… IN STATISTICS AND PERFORMANCE MEASUREMENT SYSTEMS

The implementation of a performance measurement system for quality assessment in industrial production requires exact planning. Hands-on experience proved that data recording and data storage require more than 80% of the total effort. Once the information has been structured and stored correctly, it is quite easy to use the quality information in calculations.

The Q-DAS CAMERA Concept is designed to implement and maintain an efficient performance measurement system. It offers all the tools and support you need to record, visualise, manage and evaluate data, to generate and distribute reports and finally to store data.

The tables below inform about the most frequent risks and weaknesses you face while creating a performance measurement system or while using statistics in quality assessment. We specify possible consequences and provide solutions.

Error 1		There are no statistics or validated calculation methods defined. Multiple tools are used to determine statistics under different conditions. The results and their processing depend on single users and are hardly protected from manipulations at all.
Effect		The statistics are not reproducible leading to growing scepticism. The results reflect facts that are supposed to be the same even though they are based on different basic conditions. There is the risk of intentional manipulations or manipulations that happen by accident. This might also lead to misinterpretations and wrong decisions.
Solution		Define suitable statistics clearly (reference size, calculation formula, etc.). Due to the concept of evaluation strategies, qs-STAT guarantees a validated evaluation of data and calculation of statistics. The approach is transparent and user-independent because it is set globally and cannot be modified.

Error 2		The results are processed numerically in measurement reports filling pages. They do not consider all the requirements of different recipients.
Effect		Recipients have to interpret the intended meaning themselves. This is quite time-consuming and reduces the benefit and acceptance of the system.
Solution		Appealing graphics draw the attention to what is really important. Reports and graphics adapted to user requirements provide decision-relevant information. The meaning is clear and easy to comprehend; the results are straight to the point. All Q-DAS software products offer a wide range of configuration options for user groups and single users. In addition, the Form Designer provides an outstanding tool for the creation of individual report templates.

Error 3		It is complicated to access data. You might need to merge different data sources manually but sometimes this is not even possible due to different data formats. An unstructured data management is not able to deal with the large volume of collected data. A data archiving approach does not exist.
Effect		The statistics are not up to date and difficult to access. The evaluation is time-consuming and cannot be automated based on a standard procedure. The system performance suffers from an inappropriate data management approach.
Solution		The Q-DAS ASCII transfer format or the Advanced Quality Data Exchange Format (AQDEF) are widely accepted and applied standard data formats. Data management and the storage of recorded data in a central database become easy. Data compression and archiving functions of M-QIS provide users with a data management approach adapting to the respective data volume.

Error 4		Insufficient data quality leads to missing or incomplete information. This information, however, is required for a clear and correct allocation of data.
Effect		The statistics do not or only sometimes lead to a conclusion. Since the important facts are hardly described at all, there is a lack of acceptance.
Solution		When you design a performance measurement system, you need to specify all required data for respective evaluation strategies, selections and reports. Each recording system has to support the mandatory input fields for a clear identification of measured values and to ensure permanent traceability. Q-DAS offers data field workshops when new customers implement the Q DAS CAMERA Concept.

Error 5		The required data basis is difficult to include. Missing interface standards lead to extensive and expensive special developments or data conversions. No measurement process capability analysis was conducted.
Effect		Unstable measurement and test processes are not able to ensure the required data quality and challenge the whole performance measurement system. Individual solutions for output of data require a lot of support and are not flexible enough to integrate a system. The costs outweigh the benefits permanently.
Solution		Plan and specify system interfaces, data output and data transfer at an early stage. The Q-DAS ASCII transfer format or the Advanced Quality Data Exchange Format (AQDEF) are widely accepted and applied standard data formats. Capability analysis help you release and monitor test process at regular intervals. Q-DAS offers the required methodological consulting service and training as well as the suitable software tool solara.MP. solara.MP supports all current standards and guidelines about capability and measurement uncertainty.

Error 6		The implementation and maintenance of a performance measurement system is time-consuming. Some system components are incompatible (interfaces) because of missing standards. This fact leads to new problems causing further delays. System maintenance becomes difficult and the effort is incalculable.
Effect		The intended time frame for the implementation of the performance measurement system is exceeded. The demand for resources becomes incalculable and puts the project at risk.
Solution		The Q-DAS CAMERA Concept provides a set of ideally matched standard tools. Due to its high flexibility, you can meet customer requirements without any additional programming. Since the interfaces (e.g. AQDEF) are specified, you can easily connect third-party systems. The CAMERA Concept facilitates installation, configuration and implementation planning since it can be realised in a short period. The advantages also apply to the maintenance of the system.

Error 7		Users are not informed about the targets and scope of a performance measurement system. They are hardly involved at all.
Effect		The performance measurement system is perceived as a monitoring system. More and more users try to manipulate it. They are not aware of the room for improvement the system is supposed to provide. The efficiency of the system is at risk.
Solution		Select the members of the project team carefully. Involve the respective workers in time. You can use their experience in implementing a performance measurement system and dwindle their scepticism or calm their fears.

The Q-DAS CAMERA Concept is able to avoid many of the errors listed above.