

# Q-DAS

Products and services





## **Market-leading software and services for quality assurance in industrial production**

Hexagon's Q-DAS software range enables enterprises in a wide range of industries to increase the quality of their products and processes – from planning, data collection and visualisation to statistical evaluation and reporting to meet users' requirements for the task at hand.

Q-DAS software has grown to become an industry standard on the strength of its ability to perform evaluations in line with official standards and guidelines. Big-name corporations from many different fields make use of the tools to qualify their production equipment and demonstrate the suitability of their inspection processes and the quality of their products and processes. General and company-specific training sessions on how the software works ensure effective use of Q-DAS products. Instruction courses on statistical process control, production measurement technology and quality assurance provide the necessary technical and methodological knowledge.

More and more companies are using Q-DAS products as the worldwide standard! And for good reason. Q-DAS software solutions and services help many companies increase their production quality and reduce costs.

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# Process Capability Analysis

Char. Descr.	$\bar{x}$	s	Index	Index	Overall	Value chart Individual	Histogram Individual
Test 1	20.00453	0.0126	$P_p = 0.81$	$P_{pk} = 0.71$	↓	[Value chart]	[Histogram]
Test 2	14.067923	0.00124	$C_p = 2.01$	$C_{pk} = 1.90$	↑	[Value chart]	[Histogram]
Test 3	130.0392	0.0326	$C_p = 1.79$	$C_{pk} = 1.79$		[Value chart]	[Histogram]
Test 4	0.504	0.361				[Value chart]	[Histogram]



# Q-DAS qs-STAT

## Process qualification

Q-DAS qs-STAT is for the evaluation and continuous improvement of industrial production processes, and is also available as a web-based product. Norms, standards and guidelines provide the necessary orientation in the process.

### Results you can rely on

The requirements and procedures for calculating key statistical figures such as Cp and Cpk values can vary greatly and are based on norms, standards, association and company guidelines (such as BMW, GMPT, Robert Bosch and Volkswagen) or individual approaches. The requirements for calculating the statistics are saved in 'evaluation strategies', as we call them. They are at the heart of Q-DAS software and guarantee comparable results.

- The use of an integrated evaluation strategy ensures the correct method will be used to calculate the statistics
- This yields comparable, verifiable and dependable results
- Define your own evaluation strategies tailored to meet your specific requirements

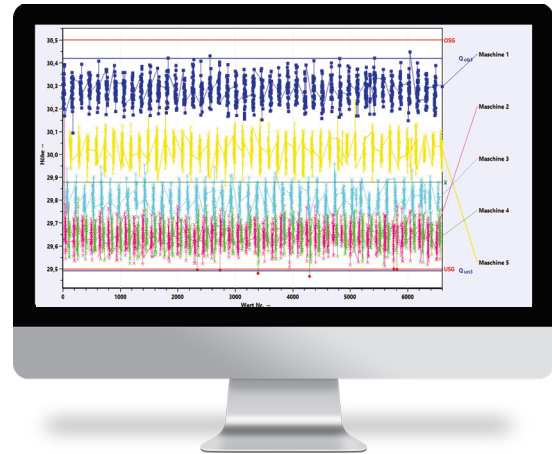
### Reports

Reports summarise key figures and graphics in compact form and accessible layout. They can be saved as a PDF document or sent as an E-mail attachment. They can also be used as graphic files which can easily be incorporated into other systems.

### Knowledge acquisition

Q-DAS qs-STAT is used to create proofs of suitability for machine and process capabilities. Processes can also be checked for abnormalities by using filter and selection criteria. The analyses enable you to draw conclusions about significant influences which may be caused by factors such as different machines, lots, inspectors, tools and temperatures.

Q-DAS qs-STAT helps create an overview of the influences and evaluate them in order to derive potentials for improvement. Obtaining such findings can yield significant process improvements and considerably reduce process costs.



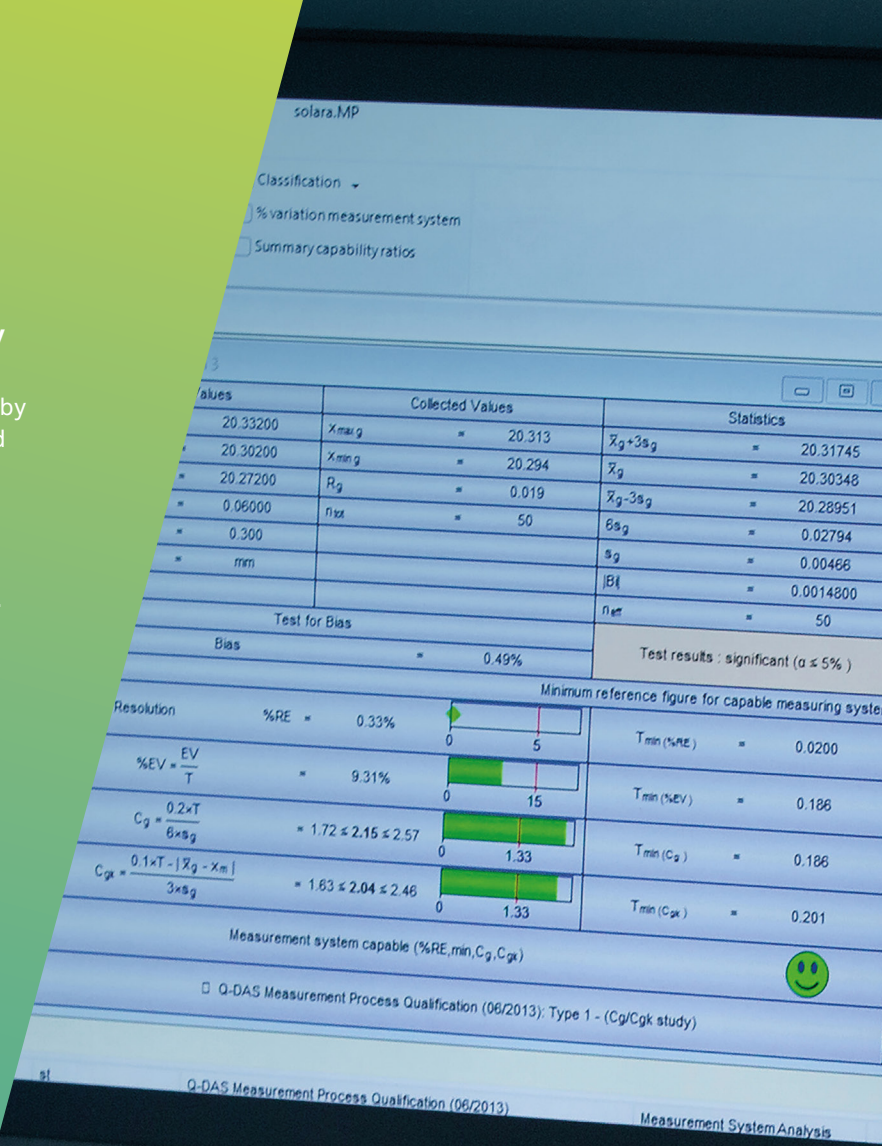
### Graphics and key figures

A wide range of statistical processes are on hand, allowing you to find the best-suited distribution time model automatically and assign the data to the respective process models laid down in DIN ISO 22514-2. It also gives the user a wide array of statistical graphics of individual values and overviews to evaluate processes visually.

# Q-DAS solara.MP

## Inspection process suitability

Misinterpretations of process data can be avoided by making sure that the measurement values obtained reflect the actual situation at hand with sufficient certainty, i.e. the measurement processes must be suitable for the application case at hand. These proofs of suitability can be created with Q-DAS solara.MP – also available as a web-based product.



## Measurement system capability as per MSA

Capability analyses are used to render proofs of suitability. The automotive industry offers company-specific guidelines to consolidate them and implement them in practice. Q-DAS solara.MP presents many of them, including the methods of the MSA guidelines from the AIAG Core Tools. At the same time, the generally widely used methods 1 (Cg/Cgk), 2 and 3 (%GRR), linearity and stability differ in terms of calculation methods and limit values.

## Informative graphics, key performance indicators and reports

Once the key figures have been calculated, Q-DAS solara.MP provides you with many different graphics as a visual interpretation aid. All graphic readouts can be configured individually to give you a quick and professional overview of the suitability of the inspection process.

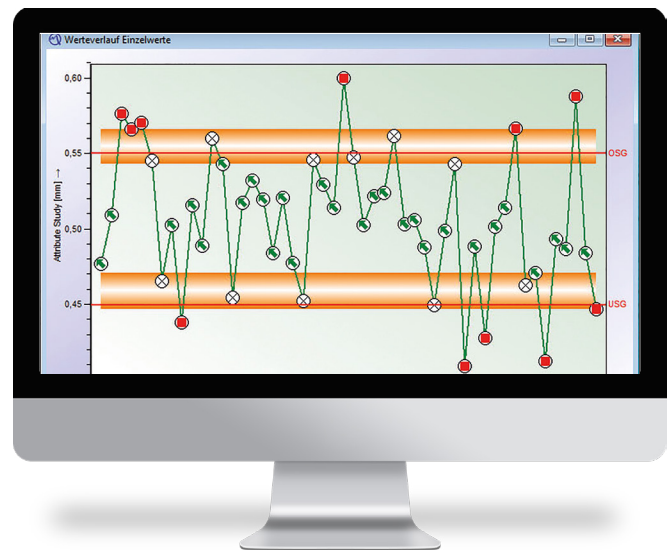
Reports provide summaries of key statistical figures and graphics. They are often used to document the proof of suitability of inspection processes. They can be saved as a PDF document or sent as an E-mail attachment. They can also be used as graphic files which can easily be incorporated into other systems.

## Inspection process suitability as per VDA 5

VDA Volume 5 evaluates measurement processes based on measurement uncertainty. Measurement uncertainty is determined using similarly pragmatic methods as with proofs of capability, but based on the requirements of the GUM (Guide to the Expression of Uncertainty in Measurement) and/or DIN EN V 13005. The uncertainty components are summarised in measurement uncertainty budgets, and then the expanded measurement uncertainty U is determined. This factors in the uncertainty in tolerance during conformity assessments as per DIN EN ISO 14253.

## Attributive measurement system analysis

The signal detection method can be used to analyse attributive values in comparison with reference values. If there are no reference values, tests such as the Bowker test can be used to check whether users arrive at comparable results. Likewise, rated values ('ordinal' properties) can be evaluated using Method 7 as per Fleiss' kappa or Cohen's kappa.







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# Q-DAS O-QIS

## Real-time visualisation

Q-DAS O-QIS is used to display and evaluate inspection and process data. There are several different ways of generating these data. For that reason, Q-DAS O-QIS has various modules to offer the right solution for the task at hand and is also available as a web-based product.

- MCA/CMM Reporting for evaluating and approving individual measurements in connection with historical data
- Q-DAS procella for manual test data collection or collection with measuring instruments and interface boxes connected in series; also available as stand-alone solution for use close to production
- Monitoring for visualising measurement data and process parameters, usually directly from the plant control system (PLC)
- Alert Manager for central alarm visualisation

## MCA/CMM Reporting

This Q-DAS O-QIS module is used for evaluating measurement values after a part measurement. When doing so, it is assumed that, after conducting the measurement, the measuring system generates a file which contains both information about the component that was just measured as well as its properties and the current measurement values.

Measurements taken with coordinate measuring machines are a typical application scenario. All of the necessary information about the measurement program and the measurement is together in one place and can be provided in a Q-DAS file. The Q-DAS data format AQDEF is supported by many measurement device manufacturers.

The data are visualised in Q-DAS O-QIS immediately after being generated and can be displayed to the operator in configurable overview graphics. Historical measurement values from previous measurements are also drawn upon for evaluation.

The operator can see the abnormalities in the current measurement and can then decide whether the measurement should be used for statistical analysis or discarded (in case of a faulty measurement, for example). In case of deviations, reports can automatically be created and sent in the form of a PDF or E-mail attachment.





# Q-DAS PLV | PlantViewer

## View of the equipment

The Q-DAS PLV | PlantViewer gives the user a completely new view, with new insights into the quality data and quality aspects. The focus here is on a clear structure, which is developed further, starting with the production machine and building 'upwards'. The PLV can monitor all machines, regardless of the actual location, and immediately view the measurement result of the parts being made on the machines. The goal of the PLV is to give its user – from line supervisor to manager – an overview of the information which is of relevance to the user. There, it will be possible to create an image of the company and/or production organisation in the forms of lines, halls, plants, etc. The new key performance indicators provide users with an aggregated view of the quality status in production based on the organisational levels.

### Web-based

#### A single installation, accessible from anywhere

Q-DAS PLV is one of the new Q-DAS web products, as is Q-DAS qs-STAT Web. What they all have in common is that they can be launched via web browser and by using the new Q-DAS Web Launcher. This means that a conventional client installation is no longer necessary. It only has to be installed on the server. This means that, with the necessary approvals, it can even be accessed from outside of your own network.

### Machine monitoring

#### Clear view of the quality status of the production machines

PLV allows quality managers, production managers and line managers to select the machines they want to see for monitoring. PLV is designed so as to support a control station scenario providing the person in charge with an overview of the selected machinery. This way, the user can select an unlimited number of machines, or just those that are of interest.

The deliberately simple visual interface and its graphics make it easier for the user to register either an alarm or a limit value being breached. With the universal "traffic-light" system as an indicator, the user can see the current situation at first glance and make an assessment.

### Easy setup

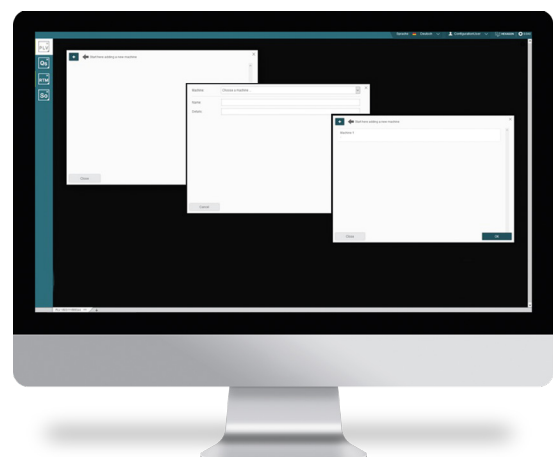
#### Guided wizards help you through the setup in just a few clicks

Using the simple and highly intuitive wizard, you can create an initial dashboard in just a few clicks. When developing PLV, as with all the other new web products, great importance has been attached to making the system setup as easy as possible for the user. Initial creation, modification or deletion of a machine never requires more than three clicks. The wizard guides the user and gives information about the options.

### Detailed analyses

#### Data can be further analysed and evaluated immediately via direct connection to other Q-DAS products

Using the "drop-off" functions, the user can further analyse the current data set of the monitored machine at any time in just one click. The data set (e.g. the data for a product that was manufactured on a machine) can either be opened with Q-DAS | RTM or opened directly using Q-DAS qs-STAT. The respective application is automatically started or loaded with the corresponding data. If the detailed monitoring of a data set (e.g. the data for a part, monitoring based on the characteristics) is paramount, this can be done using Q-DAS | RTM Real-Time Monitoring. It is possible to work with Q-DAS qs-STAT for conventional analysis of the data (e.g. to perform statistical analysis). Launching the application and loading the correct data set for the respective task is fully automatic (provided the respective product's license is open-source and active).







C-OAS Web - RTM

Language: English | User: rchiroz | C-OAS

Part no: 4714\_M1-M3 | Part descr: 4714\_M1-M3

Last measurement: 19 10 2020 14:21:59

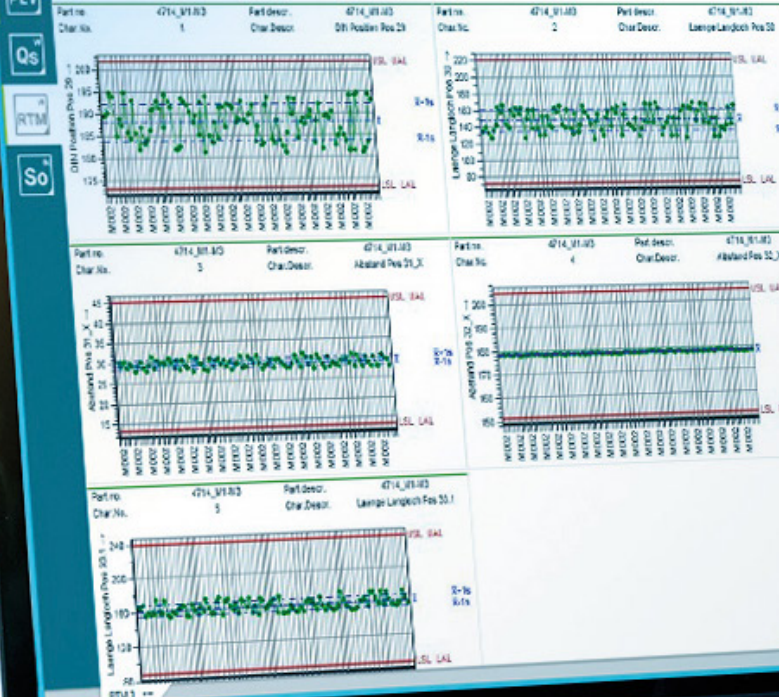
Last update: 19 10 2020, 14:33:11

Part number: 4714\_M1-M3

Part description: 4714\_M1-M3

Parts protected

Part no.	4714_M1-M3	Part descr.	4714_M1-M3		
Char No.	Char Descr.	1	X	Yield	100%
1	Chisquare Pst 2	10	10.71	X	100%
2	Length Pst 2	10	10.71	X	100%
3	Range Pst 2	10	10.71	X	100%
4	Length Pst 2	10	10.71	X	100%
5	Range Pst 2	10	10.71	X	100%



# Q-DAS RTM

## Real-time monitoring

Q-DAS RTM helps machine operators monitor the production process. The operator can visualise the production process for a single machine using a direct database connection. The simple and intuitive setup wizard makes it easier to set up each new monitoring action. Automated parts replacement completes the functionality.

### Web-based

#### A single installation, accessible from anywhere

Q-DAS RTM is one of the new Q-DAS web products, as is Q-DAS qs-STAT Web. What they all have in common is that they can be launched via web browser and by using the new Q-DAS Web Launcher. This means that a conventional client installation is no longer necessary. A single installation on the server is all it takes, since the necessary client installation on the server takes place at the same time.

### Monitoring the production process

#### Use RTM to monitor the manufacturing process directly from the database

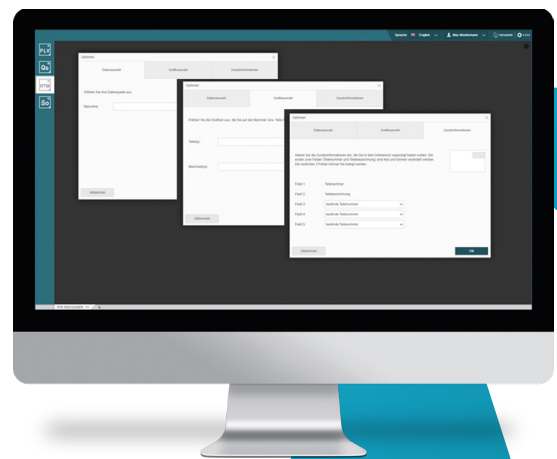
RTM is intended to make it as easy as possible for the user to monitor machines as well production regardless of the part(s) currently being produced on the machine (and thus the process). Once set up, RTM works fully automatically and monitors the process; parts are even replaced automatically. This makes it easier for the machine operator or the user to monitor the production process without further assistance.

The indicator design immediately signals to the operator that something was wrong with the last measurement. The tool uses a simple two-state system, green or red, to indicate the status. With the detailed view at the feature level, it is easy to find out which feature triggered the alarm or breach of limit value.

### Easy setup

#### Guided wizards help you through the setup in just a few clicks

Using the simple and highly intuitive wizard, you can set up the monitoring in just a few clicks. When developing Q-DAS RTM, as with all the other new web products, great importance has been attached to making the system setup as easy as possible for the user. Initial creation, modification or deletion of the object for the monitoring requires just a few clicks. The wizard guides the user and gives information about the options, such as which graphics are available.







# Q-DAS IMC

## Intelligent Machine Control

Q-DAS IMC is a software application for clear communication between machine tools and the Q-DAS database. It forms the basis for usable data in your production process and enables you to gain detailed insights into your data, to evaluate the history in order to improve future processes. By creating the added value of data preparation, presentation and evaluation, you also drive digitisation in your company.



### Correlation between tool data and measurement values

In addition to additional controls, Q-DAS IMC offers an integration of the graphics displayed in the dashboard. The automatic delivery and correction of the tools reduces the manual effort at the machines and enables additional capacities. The software reduces tool costs, scrap and relieves the operators at the machine. Process capability is sure to increase.

### Increasing process capability made easy

#### Added value from data

In times of increasing cost and competitive pressure, it is important to make the right decisions in the company quickly and proactively. In a world with increasing floods of data, data analysis is becoming increasingly important in many companies.

### Intelligent networked systems

Efficient links between the machine, machine measurement and external systems, giving you greater insight and control over your production process.

### Statistical evaluation instead of snapshots

Verifiable statistical evaluation instead of taking lots of little snapshots. This gives you a better overview and more control over your production process – and it's quick and easy.

### Automatic tool correction

The evaluation method compensates tool wear and temperature changes by using relevant parameters and mathematical strategies. Tool corrections are calculated and applied automatically. Quick gut decisions for tool correction are a thing of the past.



# Q-DAS eMMA

## 3D Measurement data management

Q-DAS eMMA software provides an integrated data management system for the entire 3D measurement process, from planning 3D features and their tolerances along the assembly processes to monitoring quality in the production processes.

### Q-DAS eMMA MDM Server/Client

Q-DAS eMMA MDM is an enterprise IT solution created to structure and manage 3D measurement data, thus closing the information gap in the quality assurance process. It provides controlled access to measurement plans, alignment systems, tolerances, measurement results, and analysis sessions. The software is a scalable solution capable of supporting small teams in an OEM department or in a supplier manufacturing site, as well as global implementations that include multiple sites and thousands of users.

Integrated and centralised data management allows full control over all data at a single location. This enables quality data to be imported and exported in or from numerous data formats (\*.dmi, \*.dmo, \*.dfq, \*.csv, etc.). eMMA MDM Server/Client tracks and manages project changes and user interactions via version checking and change management.

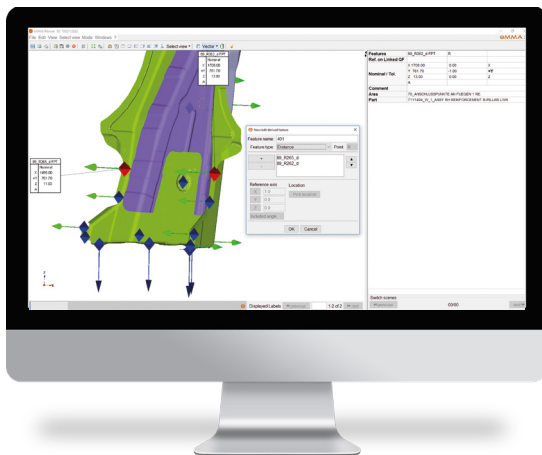
### Q-DAS eMMA | Planner

Q-DAS eMMA Planner is a module created to facilitate the management of inspection plans for both individual parts and assembly structures. The Q-DAS eMMA Planner fulfils many functions, including: creation of inspection plans for assembly structures, modification of feature tolerances and feature attributes and creation of linked features.

The rich 3D native environment that accompanies all Q-DAS eMMA modules allows the intuitive exploration of all elements of an inspection plan. The 3D environment embedded into eMMA Planner enables the edition of existing features as well as the definition of linked-features while preserving a spatial reference to the geometry associated with the corresponding inspection plan.

### Q-DAS eMMA | Illustrator

Generating quality reports for thousands of parts can become a time consuming and cumbersome task and often requires an experienced user. The Q-DAS eMMA Illustrator is the perfect module for designing report templates. Its 3D interactive environment allows users to easily create scenes in which customized geometry views, feature sets, and information related to an inspection plan will be displayed. In addition, the automatic generation of scenes can be used to considerably speed up the creation of report templates.



Q-DAS eMMA | Planner

## **Q-DAS eMMA | Analyst**

The Q-DAS eMMA Analyst is a flexible and versatile software program for the analysis of measurement results. Using statistical key performance indicators (KPIs), it provides insights that enables you to have better control over prototyping, launch, ramp-up and production processes. The Q-DAS eMMA Analyst supports both 2-D documentation and interactive 3D analysis.

The integrated 3D environment offers different graphs to display the measurement results associated with each feature. In addition to the natively supported graphs, the Q-DAS eMMA Analyst also supports the computation and visualization of statistical metrics using the Q-DAS qs-STAT engine.

The quick and easy loading and selection of measurement results along with the graphic options for the display of the results provide a clear overview of the production quality over time. The results of these analyses can later be saved as a 3D session or exported as a PDF report or PowerPoint presentation for easier distribution.

## **Q-DAS eMMA | Inspector**

The Q-DAS eMMA Inspector is a module specially designed to support the easy and fast analysis of large sets of optical measurement results. The comprehensive 3D native environment enables users to smoothly explore and interact with the data as they identify and compare regions of interest. Like other eMMA modules, the Q-DAS eMMA Inspector also supports both PDF documentation and interactive 3D analysis. At the same time, the module offers a video of the day function.

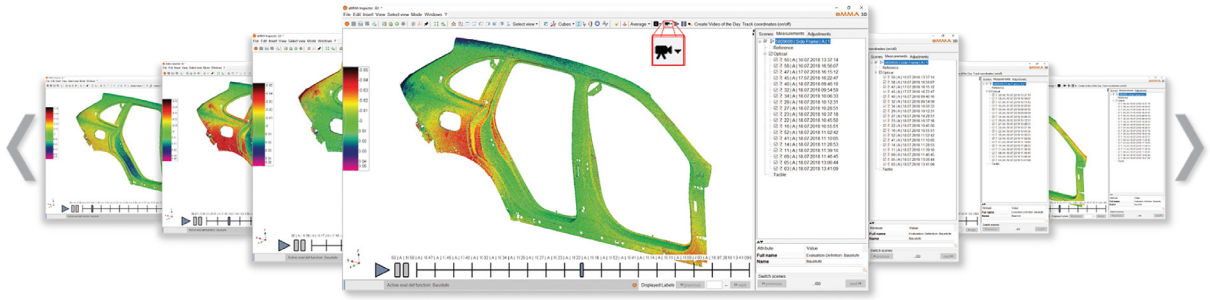
## **Q-DAS eMMA | Assembler**

The Q-DAS eMMA Assembler is a module for the graphical analysis of virtual assemblies which builds upon eMMA Analyst. It combines the powerful analytic capabilities of the Q-DAS eMMA Analyst to be applied simultaneously to multiple component parts and virtual linked-features. Individual parts or assembly structures can be compiled and analysed with transformations according to the assembly position, evaluation definitions, manually generated or adopted local alignment systems to form a virtual assembly. Individual features as well as new linked-features with individual evaluation instruments and tolerances can be added to analyse the measurement results of all components selected simultaneously. One of the Q-DAS eMMA Assembler's most popular applications is the virtual analysis of flush and gap combining multiple parts. For documentation, scenes with any component and feature selection can be exported as a presentation and PDF report.

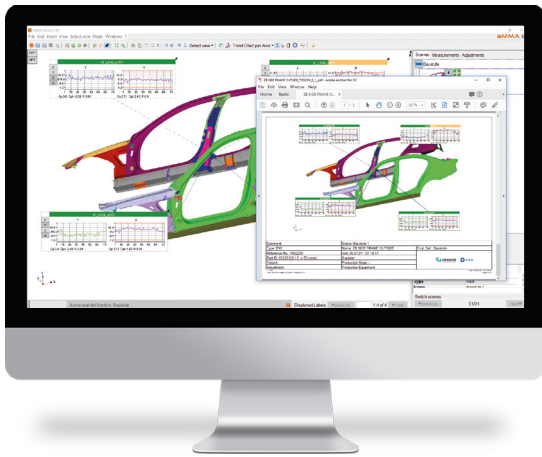
## **Q-DAS eMMA | Reporter**

Quality assurance at the production line requires the detection of tolerance deviations in real time and the identification of the cause of such deviations. The Q-DAS eMMA Reporter is a web-based module that allows company-wide monitoring of manufacturing quality at any number of production sites in real time. Tolerances defined within the product design data are used as the basis for the evaluation of different production and construction stages. The software recognises and reports deviations from manufacturing tolerances in real time and supports root cause analysis. If an out-of-tolerance deviation is detected, the system sends customizable warning messages via e-mail or SMS to authorized users.

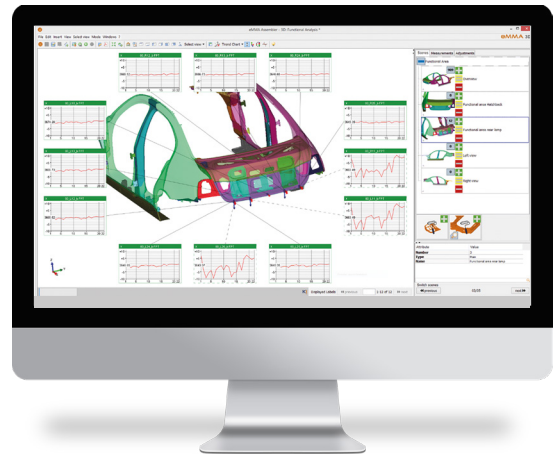




Q-DAS eMMA | Inspector



Q-DAS eMMA | Analyst



Q-DAS eMMA | Assembler





# Process Capability Analysis

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Process Mean	Process Std Dev	Cp	Cpk	Process Capability
10.0000	0.0020	$C_p = 1.67$	$C_{pk} = 1.50$	↑
14.9703	0.0024	$C_p = 2.01$	$C_{pk} = 1.39$	↑
130.0000	0.0020	$C_p = 1.75$	$C_{pk} = 1.39$	↑
0.504	0.291	$C_p = 1.01$	$C_{pk} = 1.00$	↓
718.30	61.23	$C_p = 1.08$	$C_{pk} = 0.93$	↓
0.02527	0.0135	$C_p = 1.36$	$C_{pk} = 1.55$	↑
0.00823	0.00467	$C_p = 1.54$	$C_{pk} = 1.65$	↑
20.00668	0.0397	$C_p = 1.58$	$C_{pk} = 1.50$	↑
19.9973	0.0637	$C_p = 1.87$	$C_{pk} = 1.89$	↑
64.910	1.109	$C_p = 1.50$	$C_{pk} = 1.50$	↓
4.493	0.508	$C_p = 1.78$	$C_{pk} = 1.74$	↑
20.0001	0.126	$C_p = 0.96$	$C_{pk} = 0.89$	↓
0.00000	0.00000	$C_p = 1.00$	$C_{pk} = 1.00$	↑

# Q-DAS M-QIS

## Reporting system and statistical control board

The statistical software products from Q-DAS can be used to load and evaluate data from the database and provide them in the form of reports. Q-DAS M-QIS (Management Quality Information System) automates all of these steps.

### Automated reporting

The Q-DAS M-QIS engine automatically loads a predefined pool of data from the Q-DAS database. The system evaluates the information contained and reads it out in the form of reports. The Q-DAS M-QIS engine can E-mail these reports in PDF form to a predefined group of recipients and file them in a directory structure.

Depending on the application case, the evaluation results of the cyclically analysed data can be reported every time, or only if defined requirements for the process have not been fulfilled.



### Long-term analyses based on compressed results

Q-DAs M-QIS provides users with the option of calculating process statistics continuously over a long period and storing the results based on individual process information (line, machine, cavity, tool, etc.) in the Q-DAS database. This makes it possible to load and process larger amounts of data quickly, since the software only accesses statistics that have already been calculated.

An adjustable automatism specifies the time to save these results and the compression criteria which the evaluation is based on.



### Data archiving

Q-ARC (archiving) is used to optimise and maintain the performance of the database in daily use while still allowing access to historical data at any time. Data sets can automatically be swapped out at regular intervals in order to keep the active database lean and streamlined.



# Q-DAS procella

## Process control

Q-DAS procella can be used to collect measurement and test data manually or directly from the measuring device by way of an interface. With Q-DAS procella, data are saved in files or centrally in databases. It can also collect and display quantitative and qualitative measured values.



### Tailor-made visualisation

Individually definable alarm conditions (violation of tolerance or control limits, trends, etc.) already statistically monitor the data during the data collection stage. If a violation of these alarm conditions occurs, the operator will be prompted to acknowledge the alarm immediately. Documentation can then be conducted in the form of measures, events and causes. This makes it easier to understand the cause deviations in subsequent analyses.

### Connecting measuring equipment

Q-DAS procella is not only suitable for inputting data manually, it also provides interfaces for connecting various measuring instruments and multiplexers directly. Collection is accomplished via simple data import, triggered on the measuring instrument or by foot switch. This minimises the number of faulty entries and simplifies the measurement procedure.

### SAP Interface QM-IDI

procella can load test lots generated in SAP for data collection by way of a connection to SAP/R3 QM (via IDI interface). The data collected are then transferred to SAP after the test is complete. This combines the advantages of high data collection flexibility and real-time visualisation of procella® with the advantages of the superordinate SAP system.







# Q-DAS destra / Q-DAS vidara

## Process optimisation / Design of experiments

The products Q-DAS destra and Q-DAS vidara provide a wide range of statistical methods and tests as well as process optimisation functions. Users benefit from an intuitive user interface and informative graphics allowing evaluation results to be interpreted quickly.

Q-DAS destra is a solution for comprehensive data analysis in acceptance and new development projects in industry. The program has a wizard to guide the user through the process data evaluation, yielding informative results. Alongside its application as a classic statistics package, Q-DAS destra is also used as a process optimisation tool in Six Sigma projects. For Green Belt, Black Belt or Master Black Belt alike, the software offers both simple, graphically oriented evaluation methods as well as a wide array of professional tools.

In addition to the Q-DAS destra package, Q-DAS vidara presents a package which, together with Q-DAS solara.MP and Q-DAS qs-STAT, offers the same scope of functions with all configuration options. As such, Q-DAS vidara makes a practical addition for evaluation options in improvement projects.

### Trial planning

Trial planning is a tool which is used both for investigating cause-and-effect relationships between influence parameters and target values as well as for optimising products and processes. Structured data collection plays an important role in the process.

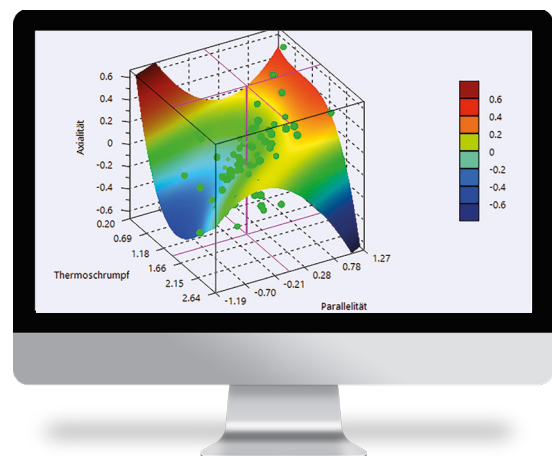
- Intuitive trial design creation
- Informative graphic depictions of results
- Optimisation with multiple target values



### Variance and regression analysis

Variance and regression analysis serves to adapt mathematical models to cause-and-effect relationships between influence factors and target values.

- Appealing model design
- Design freedom for variance analysis
- Formula editor
- Mixed effects
- Hierarchically nested models
- Unbalanced data
- Visual model diagnostics
- Cook's distances, leverage values and residuals





## Reliability analysis

Reliability analyses check whether a product meets its requirements under specific conditions over time. This requires service lives to be analysed, the data collected in the trial to be evaluated and the results to be depicted in graphic form.

- End-of-life tests
- Censoring (type I, type II and hybrid censoring schemes)
- Sudden death tests for field failures
- Eckel procedures for field failures
- Success run tests

## Project Explorer: Structuring of analyses

The integrated Project Explorer can be used to summarise and structure analyses from various evaluation modules into clearly arranged work packages. The Explorer makes up the “paper clip” around related analyses, making it quick and easy to switch to a different module of the project element in question.

## Data and results are compact and clearly structured

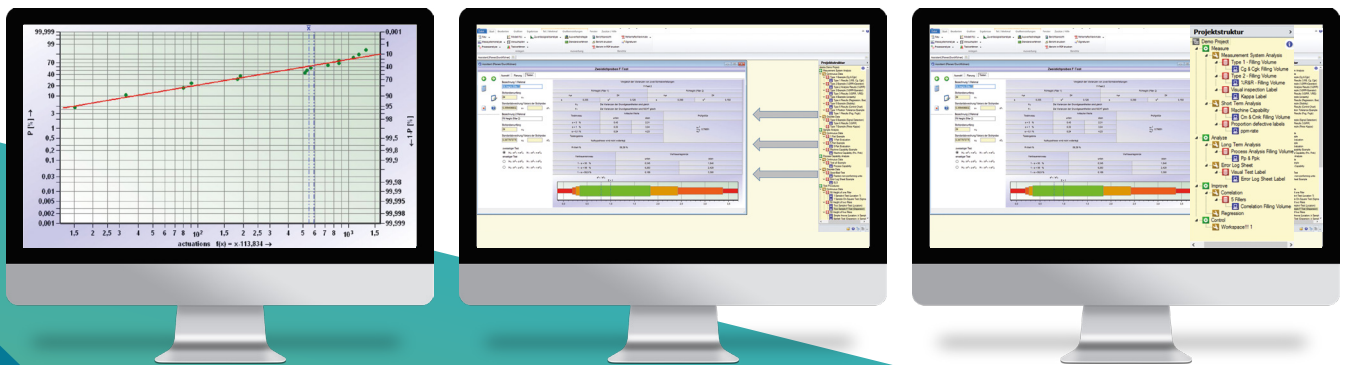
Multiple different levels are possible when creating the structure of a project. Work areas to consolidate analyses of the same time can be defined in a project phase. “Sessions” are defined for each analysis step, in which the data sources and evaluation methods to be used can be saved. A variety of evaluation graphics and forms show the evaluation results for each session. The state of editing in scope of the project created is saved so the project can be continued with the latest state at a later date.

## Navigating with the Project Explorer

Already existing files in AQDEF format can be incorporated as a data source for the project structure session, or integrated from the Q-DAS database.

All data sources, analysis steps as well as evaluation results and evaluation graphics are saved in a project file. This consolidates all of the information needed at a central location. This project file can be made available to a project team member, who can then view the project status and continue working on the project.

The Project Explorer is used to navigate between the various project phases and sessions. Navigation is possible between the available evaluation modules. If the user uses the Project Explorer to switch to a project phase in which the associated Q-DAS software product is not currently installed on his computer, or the licence is being blocked at the moment by another user, the display will switch to “viewer” mode. This allows the user to view the results of the respective project phase/session, giving him all of the information at a glance. However, the data cannot be edited in viewer mode.



# Q-DAS Q-DM

## Data management – Automated data transfer

Q-DAS Q-DM Data Management is used to transfer files from external systems to the Q-DAS database automatically. Data storage in the database enables highly flexible and task-oriented data selection in order to provide them for analysis (with qs-STAT, for instance) depending on the specific user.



### Data transfer

Q-DAS Q-DM is usually installed on a server in a network, but frequently also as a service. Directories in which Q-DAS files from external systems can be stored are cyclically monitored by the Q-DAS software. The files, consisting of measurement, testing and process data, are imported, checked for syntactic accuracy, and loaded into the database. This takes place on the basis of defined rules which can be set in Q-DM. This ensures clear allocation of measurement information in the database.

When the Q-DAS software is set up for the first time, a system technician from the System Integration Team conducts the configuration in Q-DM together with the customer. The IT infrastructure, data flow and database system of the specific customer are taken into consideration when doing so.

Q-DAS Q-DM transfers decentrally collected data to a central data pool in a structured manner.

### Configuration options

Many additional settings can be made in Q-DM. For example, alarms can already be reacted to while the file is being uploaded to the database, and the necessary entries can be made for later evaluation. If problems appear during transfer due to a network failure or faulty files, reports will be created which can also be sent to system administrators E-mail. Guaranteeing data flow is the top priority of the Q-DM data management.

### Converter

If the data are not generated in Q-DAS data format, a converter script can be integrated into Q-DM. This converts the external format into Q-DAS files first, and then loads them into the database. The conversion is a mapping of file information from the source file into the Q-DAS (target) file. In addition to the actual content, information about file storage locations, file names, etc. can also be derived from the files.

Creating a converter is a paid service of Q-DAS GmbH and only applies for the conversation of external formats into Q-DAS format.

# Training and consulting

A target-oriented offer of open training sessions, in-house seminars and consulting services ensures efficient use of the Q-DAS software products. The training sessions cover an extensive range of different industrial tasks, but they can also be tailored to your individual requirements.



## Task-related software user training courses and methodology seminars

Specific product training sessions have been planned for users of Q-DAS software products for various target groups, ranging from classic user training courses, module expert schooling and administrator training to independent maintenance and management of Q-DAS software.

Q-DAS software products are being continuously refined in order to support users in their tasks even better. The logical consequence is that we also tailor our software user training courses specifically to the various tasks and/or user groups. The right methodological seminars form the basis for efficient use.

## Measurement system analysis with Q-DAS solara.MP / Q-DAS destra

Well-versed handling of various measurement system analysis procedures is the essential prerequisite for users to conduct a proper machine acceptance or process analysis.

This seminar covers widespread procedures for proofs of capability of measurement systems in Q-DAS solara.MP and Q-DAS destra. Evaluation results are visualised in observance of various company guidelines, supplemented by valuable tips on handling files and databases.

## Measurement uncertainty as per VDA 5/ISO 22514-7 with Q-DAS solara.MP

Almost all of the test process suitability methods provided in VDA Volume 5 and ISO 22514-7 can only be conducted with the aid of computers.

This course explains how these methods for proving the suitability of measurement and testing devices are implemented in Q-DAS solara.MP. At the same time, it shows how evaluation results are visualised and how various company guidelines are factored in.

## Machine and Process suitability with Q-DAS qs-STAT

A good command of the statistical methods and the software itself is required to perform machine and process capability analyses efficiently.

In this course, users learn how to conduct machine and process capability studies in Q-DAS qs-STAT. You will receive the necessary background knowledge to store data efficiently and, by the end of the seminar, will be able to understand evaluation strategies and the associated evaluation results.

## Further training and services for Q-DAS products

Hexagon offers individual, in-depth seminars focusing on software-specific issues or specific types of tasks, as well as special consulting services. These include:

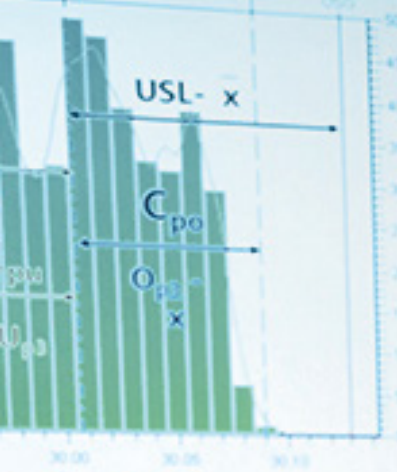
- Courses for users and administrators on how to configure Q-DAS software at the company (key users)
- Training sessions on creating reports and input masks in the form and mask designer
- Efficient use of databases and selections
- Courses on transitioning to the latest version of Q-DAS software
- Proper handling and adaption of evaluation strategies
- Development of company-specific evaluation strategies

## Competent, individual and efficient consulting

Hexagon offers a wide range of consulting services that build on its extensive network of experts for specific technical fields and industries. Examples include:

- Consultation on how to introduce SPC, including the implementation of Q-DAS statistics software
- Consultation on creating LPS-compliant technical drawings, as well as tolerancing aspects
- Consultation on the performance of measurement system analyses, as well as tolerancing aspects
- Consultation and coaching on establishing, introducing, maintaining and refining management systems (DIN EN ISO 9001, IATF 16949, DIN EN 9100, DIN EN ISO/IEC 17025, DIN EN ISO 14001, DIN EN ISO 50001)
- Performance of potential analyses for optimising processes
- Consultation and coaching on introducing improvement strategies, in particular Six Sigma
- Creation of company and industry-specific audit concepts and audit programs
- Performance of internal and supplier audits according to industry standards
- Fulfilling the function of external management representative for quality and/or environment in SMEs





$$C_{po} = \frac{USL - \bar{x}}{O_{pu} - \bar{x}}$$

$$C_{pu} = \frac{\bar{x} - LSL}{\bar{x} - U_{pl}}$$

$$C_{pk} = \min \{C_{po}, C_{pu}\}$$



# System integration

## Project support

The System Integration Center is your competent partner to assist you in successfully introducing Q-DAS software products. We accompany you through all phases of the project, from planning and specification to updating and maintaining the running system.



### Workshops

We hold workshops to discuss the necessary details on installation, configuration and commissioning with you. This starts with a survey and analysis of the current situation. Understanding the process structures and sequences yields highly important information on expedient and target-oriented system design.



### Installation and configuration

Practical implementation starts with installation. We install the software components based on the system specification and configure them and set them up for your specific requirements.



### Upgrades

Would you like to upgrade to the latest version and take advantage of the improved and/or expanded range of functions? Together with you, we define the upgrade strategy, clarify the prerequisites and discuss the system configuration.



### Product training courses

A training programme individually tailored to your needs should be held parallel to installation wherever possible, or shortly thereafter. You will also have experienced instructors for the specific range of subjects at hand.



### System upgrading and optimisation

Even after it has successfully been put into commission, we are still there to assist you in updating and maintaining the installed system. Regular updating and maintenance ensures long-term system stability. This also includes data storage optimisation and designing archiving strategies to enhance system performance, especially where large volumes of data are at hand.



### Web support

Quick and uncomplicated help at any location thanks to remote maintenance and desktop sharing. Accessing your system via internet can be a good solution depending on the issue at hand. It saves time and keeps costs down.



### System documentation

Creating system documentation is an indispensable aid in system operation and updating, especially in case of large-scale installations.



Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's Manufacturing Intelligence division provides solutions that use data from design and engineering, production and metrology to make manufacturing smarter. For more information, visit [hexagonmi.com](https://hexagonmi.com).

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