliers from Germany, France, Italy, Spain and the USA. Analogue plant units are coupled with digital ones – to realise excellent machine availability with low maintenance costs

smart nonwoven solutions

The TWE Group (smart nonwoven solutions) with its twelve production sites in Europe, Asia and the USA looks back on a history of more than 100 years. With over 1,400 employees across the group, the TWE Group develops, produces and sells comprehensive innovative nonwoven solutions for almost every application using high-quality raw materials and state-of-the-art production technologies. Total sales currently exceed 350 million euros. Many years of experience and reliable continuity have transformed the family-owned company, founded in 1912, into a globally active group of companies, which today has gained a firm place among the top 10 in the nonwovens industry. Well-known customers can be found in the hygiene, medical, automotive, filtration, household cleaning, clothing and building materials sectors. Whether in hygiene articles or nappies, in filter systems or as lining materials in furniture and leather goods, as dressing material or as part of car coverings: Nonwovens - also called "non-woven textile fabrics" in technical jargon - are used in almost all industries and are thus an important component of a wide variety of end products in everyday life.



Strategy switch with GS-Service

Mario Eisen (48), head of electrical maintenance at TWE in Dierdorf, who also works in the process and project department, remembers the days of so-called corrective maintenance with repair after failure: "Before the introduction of GS-Service, most of the work was done 'on break'. Fixed maintenance days were a rarity." Unforeseen downtimes, unplannable workload in maintenance and the search for alternative systems are only one thing. The aspects of energy and material efficiency, person/department-specific recording of maintenance effort and documentation are also success-critical factors of modern production, which TWE Dierdorf meets today with the use of GS-Service. "With the GS-Service maintenance

at the same time is a real challenge for TWE. This is a real challenge for the electrical workshop, the locksmith's shop and the technical service at TWE in Dierdorf.

We use GS-Service as a large database in which documents can also be read for error analysis; information is also passed on to other shifts via GS-Service. For external audits, we can use GS-Service to show maintenance records in text and images without any gaps.

Mario Eisen, Electrical Engineer Process Development at TWE Dierdorf GmbH & Co. KG

system," says Mario Eisen, "all plants are recorded and, within the scope of precautionary measures, appropriate maintenance and inspection intervals are defined and monitored to ensure functional readiness and energy-efficient operation. Specifically, comprehensive fault management, planned maintenance and servicing are handled via GS-Service." The activities are also documented, and operating equipment (including forklifts with inspections) as well as data on occupational safety such as a register of associations and a near-accident register are also stored. The differentiated use signals the comprehensive functionality of GreenGate's maintenance solution: as a system subordinate to the ERP, GS-Service integrates planning, documentation and monitoring functions and business management applications into an information and management system. The object-oriented software – designed as a scalable client/server solution – is based on standard technology and works under current Microsoft operating systems. Thanks to the open system architecture, GS-Service can be connected to other systems (GIS, DMS, PLM, CRM, PLS, SPS, ERP) – TWE in Dier-

dorf uses SAP. Incidentally, TWE in Dierdorf has recently changed over for higher performance: The database, the core application GS-Service and the new mobile solution GS-Web are now on different servers.

Grown with the tasks

16 years after implementation, Mario Eisen, as a power user from the very beginning, has established the "principle of simplicity" as best practice in the company. Everyone must be able to work with GS-Service in a simple way, in that the tasks set are intuitively comprehensible to everyone. This applies both to the way maintenance activities are carried out and to their documentation. "It has to be self-explanatory what has to be entered." TWE is pushing the medium of photography of defects and faults. This makes internal work more efficient because it is more effective – but when it comes to documentation, Mario Eisen looks beyond the factory gates: "With GS-Service, we

can present maintenance records in text and pictures without any gaps for external audits. This is an invaluable advantage in times when not only independent test centres and certifiers, but also clients, especially from the automotive, hygiene and medical technology sectors, require suppliers to comply with strict standards that extend right into production. Mario Eisen emphasises: "We have thus been able to grow with our challenges, also because we could fall back on valid documentation in the GS system." The electrical workshop, locksmith's shop and technical service at TWE Dierdorf use GS-Service as a "large database in which documents can also be looked up for error analysis," explains Mario Eisen, "via GS-Service, information is also passed on to other shifts."

GS-Service as an information hub

Because GS-Service offers various standard features (tasks, events, stock/budget deviations) for targeted information via the notification service, which has proven itself in 3-shift operation at TWE: Events are recorded in GS-Service and an event report is generated and filed per shift via a simple application in Microsoft Excel. The application also creates the necessary entries for the notification service in the database. Named service processes the database entries after the end of the shift and ensures that the report is sent by e-mail. Across shifts, GS-Service also notifies the TWE team of internal and external maintenance that is due on a regular basis.

Advantage: In GS-Service, tasks are already predefined for various event types, which take

known solution strategies into account. Accordingly, tasks are generated, according to which the required staff can be scheduled according to qualification and availability, as well as the resources (operating resources / spare parts). As a central data pool, GS-Service not only records the processing and evaluation of maintenance tasks at TWE, but "also the hours worked by the craftsmen", says Mario Eisen. The duration data reported in the order sheet can thus be used for cost-centre-oriented cost calculation.

The new maintenance strategy implemented with GS-Service is, incidentally, a component of the principle of "continuous improvement" at the Dierdorf TWE plant. Mario Eisen explains: "Our products and processes are regularly monitored and controlled. Deviations are compared with the targets through continuous measurement or auditing. In the event of deviations, appropriate corrective and preventive measures are initiated. Particular attention is paid to repeat errors, which are analysed in detail for their causes and remedied by appropriate measures. The effectiveness of the measures is monitored and ensured through appropriate controls."





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The trick is in making it simple. As a rule, that only works if you know what the other person wants and needs. For example, someone who is only on the road to collect defects will not get any other checklists and information on

their tablet. And a role-defined interface is wonderfully easy to realise with GS-Web.“

Martin Gerwens, Executive Board GreenGate AG

Highly mobile with GS-Web

This, too, is typical of TWE: the philosophy of continuous optimisation includes the claim to use new technology stringently in maintenance and production, if the daily work practice can be made more transparent and resilient with it. Limiting factors such as mental knowledge, time and space – all of which influence the efficiency of an activity – will be addressed by TWE in the foreseeable future with GS-Web. GS-Web is the browser-based application (intranet/internet) for viewing, editing and analysing content from the GS system. Maintenance staff visit a website, log in and start working on a task-defined basis. The new software addresses different stakeholders in the company, including the management level with the possibility of using dashboards.

Dashboards are maintenance tachos (KPIs), they graphically prepare key figures on maintenance processes, malfunctions, failures, etc. “It is absolutely advantageous,” says GreenGate board member Martin Gerwens, “that TWE has already built a solid foundation with GS-Service and can now move up into another league with GS-Web. Here it is primarily about recording events, i.e. faults, directly at the machine via smartphone or tablet, not afterwards in the foreman's office at the terminal. This also enables well-founded controlling and management in real time, so to speak.” The evaluation function in GS-Web shows its strengths especially when it comes to displaying unplanned events on important machines quickly, transparently and comprehensibly.

Of course, the previously fully operational notification service – a kind of shift book via email and Excel can also be converted to the simpler and less complex web technology in due course. Martin Gerwens continues: “The art is to make it simple. As a rule, this only works if you know what the other person wants and needs. For example, someone who is only on the road to survey defects will not get any other checklists and information played on his tablet. A role-defined interface is wonderfully easy to realise with GS-Web.” Mario Eisen also sees GS-Web as a transfer tool for the production employees at TWE in Dierdorf: “They can also feed the system with data, for example, when it comes to what activities they have carried out, such as cleaning certain aggregates.”

From barcode to sensor technology

TWE has its own ideas about what is suitable for optimisation and what is not. GS-Service, for example, was implemented and fine-tuned almost completely independently by TWE at the time after training in in-house seminars by GreenGate. The flexible integration of the software flanked GreenGate with support as needed: “Fast service, competent employees, cooperation with an affinity for solutions,” states Mario Eisen, who is pushing further new digitalisation solutions in-house. TWE has already implemented the equipping of machines and systems with barcodes that can be scanned by colleagues in order to access the right information in the system at the right time and in the right context. And the corresponding “house number” in the system can be enriched with new data if necessary. In this way, one becomes more capable of automation overall. It is clear, however, that the barcodes initially serve to clearly identify the machine and to process maintenance tasks faster and better. Another measure, currently under discussion, is expected to boost efficiency by networking the GS-Service IT maintenance system even more closely with the machines. Via the OPC UA interface, TWE is able to react to events at an early stage. The operating principle: optional sensors or people record machine states, the information is transferred to the DCS and via OPC UA to the GS-Service maintenance system. There, the information is converted into maintenance and repair orders, which are automatically sent to the tablet of the maintenance or machine operator.



**100
METRES**

long and 4 metres wide – these are the maximum dimensions of the lines at nonwovens manufacturer TWE Dierdorf GmbH & Co. KG, some of which are made up of units from several plant manufacturers.



**TWE EMPLOYS
1.400
PEOPLE**

TWE employs 1,400 people at twelve production sites in Europe, Asia and the USA. The company with the core competence “smart nonwoven solutions” looks back on a history of more than 100 years.



**350
MILLION**

TWE has a total turnover of 350 million euros throughout the group – at the Westerwald site in Dierdorf, the GS-Service software has been in use in maintenance and operations management since 2006. Users: electrical workshop, locksmith's shop and technical service.



APPLICATION PROFILE

User profile

TWE Dierdorf GmbH & Co. KG (D/Dierdorf)

Industry

Nonwovens

Supported processes

- Maintenance and technical operations management by electrical workshop, locksmith's shop and technical service
- Digital recording of all machines and systems
- Fault management: recording of fault events (incoming messages received from employees and/or sensors)
- Coordination of repair and maintenance teams
- Technical documentation of machines and systems
- Planning, controlling and documentation of maintenance and inspection intervals
- Monitoring energy-efficient plant operation
- Cross-departmental monitoring/controlling/reporting

Software

GS-Service - GS-Manager; GS-Web; OPC UA interface (linking DCS and GS-Service)

The challenge

- High machine availability with low maintenance costs
- Transition from corrective maintenance (repair after failure) to planned maintenance
- Realisation of higher energy & material efficiency
- Person/department-based recording of maintenance costs
- Cross-location and cross-time documentation of machines/plants (scan of barcodes) and processes

(knowledge database) – relevant for audits, among other things

- Notification service for cross-shift information
- Creation of an interaction platform between maintenance and production, among others

Procedure

Digital recording of infrastructure and equipment in GS-Service, inventory and analysis of operating processes (incl. occupational safety), concept development with comparison and alignment of analogue and virtual workflows, testing, training, go-live

GreenGate Solution

Dynamic, legally compliant data management, data analysis and documentation of machines and systems, equipment and maintenance processes in GS-Service

GreenGate Services

Comprehensive support with process analysis and conceptual design; implementation of maintenance system; support with initial data entry; joint development and user training (key user concept); customising, on-site training, support

Result

TWE uses GS-Service to manage operational processes in the electrical workshop, locksmith's shop and technical service departments (planning, work preparation, resource management, execution incl. defect survey and work follow-up, maintenance activities, documentation, optimisation). TWE thus achieves increased plant availability, increased production output and optimised product quality at the Dierdorf site.



Since 2000 GreenGate AG, based in Germany (Windeck) and Switzerland (Seengen), has been developing highly customisable and innovative software solutions for the maintenance of plants and infrastructures. Customers from the manufacturing, energy, water and wind industries use the GS-Service software for technical plant and spare parts management, maintenance planning and operational management tasks.

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