

LanYs

**CAQ - Information system Q-LanYs
supporting
Quality management**

Activities in the area of quality management

Information system for the support of quality control Q-LanYs

- implementation of the information system
- program maintenance
- a brief hot-line (answering specific questions)
- system development

Implementing the quality control system in accordance with standards

ISO 9001, QS 9000, VDA and TS 16949

- input analysis
- proposal of the Project for the implementation of the quality control system
- approval of the project proposal by the company's management
- realization of the project
- company certification

Optimization of the quality control system with the utilization of the information package Q-LanYs

- output analysis
- proposal of the Project for the optimization of the quality system
- approval of the project by the company's management
- realization of the project

Training

- FMEA
- internal auditing
- SPC – statistic process control
- eight quality-control tools (histogram, Pareto's diagram, Ishikawa, ...)
- problem solution method (8D, thought map, ...)
- QFD
- MSA

Maintenance and improvement of the quality control system

- input analysis
- performing internal audits
- processing of action plans for improvement
- supervision and inspection of the measures resulting from internal and customer audits
- processing of data for the yearly review of the quality system by the management
- communication with the certified company
- participation on the certification audits
- counseling and consultation services
- schooling of the employees

Information system Q-LanYs – Business office

- implementation of the information system
- program maintenance (handling of complains SW, removal of errors SW, removal of nonconformities in the conduct of general modules)
- a brief hot-line (answering specific questions)
- system development

Information system for the quality support

Q-LanYs Pack 2021 – quality system management

MODULE DMS - Documentation Management System

MODULE Management of technical standards and drawings

*MODULE Tasks, Solving of problems (8D), Projects, Improvement, Goals of
quality and indicators of processes, support of APQP and PPAP*

MODULE Auditing (internal and external, system and process auditing)

MODULE Claims from the customers

MODULE Claims to the suppliers

MODULE Suppliers and their evaluation

MODULE Metrology and MSA

MODULE Preventive and Predictive Maintenance

MODULE Building and Equipment Revision management

MODULE AGENT – indicators watching and informing by e-mail

Q-LanYs Pack 2021 – quality product monitoring

MODULE FMEA and Control plans

MODULE Product auditing

MODULE Statistical control of production – SPC station

MODULE Report of rejects – Collection cards for defects

MODULE Management of non-conform products

MODULE Incoming inspection

MODULE Releasing of the production line

MODULE Output inspection

MODULE Test rooms and Laboratories

MODULE Planning of laboratory long-term tests

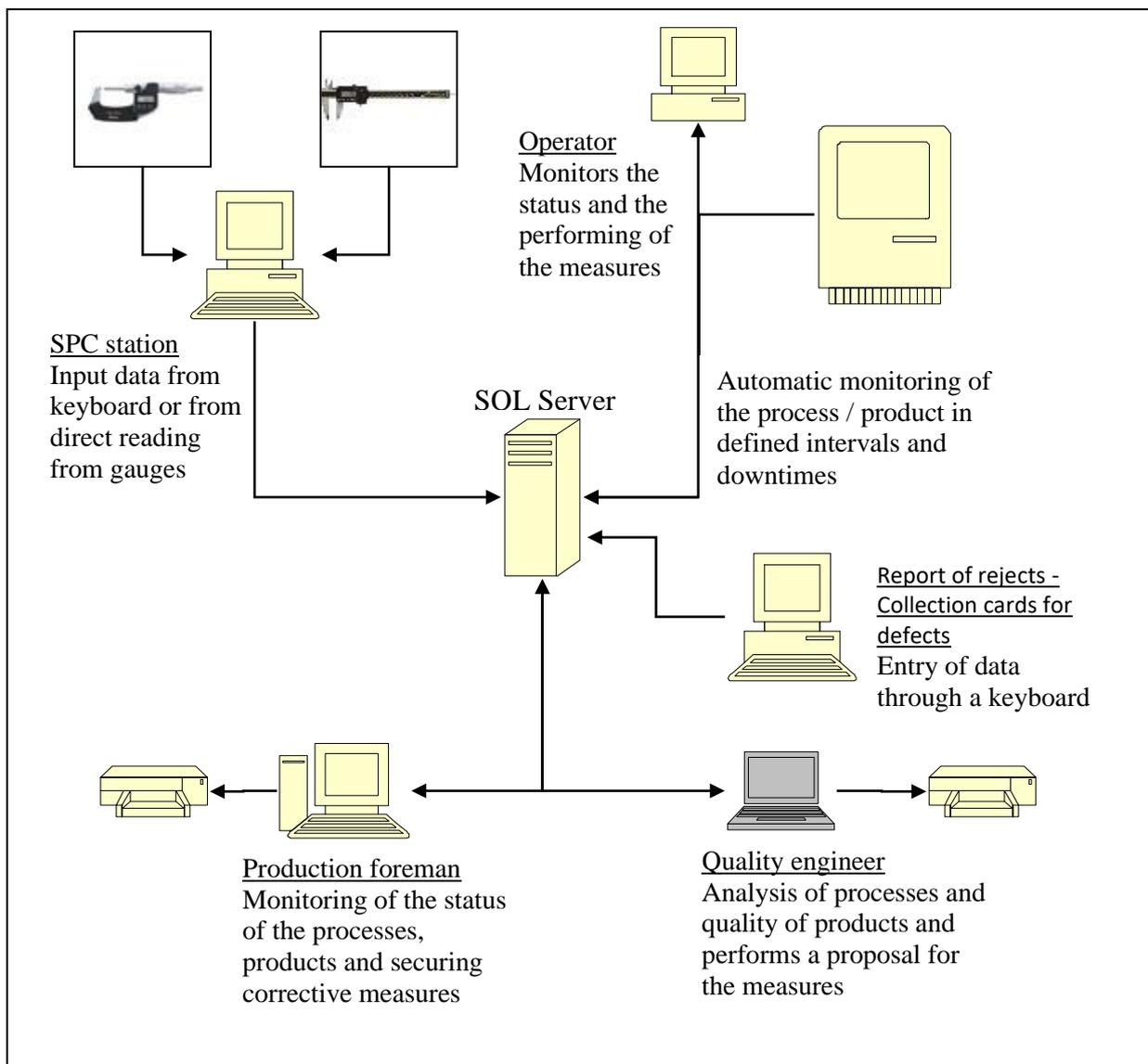
Monitoring of the quality products and processes

In order to secure the continual improvement of the processes and quality parameters of the products, it is necessary to firstly secure enough information about the monitored processes and products, not only for defining the corrective measures, but also for monitoring their effectiveness.

For the securing of the required information (data), there is a system available here for the monitoring of the quality parameters of products and processes. The collection of data can occur through the keyboard, through direct reading of the measured data from gauges (measuring devices) connected to the PC stations or through automatic reading of the parameters of the products or the processes in defined intervals.

For the processing and evaluation of the measurable or attributive data, there are used the modules of the information system Q-LanYs, "Statistical process control" – SPC Station and "Report of rejects - Collection cards for defects" or their modification according to specific requirements.

Schema of the monitoring of the quality products and processes



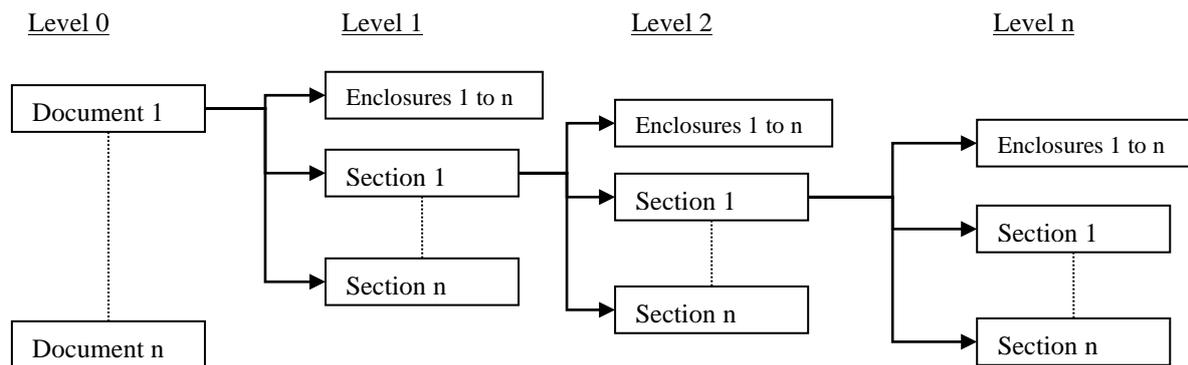
MODULE

Management of company documentation

The Module “Management of company documentation” is designed for the management of the company documentation and fulfills all of the requirements of the standards ISO 9001 and also the requirements of the automobile industry for the management of quality documentation. By using this module you are capable of securing all of the phases of the documentation management process:

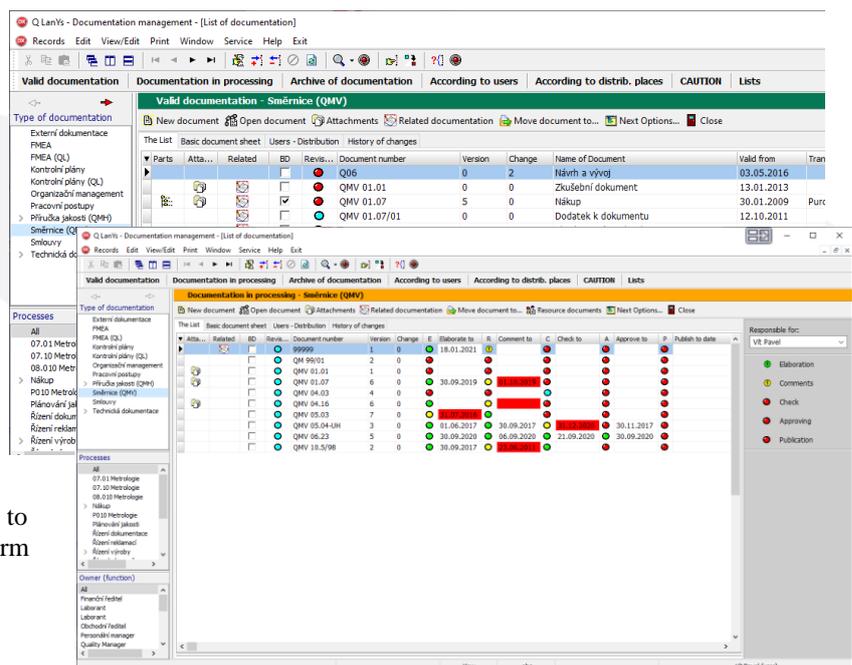
- Defining the manager of the document
- Processing of the document
- Remark proceedings of a new document
- Change and approval (release) management
- Distribution and proper filing of documentation
- Using the documentation (Filing and quick access to valid documentation, to documentation which is being processed, and also to canceled documentation [archive of invalid documentation])
- Perfect overview of the documentation distributed to the users or to constant distribution areas
- Quick access to the wording of the given document
- Change request of a document
- Automatic recording of documentation reading/training
- The cancellation of the validity of a document and its retraction
- Archive of invalid documentation

Every document can contain any amount of enclosures. Furthermore, it can be divided into any amount of sections and levels, which are managed independently. The amount of sections and levels is not limited, and it is possible to create a tree structure of the document (documentation) of any size.



The Module “Management of company documentation” is a tool for the management of all types of documentations, like for example quality brochures, guidelines, control plans, regulations, work instructions, FMEA etc. in all of the phases of the document's lifecycle.

The Module is designed for the attachment of the wording of a document in two languages simultaneously. The wording of the document is opened directly from the program and thereby this module becomes an ideal tool for direct access to the documentation in any electronic form (format).



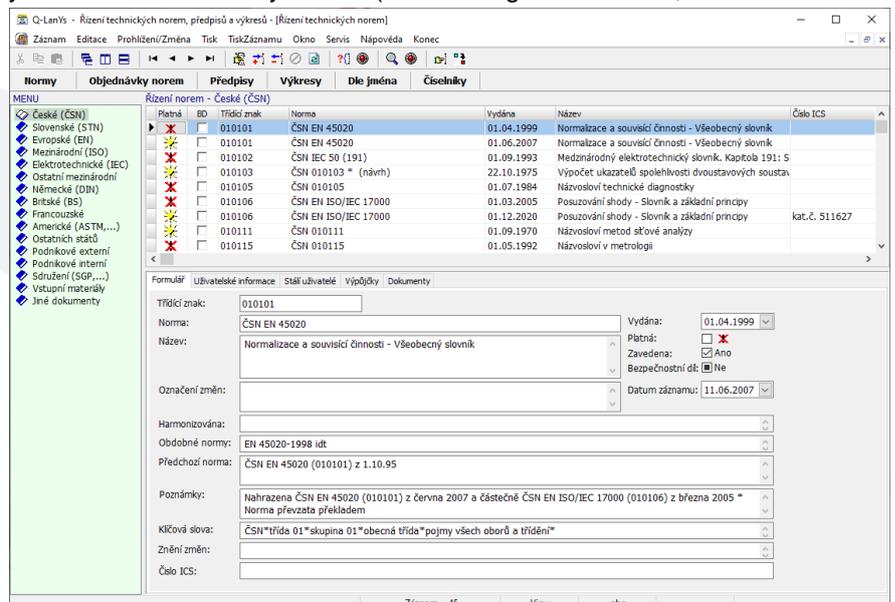
MODULE Management of technical standards, regulations and drawings

This program is mainly designated for the rationalization of work in the departments of technical standardization, in libraries and technical departments. But nothing hinders it from being used in other departments (business services, marketing), which need fast and precise information about the valid technical standards. It serves all users in acquiring records of domestic (and also company) technical standards, and also European and other international and foreign standards. This enables effective searching for a standard or standards from an area which the user is interested in. It will simultaneously provide summary information about the searched out standard, and in case of need, the user of the program can save to the record of the specific standard its full text, random pictures, graphs, schematics and drawings in any format. A part of the program are also the basic library works (record of borrowing and constant users) including the searching of lent out standards or permanently assigned from various viewpoints. The program contains databases of standards, which contain the actual and also canceled standards. Furthermore, these databases relate to the record of constant users, to the record of boring and to the database of persons. All the data is mutually interconnected and it is possible to switch randomly between individual sets of data. Here there is support for creation, management and the printing of the requirements for the ordering of standards.

Furthermore, you will find here the means for the management of technical regulations and schematics. Besides the respective record, there are functions available for the management of their distribution, lending out and the possibility of inserting a complete schematic documentation to the required records, which allows this application to be used for the electronic distribution of schematics, regulations and also technical standards.

What is new in this version

- Totally reworked user interface resulting from modern development technologies, securing a maximum user comfort.
- Technology client – SQL server.
- Storage of actual and also canceled standards, in one database. It is no longer necessary to pass through various windows.
- Possibility of the attachment of any amount of files in any format (i.e. wording of standards, schematics, drawings, pictures etc.).
- Newly supplemented support for management of technical drawings.
- Greater flexibility and quicker response for performed selections.
- Possibility to perform selections according to all items.
- Output of print setups to the files in formats html and rtf, which enable further processing, for example in MS Word and subsequent electronic distribution. For the output to the PDF format we recommend to use the software pdfFactory.



MODULE Tasks, Nonconformities solving, Improvements, Goals of quality and indicators of processes, Projects management, APQP and PPAP

In the scope of company management and the quality management system, there is generated a lot of tasks, actions for improvement and corrective measures for the solution of the occurred problems. Furthermore, there are defined the goals of quality and the indicators of processes for the monitoring of the efficiency and the effectiveness of the quality management system and the efficiency of the management of individual processes. Now it is necessary to set up a mechanism for maintaining order and overview about the status of the fulfillment of all of the defined tasks, actions, corrective measures etc. The module "Tasks, Nonconformities solving (8D), Project management, Continual improvement, Goals of quality and indicators of processes" serves this purpose. By using this module, you will maintain a perfect overview about the status of the fulfillment of individual actions, the responsible workers and terms of fulfillment for individual actions and thereby also the control over the development and continual improvement of your company.

You can switch between CZ or EN languages.

Main parts of the module

- Code-lists
- Book of tasks
- Nonconformities solving (8D)
- Continual improvement
- Goals of quality
- Control indicators of processes
- Projects management
- Support of APQP and PPAP
- Analyses of tasks or projects

Definition of the code-lists

In order to simplify the acquiring of data in further parts of the program you define the code-lists like for example: Persons, inspection areas, Functions, processes and others.

Book of tasks

This is designated for the recording and the monitoring of the fulfillment of the general tasks defined at meetings or tasks resulting from various activities during the management of the company. It is possible to classify individual tasks and workers into groups and thereby to manage the access rights to individual tasks. This means that it is possible to manage one's own tasks to which nobody else has access to accept the owner of these tasks, and also to manage the tasks of individual departments or solution teams. The printout of the tasks due to the required date is commonplace.

Nonconformities solving (8D), Project management, APQP and PPAP

Serves for the management of the solving of problems resulting from claims, external audits etc. For every problem that is being solved, it is possible to determine if it will be solved in the manner of regular tasks or by the 8D method, with the possibility of printing the 8D Reports. For the project management you can use functions supporting APQP and PPAP processes with generating GANTT chart.

Continual improvement

This is a matter of mainly managing long-term actions, whose goal is the improvement of the existing status or the solution of long-term problems.

The screenshot displays the Q-LanYs software interface. The main window shows a list of nonconformities (8D) with columns for ID, Card 1, Card 2, Documents, Text of progress, Costs calculation, Responsible, Department, Deadline, Control date, Link to, and Stat. A detailed 8D report is printed, showing the following information:

8D Report		Protocol No.:
Link to:	rek1.2013/0002	Start date:
Customer:	BoschNěmeko	Updated:
Part No.:	DL4188972166	Closed:
Part name:	Přední maska VW Polo R445	Customer claim no.:
Quantity of defective:	15 ks	SAP No.:
D1 - Definition of nonconformity:		Responsible:
Popis neshody: Řešení neshody povrchové úpravy masky VW Polo R445. Huboké rýhy a matný povrch kolem znaku VW.		Team:
D2 - Description / Further information:		Responsible:
Popis neshody: Huboké rýhy a matný povrch kolem znaku VW.		Deadline:
D3 - Definitions for immediate action:		Completed:
Proškolení personálu a zavedení vzorkovníku vad.		Diabaja, Mgr:
Namátková kontrola výrobných děl ve výř. středisku.		Diabaja, Mgr:
100% kontrola skladových zásob		Bašáková, ing - ITC
D4 - Definition of possible causes:		Completed:
Why 1) Poškřábání při manipulaci		Responsible:
Why 2) Poškřábání v průběhu přepravy - nedostatečné balení.		Deadline:
Why 3) Nesdílný parametr procesu povrchové úpravy.		Completed:
D5, D6 - Corrective actions definition, implementation and verification:		Responsible:
Zavedení SPC pro měření koncentrace lázně		Deadline:
Kontrola účinnosti a plnění opatření.		Completed:
D7 - Definition of preventive actions and their implementation:		Responsible:
Aktualizace FMEA, Kontrolního plánu a pracovních instrukcí		Deadline:
D8 - 8D Report closed:		Completed:

Goals of quality and indicators of processes

Here you have the possibility of defining the company's goals of quality and their division to individual departments or workers. For every goal you can record the course of their fulfillment, including the defining of additional tasks for the securing of reaching the required goals. For every process, you have the possibility of defining any amount of control indicators, with the possibility of the graphic monitoring of their course.

Analyses

Fulfillment of tasks and projects for defined periods can be analyzed according to departments, control points or areas of findings.

Automatic notification to the deadlines by e-mail

The module AGENT provides automatic notification by e-mail to the required terms. The AGENT module checks in set periods the status of individual tasks and projects. In case of non-compliance with the required deadlines the responsible persons are informed by e-mail.

MODUL Auditing

The Module Auditing is designated for the managing of internal and external system or process audits.

The main functions of this module are:

- Definition of audit units
- Definition of code-lists (Auditors, Departments, Processes, Requests on departments, Method of evaluation, etc.)
- Creation of the main catalog of questions
- Creation of the catalog of questions for individual audit units
- Creation of the plan of internal audits
- Preparation for audit
- Evaluation of audit including definition of corrective measures
- Inspection of the fulfillment of the corrective measures
- Yearly summary evaluation of the audit unit.

Definition of audit units

The Module auditing is adapted for the management of audits for several audit units (for example various manufacturing plants, suppliers, production divisions, etc.) for which it is necessary to differentiate various requirements for quality control, and thereby also to secure the evaluation of the quality control system in the scope of individual units (accounts). This possibility is very useful if you're performing audits in several production divisions, in several production plants or if you're performing external audits as a service and each one of your clients has different requirements on the quality control system.

Definition of code-lists

Here you define important formation, which is used in other parts of the module. This is a matter of defining a team of auditors and maintaining records about their qualification and training, furthermore, definition of departments, processes and their relation on the requests regarding the quality control system.

Catalog of questions

The main catalog of questions serves for the defining of the requests for the QCS. For individual audit units (accounts), upon which there are placed different requirements, it is also possible to create catalogs of questions right for the given audit unit. The main catalog of questions and also the catalogs for individual audit units can be performed in a dual language form.

Creation of the plan of internal audits

For the securing of the planning of the audits, here you'll find the means for the creation of the yearly plan of audits. On the basis of the information defined in the code-lists, it is possible to utilize the function of the automatic generating of the yearly plan and the automatic assigning of elements of norms or departments for the audited area.

Preparation for audit

In this section you will find the means for the creation of the audit program, means for the generating and preparation of audit questions. It is possible to print the questions in the form for the auditor or for the party being audited.

Evaluation of audit

In this section, there are tools for the evaluation of the performed audits. The recording of discovered deviations. Point evaluation of questions and the evaluation of the success of the audit, according to the elements of the norms. Here there is also performed the recording of the defined corrective measures. For the creation of the total report from the audit, there are prepared several print sets such as summary report from the audit, discovered nonconformities, defined corrective measures and evaluated questions of the audit.

Inspection of the fulfillment of the corrective measures

For the securing of the proper improvement of the quality control system, it is necessary to perform an inspection of the fulfillment of the corrective measures. For this purpose there is the function "Inspection of measures", which will allow you to have a printout of the due measures to the given term, and the recording of the status of fulfillment of the corrective measures. The selection of the measures to be inspected can be performed according to the selection conditions which you enter, like for example the due date, the department, the responsible person, the question number etc.

Yearly summary evaluation

One of the requirements of the norms is the performing of the re-evaluation of the quality control system. One of the inputs for this re-evaluation must be the report from the performed internal audits. For this purpose, you will find here the functions for the summary evaluation of the audits and a statement of the discovered nonconformities, according to individual elements.

MODULE Claims from the customers

This is a useful tool for the securing of proper management of customer claims. Besides the basic recordkeeping of the claims, here you will find several functions for the keeping of the correspondence for the claims, evaluation of indicators, tools for analysis of claims for the required period and basic monthly overviews. Furthermore, there is available a so-called WEB peephole, which through the Internet will allow your customers to look into the status of the solution of the claims, which are related to them.

The main parts of the module Claims from the customers:

- Code-lists
- Record of claims
- The evaluation of indicators
- Analysis of claims and various views
- Monthly report (supporting of visual management)

Code-lists

This is a matter of defining the information which is used in other parts of the program. In this part it is possible to predefine the list of products, list of customers and suppliers, and furthermore, to define the catalog of the defects and the catalog of the causes of claims.

Record of claims

This is the filing of a claim and the recording of important information about the claimed product. This means – who is doing the claiming, information about the important time data regarding the solving of the claim, the claimed defects, the amount of claimed products, information about the expenses related to the claims etc. The card also contains the possibility of storing all incoming and outgoing correspondence for the claim (for example the pictures or photographs of the claimed defects or the sent 8D Report).

The screenshot shows a detailed claim card in the Q-LanYs software. The card is titled 'Reklamující' and contains the following information:

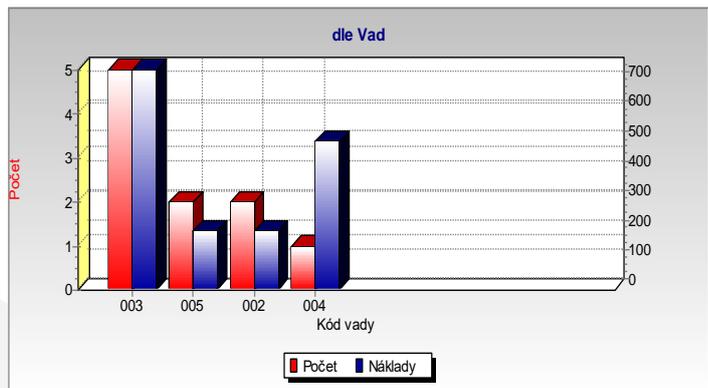
- Reklamující:** Číslo reklamace: 2008/0012, Zákazník: ARMATURY GROUP a.s., Č. rekl. zákaznika: R0393, Č. faktury: FAB373, Č. dodácho listu: , Datum dod. listu: 14.2.2008, Dodané množství: 2000 ks.
- Reklamovaný výrobek:** Kód výrobku: V03, Název: 10 9538 028 001 001, Norma/Č.výk.: SA 76S, Skupina vyr.: DĚN výroba strojní, Vyrobitel: VT Hranice s.r.o., Rekl. množství: 100 ks, Zakázka: Z536453.
- Reklamační údaje:** Datum přijetí rekl.: 17.4.2008, Datum přijetí vzorků: 29.4.2008, 8D odeslán dne: 14.5.2008, 8D Odeslat: Borský, Uzavení reklamace: 14.5.2008, Odesláni dobropisu: , Odesláni náhr. výroby: 30.5.2008.
- Náklady:** Uznané množství: 50 ks, Dobropis: 0 EUR, Č. dobropisu: , Náhradní výroba: 3500 EUR, Vícenáklady: 1000 EUR, Doprava: 2000 EUR, Náklady celkem: 6500 EUR.
- Kód vady:** Vada: Vady povrchové vrstvy, Kód vady: 007.
- Kód příčiny:** Příčina: Chyba našeho dodavatele, Kód příčiny: 004.

The evaluation of indicators

On the basis of the information stated in the claim card and the code-lists, there are functions available for the evaluation of the indicators for the development of the claims. These are the indicators for the amount of claims, volume of claims in CZK, the ratio of expenses regarding the claims to the turnover and also indicators regarding the average time of solving a claim.

Analysis of claims

From the gathered information about claims, it is possible to make a detailed evaluation according to the amount of claims or expenses for claims related to the products, customers or product groups. Furthermore it is possible to discover the type of defect or the cause, which has the largest share of claims.



Monthly and annual reports

Due to the reason for the need of reporting about the status and development of claims, there is available an output composition, which informs about the received claims in the given month, about acknowledged claims, about non-acknowledged claims from the beginning of the year and about the amount of claims which have not yet been concluded.

MODULE Claims to the suppliers

This is a useful tool for the securing of proper management of claimed deliveries. Besides the basic recording of claims, you will find here several functions for the storing of the correspondence to the claims, evaluation of indicators, tools for analysis of claims for the required period, and basic monthly overviews.

Main parts of the module claims to the suppliers:

- Code-lists (lists of materials, suppliers, catalogs of defects, catalogs of causes, etc.)
- Record of claims
- Evaluation of indicators
- Analysis of claims
- Monthly report for the company management
- Print of the protocol about defects
- Possibility of attaching the received and sent correspondence

Code-lists

This is the defining of information used in other parts of the module. In this section, it is possible to pre-define the list of materials, suppliers and catalog of defects.

Record of claims

This is the recording of the claim and the noting of important information about the claimed material, about the supplier, about important time information regarding the solving of the claim, the claimed defects, the amount of claimed products, information about the expenses related to the claims etc. A part of the claim card is also the possibility of storing all incoming and outgoing correspondence to the claims (for example of pictures or photographs of claimed defects or accepted 8D Reports).

Evaluation of indicators

On the basis of information stated in the claim card and the code-lists, there is available the evaluation of the indicators of the development of the claims. These are the indicators: the amount of claims and the volume of claims in cost.

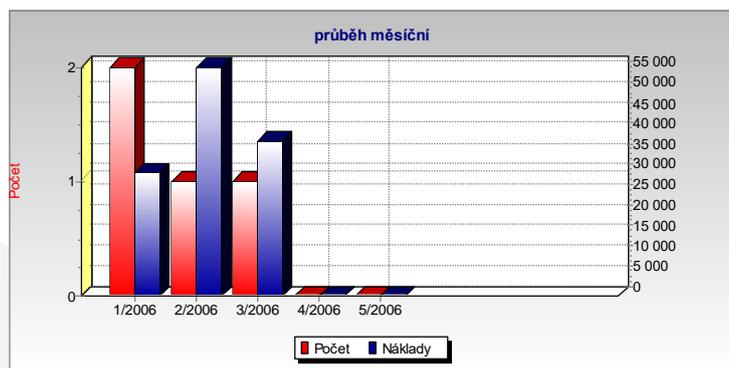
Analysis of claims

From the gathered information about claims, it is possible to make a detailed evaluation according to the amount of claims or expenses for claims related to the products, customers or product groups. Furthermore it is possible to evaluate the type of defect or the cause, which have the largest share of claims.

Monthly report

Due to the reason for the need of reporting about the status and development of claims, there is available an output composition, which informs about the sent claims in the given month, about acknowledged claims from the beginning of the year, about non-acknowledged claims from the beginning of the year and about the amount of open claims.

Vada	Kód vady
001	001
002	002
004	004



MODUL Suppliers and their evaluation

The Module "Suppliers and their evaluation" is designated for the purchase department and for the workers which are involved in improving suppliers. This module offers several tools for the securing of important information about suppliers, contact persons, tools for communication with suppliers (creation and management of written correspondence, faxes and e-mails). For the management of tasks and measures resulting from the evaluation of suppliers and negotiations with the suppliers, there are tools available which secure a perfect overview of the accepted tasks, about the course of their fulfillment, inspections of due tasks etc.

The evaluation of suppliers is performed on the basis of these indicators:

- quality of deliveries (batch and PPM evaluation)
- timeliness of deliveries
- service (user defined partial indicators of service)
- other (user defined other indicators)
- total indicator of satisfaction (weighted average of all the above stated indicators)

Main parts of the module "Suppliers and their evaluation"

Code-lists

Here you define the indicators for the evaluation of the suppliers and other information for the simplification of acquiring the record about the suppliers and their evaluation.

Suppliers

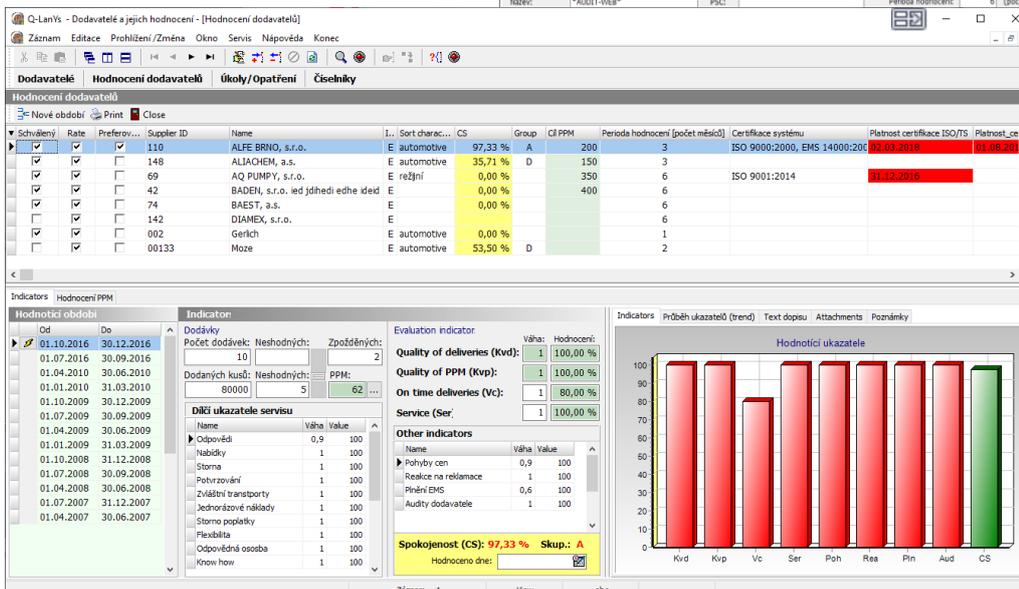
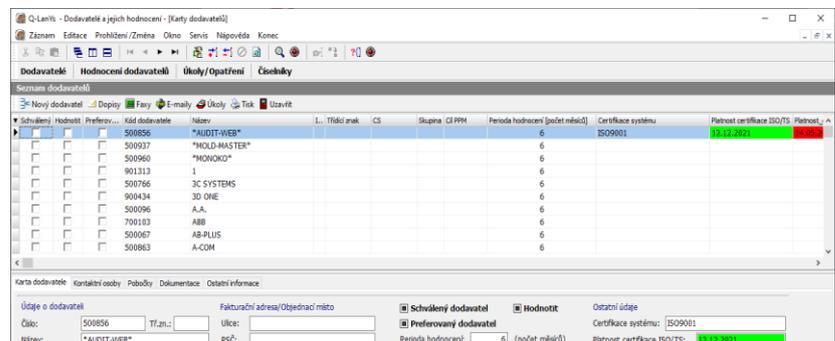
Record of suppliers, management of correspondence with suppliers and the recording of important information about the suppliers.

Evaluation of suppliers

Summary of tools for the evaluation of suppliers.

Tasks / Measures

For the management of tasks and measures resulting from the evaluation of suppliers and negotiations with the suppliers, there are tools available which secure a perfect overview of the accepted tasks, about the course of their fulfillment, inspections of due tasks etc.



MODULE Metrology

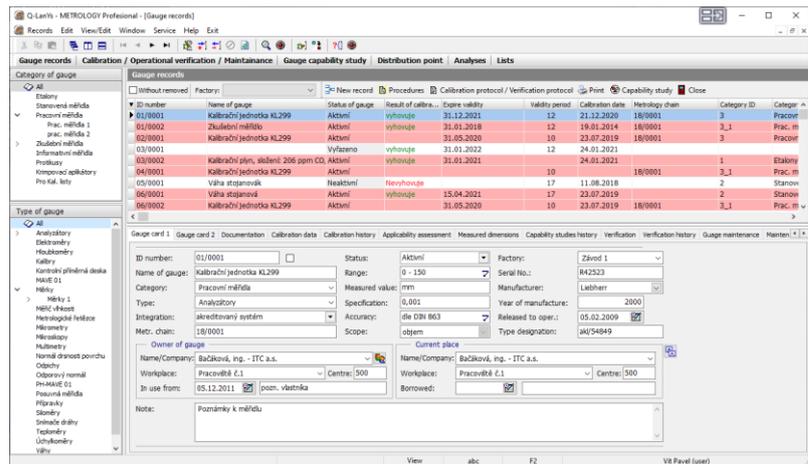
The module metrology is an effective tool for the management of gauges, measuring fixtures, and measuring devices which are subject to the metrological order.

It is delivered in three variations:

- Metrology Basic** – The most simple variation containing the record of gauges, calibration planning and the issuing of gauges.
- Metrology Standard** – Contains a record of gauges, calibration planning, performing of the respective calibrations, calibration protocols, analysis of linearity error and the stability of the engage.
- Metrology Professional** – Includes all of the functions as the standard version, plus the tools for the investigating of the gauges capability.

The basic parts of the module are:

- Code-lists
- Record of gauges
- Gauge dispensary
- Planning of calibrations
- Calibration and calibration protocols
- Evaluation of linearity error and the stability of the gauge on the basis of acquired values from calibrations
- Study of the repeatability of the gauge - Cg, Cgk
- Study of the repeatability and reproducibility R&R (GRR) (method based on range, method based on average and range, method ANOVA)
- Graphical analysis of R&R (GRR) and ANOVA
- Study R&R (GRR) of attributive gauges
- Overview of performed studies according to product



Definition of the code-lists

In order to simplify work in other parts of the program, you define the code-lists like for example, the category of gauges, types of gauges, list of products, workers, calibration centers, calibration procedures etc.

Record of gauges

For the recording and the storage of the necessary information about the gauges, there is the "List of gauges" and "Evidence card of the gauge", where you will find, besides the basic information about the gauge, also the information about calibration, history of use and repairs. The gauge's evidence card is interconnected with the program part "Calibration" and the resulting information from the calibration process is automatically transferred to the gauge's card. This is a matter of information about the result of calibration, the calibration dates, the calibration validity end, the protocol numbers, measuring uncertainties etc.

Gauge dispensary

Use the functions of the part of the program the "Gauge dispensary" for record keeping of borrowed gauges and the recording of the history of lending.

Calibration

Calibration is a useful tool for the securing of proper management and the performing of the calibration of gauges. The basic elements of the "calibration" are:

- the calibration plan securing the selection of gauges with an expired calibration due date
- recording of monitored (calibrated) dimensions
- the respective performing of calibration including the calculation of the extended uncertainty of measuring
- the display of the linearity error in the entire monitored extent of the gauge
- the course of calibrations and the display of the stability of the gauge
- printing of the calibration protocol

Study of the capability of the gauges

The Module Metrology Professional contains methods for discovering the capability of the gauge. It is a matter of a method of the analysis of repeatability and the calculation of the indicators Cg, Cgk, and furthermore, the methods for the discovery of the repeatability and reproducibility R&R (GRR). A useful function of this part of the program is the displaying of the performed studies of gauges, according to products.

Product auditing

Process product auditing check independent whether product meet technical (customer) requirements and legislation. This process shall be included to entire system of product quality management and it has to be in the line with other control processes.

To ensure process of product auditing is developed module „Product auditing“ meet above mentioned requirements. Within this module you can use tools for the planning, timing, recording of audit results, evaluation and printing of audit reports.

Main function of module:

- Control plan making
- Planning (timing) of audits
- Auditing and audit results recording
- Printing of audit reports

The screenshot displays two windows from the Q-LanYs software. The top window, titled 'Zobrazení sestavy', shows a 'Product audit plan' for the period 01.01.2008 - 29.06.2008. It contains a table with columns for Product ID, Name of product, Standard/Drawing Group, Posl. auditu, Period [days], and Next audit.

Product ID	Name of product	Standard/Drawing Group	Posl. auditu	Period [days]	Next audit
V03	10 9538 028 001 001		DIN výroba strojní	12.01.2008	90 2008/3
V01	20 9527 036 001 001	PN 6666	DIN výroba ruční	28.03.2008	30 2008/3
V02	10 9539 070 001 001	PN 3344	Vstřikovna UH	30.01.2008	60 2008/3
V04	10 9555 025 002 001		AUTO výroba ruční	16.10.2007	180 2008/4
V05	10 9570 016 001 001		DIN výroba strojní	21.04.2008	30 2008/5

The bottom window, titled 'Control instruction', shows details for a control plan 'VA-702' (Name of CP: Výrobní audit). It includes fields for 'Elaborated by' (Dohnal, Ing.), 'Version' (1), 'Valid from' (01.10.2009), 'Výrobek/Material' (001), 'Name' (Výrobek č.1), 'Drawing' (FD1554), 'Index' (RV00/DV05), and 'Date of change' (01.01.2018). Below these fields is a table of 'Required inspections and tests' with columns for Parameter ID, Parameter name, Critical, Who, Value, Unit, LSL, USL, Gauge, Gauge ID, Sample size, Tab.No., Sample size, Valid to, and Frequency [d...].

Parameter ID	Parameter name	Critical	Who	Value	Unit	LSL	USL	Gauge	Gauge ID	Sample siz...	Tab.No.	Sample size	Valid to	Frequency [d...]	U/O
001	Kontrola balení	K	K	1,000		1,000	1,000	vizuálně	E15115			1ks/paletu		1	U
002	Průměr příruby	K	K	20,000	mm	19,700	20,300	PM				3 z dávky		30	U
003	Kontrola počtu kusů v balení	O		1,000		1,000	1,000	vizuálně				1 paleta	01.08.2014	30	U
004	Tloušťka	Z		15,200	mm	15,000	15,400	tloušťkoměr				3 z dávky	01.09.2014	30	U
005	Povrch	K		1,000		1,000	1,000	vizuálně				1ks/paletu		30	U

At the bottom of the 'Control instruction' window, there is a note: 'Nepoškozený obal, správný počet kusů v balení' and a field for 'To parameter connected file: {89A88BD0-2F45-4D63-8096-C38BC8E8361}'.

MODULE

Statistical process control – SPC station

The Module SPC serves for the securing of statistical control of production and the monitoring of quality parameters of products. This system is designed to be implemented in the production process as the SPC workplace or as a tool for the quality engineer and the production foreman for the discovery of the states of the production processes.

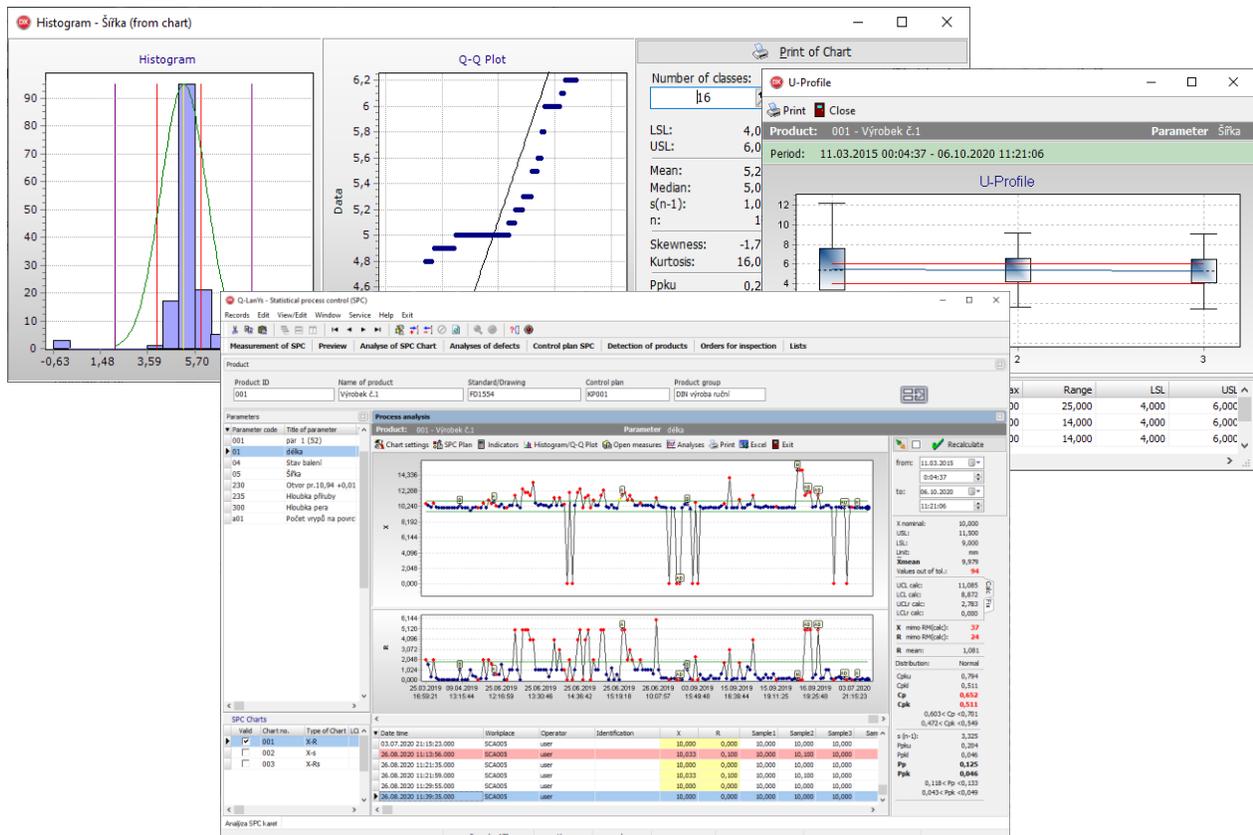
The entry of data can be performed through the keyboard or by direct reading of data from the gauges (measuring devices) connected to the SPC station. For the automatic reading of data, you can set the order of the measured parameters (SPC charts), and also the order of the measuring in the scope of the SPC chart, according to samples or parameters.

For the statistical process control are available the control charts X-Rs (chart of individual values), X-R, X-s, Me-R (median chart), p, np, u, c. During the performing of the respective measuring, the program secures immediate portrayal of the monitored characteristics into the control chart, the recalculating of the control limits and indicators Cp, Cpk. For a more detailed analysis of the monitored processes, there are available the table of important indicators of the process, the table of measured values, the histogram including the depiction of the Gaussian curve, graphic evaluation of the trend of the process and further tools enabling the selection of data for analysis.

For the monitoring of the attributive marks or the scrap of the process, there are available tools for the collection and evaluation of the attributive parameters (collection cards for defects). Described in detail, in the module "Report of rejects - Collection cards for defects".

Summary of the main elements of the module SPC:

- simple and quick definition of the SPC control plan
- tools for the calculation of the stipulated fixed control limits resulting from the requirements of the customer or from the knowledge of the variability of the process
- setting the order of measuring according to the products or according to the parameters
- possibility of direct connection with the gauges and the measuring equipment, for automatic monitoring of the qualitative parameters of the products
- the displaying of the table of measured values including the operator's name and production lot
- calculation of important statistical indicators of the process, including the natural control limits
- graphic display of the trend of the process using the course of the indicators Cp, Cpk
- function for the construction of a histogram including the depiction of the Gaussian curve
- functions for corrective action recording and indicating this one directly in SPC charts
- Function for detection of suspected product (products that do not meet required parameters)



MODULE

Report of rejects – Collection cards for defects

The module “Report of rejects - Collection cards for defects” is designated for the recording of scrap, technological losses or the monitoring of the course of attributive marks of products in the scope of the entire company. This module is designed in such a way, so that it is as simple as can be, and so that the entering of data does not take up too much time. Most of the information is taken over from the previously prepared code-lists.

The recorded defects are identified according to the period of the occurrence, the shift, the operator, the area of the occurrence (discovery) of the defect, the workplace, the department, the product, the product group and the order number.

According to all of the above stated identification marks, it is possible to perform the selections of data and to analyze them, by using the Pareto's diagram or to monitor the time flow of the scrap for the areas which you define.

This module can be integrated together with the module “Statistic process control – SPC Station” or it can be independent.

Summary of the main functions of the module:

- Pre-defining of information for speeding up the entry of data (Code-lists).
- Input form for report of rejects.
- Defining the collection of data for analysis, according to the period, the product, the product group, the workplace, the department, the operator, the order, the shift and the defect code.
- Pareto's diagrams for the discovery of what (who) has the largest share of rejects
- Time flow of scrap (daily, weekly, monthly, quarterly, yearly).
- Time flow of individual defects (p-card). An ideal tool, for the monitoring of the effectiveness of corrective measures for the lowering of scrap.
- The calculation of the indicators of scrap of the analyzed object (for example the product, the operator...), total scrap, share of total scrap and all of this according to the amount of defective parts or the price of the defective parts.

The screenshot displays the Q-LanYs software interface for reporting defects. The main window is titled "Zmetkové hlášení" (Defect Report) and shows a form for entering defect data. The form includes fields for "Číslo hlášení" (Report Number: 2021/000002), "Zapsal:" (Recorded by: Borský), "Datum:" (Date: 14.01.2021), "Směna:" (Shift: N12), "Pracoviště:" (Workshop: Pracoviště č.2), "Obsluha:" (Operator: Borský), "Kód výrobku:" (Product Code), "Číslo zakázky:" (Order Number), "Výrobní příkaz:" (Production Order), "Typ polotovaru:" (Semi-finished Product Type), and "Vyrobeno dobrých:" (Number of Good Products Made).

Below the form, there is a table for "Zápis zmetků" (Defect Record) with columns for "Kód vady" (Defect Code), "Název vady" (Defect Name), "Vadné množství" (Defective Quantity), and "Jedn." (Units). The table lists defects such as "9999 Nespecifikováno" (0 ks), "F01 Praskliny" (2 ks), "F02 Díry v povrchové vrstvě" (3 ks), and "P02 Drsný povrch (hlavní jedn.)" (0 ks).

On the right side, there is a "Přepočítat graf" (Recalculate Chart) button and a "Volby analýzy" (Analysis Options) section. The "Volby analýzy" section includes options for "Trendy zmetkovitosti" (Defectivity Trends) and "Paretova analýza" (Pareto Analysis). The "Paretova analýza" section shows a bar chart titled "Analýza zmetkovitosti - dle výrobku" (Defectivity Analysis - by Product) with a Y-axis for "Zmetkovitost (CZ) [%]" (Defectivity (CZ) [%]) and an X-axis for "Kód výrobku" (Product Code). The chart shows defectivity for various product codes, with the highest values for codes 001 and 60 9413 3014.

Below the chart, there is a table for "Paretova analýza" (Pareto Analysis) with columns for "Kód výro..." (Product Code), "Název výrobku" (Product Name), "Vadných" (Defective), "Vadných(Ce...)" (Defective (Ce...)), "ZAO", "CZ", "PCZ", "CZc", and "PCZc". The table lists products such as "001 Výrobek č.1" (290,15 defective), "60 9413 301 Tělesko konektoru" (55 defective), "47774 vyr. sca001" (13,3334 defective), "21705 vyr. sca003" (10 defective), "49016 vyr. sca002" (8 defective), and "000101002 Litahovák 000101, Program 002" (3 defective).

At the bottom of the interface, there are summary statistics: "Celková CZ: 1,60 %" (Total CZ: 1.60%), "Vyrobeno dobrých: 23306,53" (Number of Good Products Made: 23306.53), "Celková CZc: 3,34 %" (Total CZc: 3.34%), and "Vyrobeno dobrých (cena): 1885535,56" (Number of Good Products Made (Price): 1885535.56).

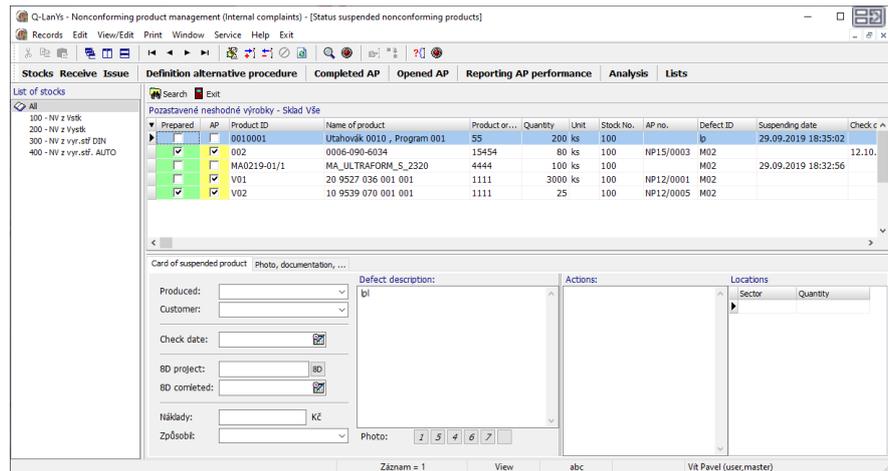
MODULE

Management of non-conform products

This module is a useful tool for the management of non-conform products and semi-finished products discovered and stopped during the course of production. By using this module, you will gain a perfect overview and control over the stopped non-conform products which are stored in the outlined areas. For the stopped products, there are available tools for defining alternative procedures for their repair or alternate use. If the user requires it, there is available monitoring of the course of the repair. For the discovery of the most occurring problems, there are available the functions for graphic evaluation of the Pareto's analyses with regards to the product, product groups and defects which have the most share in the amount of stopped products. For the discovery of trends in the amount of stopped products, there is available the graphic display of time flows of the analyzed indicators.

The main parts of the module

- Code-lists
- Stocks of non-conform products, receiving and shipping from the stock
- Definitions of alternative procedures
- Monitoring the course of fulfillment of the alternative procedures
- Analysis of the stopped products

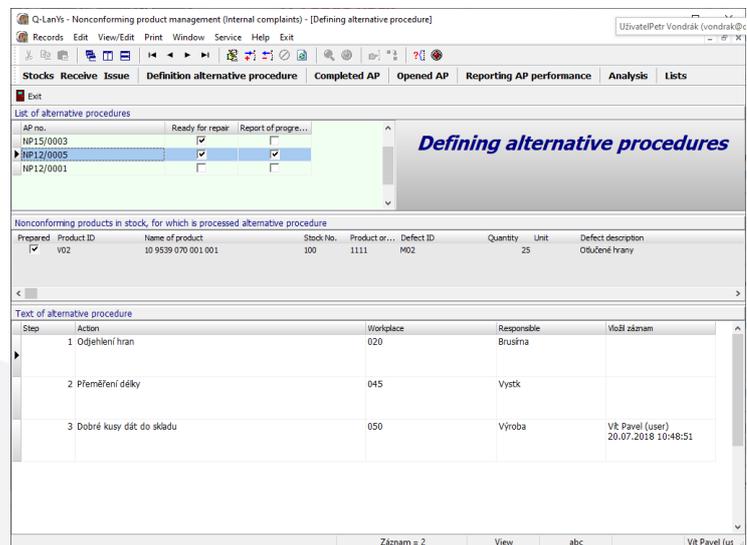


Definition of the code-lists

In order to simplify the acquiring of data in further parts of the program you define the code-lists like for example: Persons, stocks, production, catalog of defects and others.

Stocks of non-concordance products, receiving and shipping from the stock

The discovered non-conform products are stopped and placed into the special areas (stocks) designated for non-concordance products. The stopped products are recorded on individual stocks. Through this part of the program, you gain an overview about the stopped products on the NP (non-concordance products) stocks, and furthermore about the status of the processing of the alternative procedures and the preparation of the product for repair.



Definitions of alternative procedures

In this part of the program, there are available tools for the creation and the printing of alternative procedures and their changes.

Monitoring the course of fulfillment of the alternative procedures

If it is required by the user, then there is the possibility to record and to monitor the course of the fulfillment of the alternative procedures and thereby to gain a perfect overview about the course of the repairs of the non-conform products.

Analyses of the stopped products

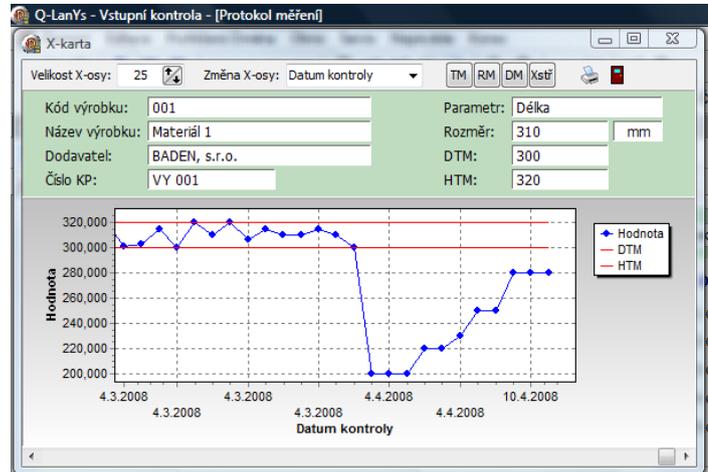
Here there are available the functions for the Pareto's analysis of stopped products, according to the type of product, product group and defects. For the monitoring of trends, there is the possibility of the time flows of the analyzed indicators.

MODUL Incoming inspection
MODUL The first part releasing
MODUL Final inspection
MODUL Test rooms and Laboratories

The modules are designated for the support of batch releasing of incoming material, semiproducts and final products.

The following functions are covered by this module:

- The creation of inspection plans
- Planning inspections for periodical tests
- Recording and evaluation of measuring, including the printing of the releasing protocols
- Support for the creation of exceptions during the discovery of nonconformity
- Displaying of the X-card during the course of measured parameters (possibility to set intervention limits)
- Support for the analysis of the most occurring defects using the Pareto's diagram.
- Possibility read data from on-line connected gauges and test equipments.



Creation of inspection plans

Here you have the possibility to define, for every material, the required inspection plan. In the scope of the inspection plan, you define the required dimension including the tolerances, the size of the selection, the amount of tests, the intervention limits, the prescribed measuring device, the defect code and others.

The planning of inspection of deliveries

In the case of defining periodical tests, the validity of the performed measuring is automatically inspected and a printout of the tests is performed, which have to be measured for the given batch.

Kód parametru	Název parametru	hodnota	jedn.	DTM	HTM	měřidlo	Celost.	Platnost do	U/D	Výběr	Vyhodocení	Vyhov.	Min. hodnota	Max. hodnota
p001	Délka	310	mm	300	320	Posuv. měřtko	30	14.6.2008	U	3ks/dodávku	✓	✓	300	325
p002	Sířka	30	mm	29	31	Posuv. měřtko	30	14.6.2008	U	3ks/dodávku	✓	✓	28	32
p003	Tloušťka	3	mm	2	4	Posuv. měřtko	1		U	3ks/dodávku	✓	✓	2	4
p004	Tvrdost	60	Sh	60		Tvrdoměr	1		O	1ks/dodávku	✓	✓	59	65

Record of measuring and evaluation of the delivery

During the recording of the measuring the value is immediately evaluated towards the tolerance limits. On the basis of the result of measuring, you have the possibility to print the protocol for the releasing or for the non-releasing of production.

Analysis of recorded data

For the detailed analysis of the measured deliveries, there are statistic tools available, enabling the analysis of recorded data for the certain period, supplier, material or other sets according to your definition. Required data are possible to evaluate using X-chart

Analysis of non-conform deliveries

The Pareto's analysis is available for the analysis of defects, which are mostly involved in the non-conform deliveries.

Preventive and predictive maintenance with spare parts management

The module Preventive and predictive maintenance is useful tool for workers in maintenance area and workers responsible for spare parts management. In this module you have functions that ensure perfect summary of machines and their state. Maintenance planning relate to planning of repairs and warehouse of spare parts management. By this module you can achieve increasing of productivity and efficiency in all activities relating to preventive maintenance.

Workers responsible for spare parts management have functions for summary of spare parts state, tools for intake and output spare parts and functions for spare parts ordering.

For watching of preventive maintenance efficiency you have tools for repairs analysis and analysis of machine parameters trends. Repairs are evaluated according to:

- Number of repairs
- Costs of repairs
- Time of repairs in hours and man-hours

The main functions of module:

- Summary of machines and instructions for preventive and predictive maintenance
- Preventive maintenance and Repairs planning
- Reporting of maintenance
- Equipment failure (breakdown) management
- Repairs of machine management
- Spare parts management
- Spare parts ordering
- Analysis of maintenance and repairs

The screenshot displays the Q-LanYs software interface, which is divided into several functional areas:

- Register of machines:** A table listing machine details such as Key, Machine code, Machine name, Serial No., Cycles status, Group machine, Producer, Sort character, Guarantor name, and Machine ID. A 'Diagnostika' window is overlaid on this section, showing a line graph titled 'Měření vůle šneku' (Gear backlash measurement) with data points from 0.2 to 0.4 over time.
- Spare parts management:** A table showing inventory levels for various parts, including SP code, SP name, Group code, Name of group, Location, IQ, AQ, and Quantity in stock. A 'Store and allocation SP' window is also visible, providing details for a specific part like 'Ložiska #25', including its location, stock levels, and pricing.
- Machine details:** A 'Card machine 1' window provides specific information for machine code 001, including its name (Soustru H55), type (T6456564), and machine capacity (1000 KW).

