One-stop-shop

Complete quality management

Quality management, in the automotive industry, utilizes a number of tools to ensure that the final products meet the highest quality requirements in a sustainable manner. The individual components of quality assurance include failure mode and effects analysis (FMEA), initial sample inspection report, inspection and control plan, action management and complaint management. Kienle + Spiess GmbH, the European market leader in manufacturing components for electric motors and generators, such as electric and hybrid vehicles, has been actively implementing many of these quality steps with professional software. However, in 2012, the company took a chance and carried out a major restructuring program and organized the quality processes from anew: the aim was to use a comprehensive CAQ-system that combines all modules in order to effectively use synergies. The company chose the CAQ-system from iqs Software GmbH in Buehl, Germany.

Buehl / Sachsenheim – although Kienle + Spiess already used a mature quality management system and little action was required, the Swabian manufacturer of components for electric motors and generators decided in 2012 to restructure comprehensively: all modules of quality assurance should in future derive from one single source, provided by a professional CAQ-provider. "Our modules were provided by various suppliers up to this point, some were even MS Office solutions. This gave us numerous stand-alone solutions - but it was our goal, to use synergies that arise when modules can communicate with each other to establish a quality control loop," said Frank Scheihing, head of quality management, project management and Research & Development of Kienle + Spiess group, with its headquarters in Sachsenheim.

Initial situation

Diverse systems were used for operational quality processes in the past: inspection plans were only edited on paper printouts, Excel spreadsheets were created for FMEA, SAP handled complaint management, inspection equipment management and other partial module were managed by sub-modules. Due to the sheer number of stand-alone applications, the modules lacked a shared master database, meaning that multiple inputs were required, which were not only costly and time consuming, but also prone to error. Data exchange between the modules was not ideal: findings from complaint management for example, were not automatically transferred to FMEA, changes within FMEA did not necessarily lead to the adaption of inspection plans.

Development potential also became apparent when connecting measuring equipment, as measurements from the measurement systems were not carried out automatically by the software, but had to be entered manually.

Critical selection

After thorough analysis of the current situation, four professional CAQ-providers were shortlisted. "But only two CAQ-systems could meet all technical demands the software had to fulfill," Scheihing recalls. "And of the two, iqs Software GmbH had a significantly better price-performance ratio." Especially convincing was the continuous quality control loop of iqs CAQ-system. The experiences, made by reference companies, using the software modules of iqs, confirmed the initial impression. A project manual and a complete project schedule were created, as it was intended to switch all four business locations of Kienle-und-Spiess-Group simultaneously to the new software. In addition, fixed launch dates for each module and location were set, project management and key users defined.

Connection via interfaces

The central server of Kienle-und-Spiess-Group is located at the company headquarters in Sachsenheim. The software is provided from this location. Other sites in Vaihingen and foreign locations in Bilston (GB) and Tokod ›

(H) access the software modules and specific data via Terminal Server. This guarantees the performance. The existing ERP-system SAP could easily be connected with the iqs CAQ-system by means of a master data interface for article, customer and supplier-related data. According to the principles of a skip-lot-procedure, a transaction data interface was created simultaneously, ensuring that incoming products at goods receipt can also be automatically taken into account and recorded in the new iqs CAQ-system.

Appraisal time halved for complaints

The first step was to implement the module complaints management (iqs RKM) and action management (iqs MM) at all four locations within six months. As an automotive supplier, Kienle + Spiess is required to process all complaints using the 8D-methodology. This methodology is fully displayed in the iqs-system including all its measures and decisions. The real advantage of iqs software: in complaints management it is possible to customize the complaint process, so that the complaint procedure can be tailored to the needs of Kienle + Spiess. The in-house signature rules were also mapped via the complaints-workflow. From the outset, the final 8D-report was sent by the iqs-system to the stored contact data of the customer - a process where different systems and hardcopy filing had to be maintained in the past. The appraisal time could be halved by using iqs RKM. Old complaints were not transferred to the new system, but the old system can still be accessed for research. This also applies to initial sample inspection report (iqs ISIR): old initial sample inspection reports have not been included in the iqs-system, but can be called up in the old system, if required. iqs ISIR has already been successfully introduced at the German sites, the sites Bilston (GB) and Tokod (H) will follow.

Perfect match: FMEA and inspection plan

The perfect interaction of FMEA and inspection planning is of crucial importance for the highly efficient running of iqs CAQ-system. Therefore Kienle + Spiess pushed for the rapid implementation of the new software. A new standard-FMEA was created for each production technology such as welding, punch bundling or Glulock-glue bundling. Using the iqs module technology, article-specific FMEAs could be deduced quickly and easily. The seamless combination of FMEA and inspection planning in iqs-system made it possible to deduce the inspection plans directly from the FMEAs. The creation of FMEAs and the derivation of inspection plans, including training of the workforce and auditors took six months until rollout.

FMEAs are always created at Kienle + Spiess headquarter in Sachsenheim and transferred from the central server to the terminal server of other locations.

Biggest benefit: the quality control loop

"The biggest benefit that the new software solution has provided is the automated exchange of information between the individual modules. The findings, which are collated in complaint management, are fed back to the FMEA and are included as a new potential cause of error and/or considered as a defect analysis and automatically adopted as a potential measure in our inspection plans. The errors that led to the complaint will therefore be eliminated, repeat errors will be avoided. We now have a highly efficient quality control loop, which our customers and external auditors praise", states Mr Scheihing in his initial conclusion after the introduction of iqs FMEA, iqs Complaints Management and iqs Inspection Plan. Closely connected to the quality control loop is the iqs Action Management (MM). All tasks that result from the FMEA, the complaint management or inspection planning are automatically defined as an action and consistently sent automatically by e-mail to the responsible departments. All actions are managed centrally via iqs MM and can be viewed with Web-MM via the Internet browser. "Each associate can therefore see which action has to be processed by a certain point in time," said Mr Scheihing about the clarity of the new system. The drawings are also greatly appreciated at Kienle + Spiess and are seen as a main unifying element between the individual modules. After the ›


The Kienle-und-Spiess Group is the market leader in Europe in the field of manufacturing components for electric motors and generators. Founded in 1935, today more than 1100 employees work at the four corporate locations Sachsenheim (D, headquarters), Vaihingen (D), Bilston (GB) and Tokod (H) with a turnover of around EUR 200 million per year.

Using the most modern stamping and die-cast technologies, they are specialized in manufacturing efficient, energy-saving electric motors, finding their way into electric and hybrid vehicles in current vehicle manufacturers. Countless patents are testament to the innovative spirit of the enterprise, such as the Glulock-glue bundling process.

completion of the drawing, it is read by the module active drawing management (iqs AZ) with all its features, then automatically stamped and versioned. The latest version of the drawing can be accessed quickly and easily from all modules. Mr Scheihing added: "We can also create documents, such as the initial sample inspection report or the inspection plan by directly transferring features from CAD-data. This saves an immense amount of time and minimizes the occurrence of transmission errors."

Close cooperation between iqs and Q-DAS
To introduce iqs Inspection Equipment Management (iqs PMV) into the new quality management system, a total of 7,000 inspection equipment were manually entered within four months. The measured values from the inspection equipment can now be transmitted automatically from the measuring systems to the CAQ-system. Some special measurement equipment could not automatically transfer any data until the introduction of iqs CAQ-software but had to be entered manually, as the test results were only graphically displayed. At the request of Kienle + Spiess, a solution was developed for these special cases within the framework of cooperation between iqs and Q-DAS.
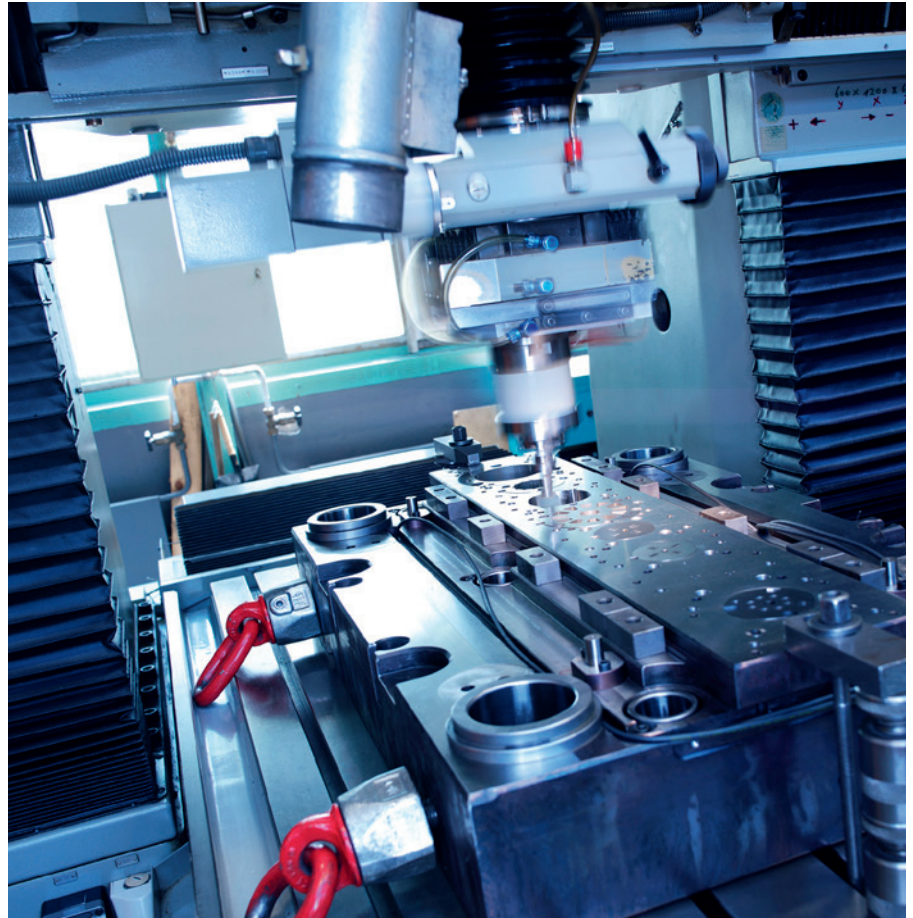
The programs procella and qs-STAT from Q-DAS are used for the transfer of measurement and inspection data and their evaluation at Kienle + Spiess. The close cooperation between iqs and Q-DAS was also beneficial, because it allowed the direct transfer of test programs of iqs Inspection Plan to procella. The test results are then evaluated in qs-STAT. Before the introduction of the iqs software, at least one hour was required to analyze the process capability (cp, cpk), it can now be obtained within a few seconds by pressing a button - during audits - a crucial timesaver.

Positive results
"The iqs CAQ-system is the fourth CAQ-system that I introduced in my career as a quality manager at various companies - but it is by far the best," said Mr Scheihing,

expressing considerable satisfaction with the recent progress of the restructuring. "Much is self-explanatory and has been thought out excellently. Of course there were difficulties when connecting the new software, but iqs solved all our problems and fulfilled our requests with patience, creativity and high level of expertise. "For example, the transfer of transaction data from SAP to the iqs-system could only be carried out by transferring the SAP WE-interface from 2.0 to .NET Connector 3.0. A solution was also found for the specific sales organization of parts master data by adapting the programming of the software.

Outlook
Frank Scheihing sees iqs as a reliable partner, because the software specialist moves with the times and has visions for the future. In a next

step, Scheihing wants to use the standard FMEAs for group-wide standardization. Given that the already standardized part of the FMEA is raised to so-called group level and passed-down from there to the site-specific standard FMEAs. "And iqs will certainly help us again with this venture." ○

Interview was conducted with user:

**Frank Scheihing
Director Project management;
Quality management;
Environmental management
Kienle + Spiess GmbH**

**iqs
CAQ mit System**