










The 7 Most Frequent Errors in Process Qualification or Long-Term Analysis



In process qualification or Long-Term Analyses, the respective characteristics are measured in measurement processes. The results are transferred to a recording system or an SPC system (e.g. procella®). In order to get a holistic view, the data must be structured, saved to and administered in a central data pool. Then, you can load data from the data pool regularly or set an event-controlled loading. The data to be loaded is chosen according to different selection criteria and can be evaluated later on. Use predefined reports in order to inform the respective persons involved.




Error	The data recorded in the measurement process is not representative (e.g. operators forgot to take a measurement after the change of shift or after the break).
	
Consequence	The recorded data does not reflect the actual situation. There is the risk that the deviations will not be recognized in time. Thus, the results of the statistical evaluation might be wrong.
	
Solution	At first, record data at frequent intervals over a longer period of time. Deviations will be recognized immediately and can be eliminated by taking corrective actions. Operators should be advised of the forthcoming measurements. Find more information about samplings in the book called "Statistical Procedures for Machine and Process Qualification" or in the Daimler guideline LF1236.
	




Error	Unclear description of the capability indices.
	
Consequence	The indices are interpreted differently.
	
Solution	The meaning and definition of the capability indices C_m , C_{mk} , P_p , P_{pk} , C_p , C_{pk} or T_p , T_{pk} must be clearly determined. Find more information in the Daimler, GM or VW guidelines.
	




Error	Particularly the descriptive data is of poor data quality. The operator does not fill in all the fields or enters continuous text.
	
Consequence	A selection of contents from these fields will result in an incomplete dataset.
	
Solution	Due to the Q-DAS® products procella® and O-QIS, you can define which fields are mandatory fields. When some of the mandatory fields are not filled, the program does not proceed and you cannot enter new measurement values. In order to avoid continuous text, use the comprehensive catalogs to fill the fields in. This data is available in the Q-DAS® ASCII Transfer Format (AQDEF) and can be saved into the central database.
	




The 7 Most Frequent Errors in Process Qualification or Long-Term Analysis



Error	The capability indices are calculated without knowing the time-dependent distribution model. The calculation is often based on the normal distribution because it is easier.
	
Consequence	The capability indices are often wrong or do not describe the process situation exactly.
	
Solution	Use qs-STAT [®] in order to determine time-dependent distribution models according to DIN ISO 21747. At the same time, the software assigns a calculation of capability indices to the respective time-dependent distribution model. This procedure can be automated to make validated evaluations. Thus, results from different plants and locations can be compared.
	

Error	Definitions like controlled, capable and stable are not specifically defined.
	
Consequence	Misinterpretations and unnecessary discussions.
	
Solution	Determine the terms using standard company guidelines (e.g. DIN ISO 3534 ff).
	




Error	The use of wrong stability criteria when dealing with a huge data volume.
	
Consequence	A process might be taken as instable although it is not.
	
Solution	Depending on the number of measurement values or samples, more or less violations of the control limits should be allowed in the quality control chart without giving an alarm concerning the process stability. Find more information in the book called "Statistical Procedures for Machine and Process Qualification". qs-STAT [®] uses these limits automatically.
	




Error	The result of the evaluation is not traceable.
	
Consequence	The results cannot be compared.
	
Solution	Determine which additional information the result has to contain. Besides the capability index, it should include the time-dependent distribution model and the calculation method, for example.
	

The 7 Most Frequent Errors in Process Qualification or Long-Term Analysis



Further errors are

Error	Statistical evaluations are often made locally without transferring the recorded measurement values to a central database.
	
Consequence	The results cannot be compared and a holistic view of a process or a product is not possible.
	
Solution	Use the same programs in all plants to determine the capability indices. Structure and save the data into a central database to evaluate and compare the data company-wide.
	

Error	Many non-validated Excel form sheets with macros for the determination of results are erroneous.
	
Consequence	Depending on the constellation, the calculated results are wrong or imprecise which makes them useless.
	
Solution	Use a validated evaluation strategy in qs-STAT®.
	

Many of the errors listed above can be avoided by using the Q-DAS® software qs-STAT®. Here you can find more information about process qualification and long-term analysis:

- [Book: „Statistical Procedures for Machine and Process Qualification“ including company guidelines](#)
- [Pocket Power: Production Facilities Acceptance](#)
- [AQDEF – Automotive Quality Data Exchange Format](#)
- [Flow Chart: easy2use | Machine Acceptance](#)
- [Q-DAS® Poster \(Capability Indices / Distributions\)](#)
- [Seminars](#)
- [Hotline](#)