… IN DATA RECORDING AND REAL-TIME VISUALISATION

Data recording is the most laborious task in a quality information or performance measurement system. The more important it is that the costs and time required efficiently result in substantial improvements (e.g. reduce failure costs, the number of rejects and the number of complaints, increase customer satisfaction, etc.).

It is important to take all measures ensuring outstanding data quality with respect to content, completeness and correctness. Data evaluations, process descriptions and the resulting decisions are only as good as the data they are based on.

The following selection of error sources and weaknesses in software-assisted data recording and real-time visualisation informs you about this topic and provides solutions based on the application of Q-DAS® products.

Error 1		Measured values are recorded manually and collected on paper in forms or lists.
Effect		This procedure is time-consuming and leads to errors. Abnormalities such as trends or violations of specification limits are hard to identify. Additional evaluations of data require considerable effort since you have to transfer the data to the respective systems first.
Solution		Use available interfaces of measuring instruments (RS232 or file export) for an automated data transfer or processing. O-QIS and procella support many measuring instrument interfaces. Depending on the respective application, you can add the respective interface package to your Q-DAS software.

Error 2		A correct allocation of measured values e.g. to machines, orders, cavities or batches is not possible since the system does not record any additional data or the recording of additional data takes great effort.
Effect		Important information ensuring traceability is missing. Visualisations and evaluations related to additional data are not feasible. You are not able or it is difficult to detect weaknesses in the production process.
Solution		An automated selection of additional data integrated into the measurement procedure supports operators in recording data. Define mandatory input fields and mandatory changes to foster the completeness and correctness of data.

Error 3		Operators identify trends in the process and specification limit violations too late because they do not have any options to visualise data in real time and to manage alarms available or only to a limited extent.
Effect		You are unable to set up a control loop allowing for preventive action in the process. A control loop minimises failure costs caused by rejects and rework. Process responsibles do not have the information required to take corrective action in real time.
Solution		O-QIS meets the requirements of a real-time control loop. After the measurement has been completed, the software evaluated measured values automatically and detects specification, warning or control limit violations. It provides messages or warning messages, appealing graphics and statistics to operators. Further options are email notifications or the automated generation of reports.

Error 4		Operators are not able to acknowledge and comment on alarms that have already occurred.
Effect		Important information about the alarm frequency, type and causes are missing for a comprehensive evaluation of the process. You are unable to create a specific action plan for process optimisation.
Solution		In case of alarms (e.g. control limit violations), the software prompts operators to confirm and comment on the associated event, cause and/or measures. Use catalogues containing specified entries for a reasonable evaluation of this information later on.

Error 5		The software is not able to map the approved measurement procedure, e.g. its input sequence, sampling frequency and repeated measurements.
Effect		The process and test instructions must be adapted to the options available in the software. The software tool is not able to support operators in their tasks or only to a limited extend. There is a risk of incomplete measurements or subgroups.
Solution		O-QIS or procella offer a wide range of configuration options to map the measurement procedure according to the respective requirements. The software guides operators automatically through the measurement task. You can adjust all required steps, from opening a test plan to the measurement finalisation. The software minimizes the influence operators have on the results.

Error 6		The software's lack of flexibility makes it impossible to meet the task-related and operator-dependent data requirements of data recording and data visualisation.
Effect		The software does not consider specific aspects. You are not able to realise individual visualisation concepts for different data sources (e.g. portable measuring instruments, 3D CMMs, measuring machines or PLCs), measuring tasks (e.g. continuous or discrete characteristics) or operator groups.
Solution		You create individual recording or visualisation levels depending on the characteristics type and/or class, etc. for the support of operators. The configuration of inspection frequencies has to show the same flexibility. From daily measurements of single parts to 100% inspections every second, the results need to be illustrated in suitable graphics. O-QIS is the perfect tool to cover all these applications.

Error 7		Erroneous measurements or faulty insertions are not detected. They are just saved to the database like any correct value.
Effect		The data quality is insufficient for subsequent statistical evaluations or calculations of statistics. The real process is not fully described.
Solution		Use plausibility limits to detect values that cannot be part of the process, e.g. because they are caused by faulty insertions, and exclude them automatically from evaluations. The software informs operators about these values so that they can repeat the measurement or the input of data.

The Q-DAS software procella or O-QIS is able to avoid many of the errors listed above.