

MPG – The user defined measuring program

The measuring program supports directly the operator activities to be performed at the measuring station, providing quick and safe data collection, automatically interpretation of the collected data on an adequate level of operator, the making the operator's work technologic.

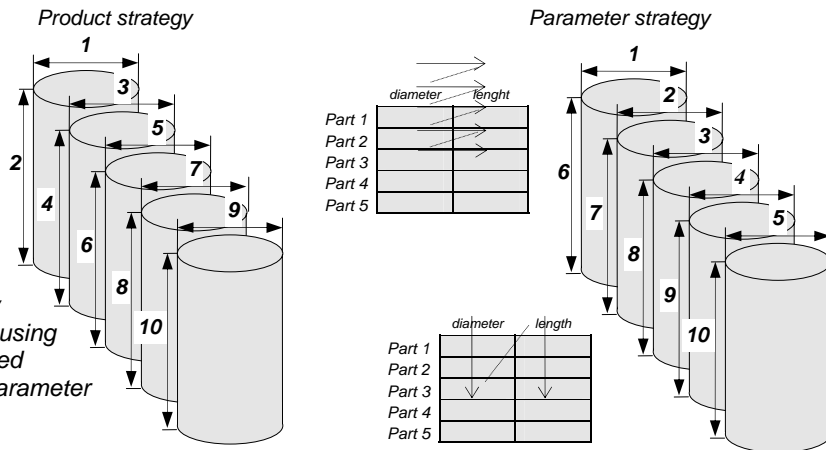
- Measuring program can be assigned to an operator or a group of operators.
- Sampling rate can be specified.
- The measuring program can contain prescriptions for more measured and attributed parameters simultaneously.
- Capable of handling samples with different sample sizes.
- The order of measurements and qualifications (by products, by parameters, more gauges in one measuring equipment) can be specified.
- Measurements can be performed using directly data transmitting from the gauges.
- Multilevel possibilities of re-measuring.
- Support measurement by measuring equipment - 'device' strategy -.
- Pictures** can be displayed during the measuring process.
- Operator's **control charts** can **automatically** be displayed after the measurements and tests.

Sample Codes dialog box showing fields for User ID (bk), Sampling time (2009.03.18), Shift (II), Team (hns), Mask (123456-02), and an Ok button.

HNS SPC - Rivet measuring and qualification A dialog box. It shows product details (S49548-T), workgroup (A-10), machine (A-11), and measurement parameters (USL: 6.70, LSL: 6.10). It includes a table of measurements for overall length, head length, stalk length, head diameter, and stalk diameter. Buttons for Start, Chart, Save, and Close are visible.

MPG Abort dialog box with options: Repeat, Back, Abort, and Choose MPG abort mode...

The product and parameter strategies of MPG serve for controlling data inputs by manual measuring gauge or by keyboard. May be read more measuring gauges parallel using the device strategy - after putting a piece into an integrated measuring equipment the program reads all measured parameter value at one step -.



Our users:

- GE Hungary, (Light production)
- GE Lighting North America,
- Knorr-Bremse Ltd.,
- FCI Connectors Hungary Ltd.,
- FAG Hungary Ltd.,
- LEAR Corporation Hungary Ltd.,
- Karsai Plastic Holding
- Vincotech Hungary Ltd.,
- ...
- Technical University of Budapest, Department of Machine Production Technology,
- ELTE, Department of Probability Theory and Statistics,
- University of Miskolc, Department of Machine Production Technology,
- Jedlik Ányos Technical and Informatics High School,
- ...

Registered users of the last or the previous version.

System requirements

- IBM PC (min. Pentium 4),
- 1 GB RAM,
- SVGA (1024x768),
- Windows 2000, Windows XP, Windows Vista, Windows 7.
- File server (in case of xBase database)
- Oracle, Microsoft SQL database server (in case of SQL database)

HNS SPC

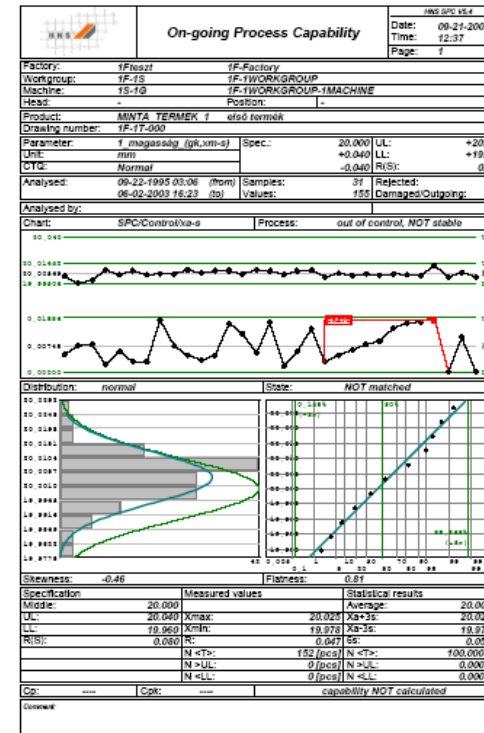
Statistical Process Control and Quality Assurance



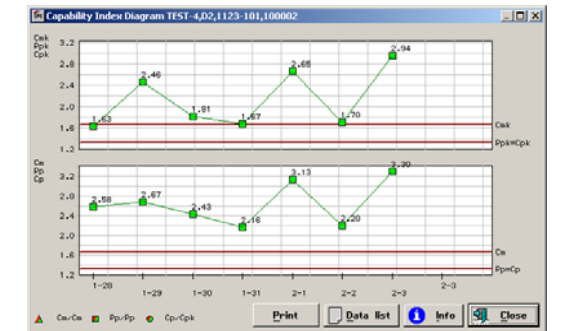
HNS SPC main interface showing 'Start (Log-in)' and 'Exit' buttons, along with system information like date and time.

Mathematical-method-based statistical process control and quality assurance make up an important part of the means of company's quality assurance systems. Process control and quality assurance make it possible for us to learn more about manufacturing procedures and provide the proper handling, monitoring and controlling of them.

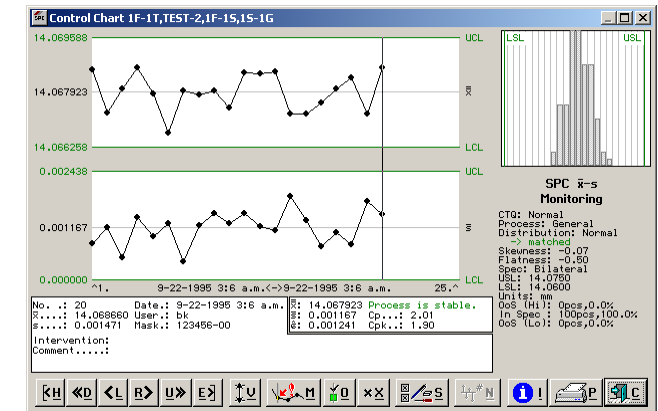
The HNS Ltd. has been offering its HNS SPC program since 1990 and due to the permanent work we have already developed version 5.5. During the development we are adding our theoretical experience and the practical experience of our users into the system in order to satisfy the needs of our partners as much as possible and to meet the requirements becoming increasingly stricter.



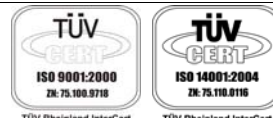
- Native 32 bit **Windows** application.
- Support for **xBase** and **SQL** - Oracle and Microsoft SQL - databases.
- Individually or network operation.
- Variable** and **attributive** parameters supported in one integrated system.
- The relational database structure provides recording your process data.
- There are **password-protected functions** for all manufacturing levels - operator, plant leader, quality engineer.
- Data input from keyboard and **direct data input** from gauges.



- Converted measurements** using built-in functions.
- Takeover data from DataConnect interface** (CMM).
- Wide-range SPC analysis**, facilities for documentation results and settings in English and Hungarian language.
- Technology of measurement and analysis can be defined for operators, predetermined **measuring task** can be performed.
- Possibility of **data exchange** with external measuring and data acquisition systems.
- Direct data exchange possibility to **HNS Geometry-2D** measuring program.



- Preparation of **quality certificate**, which can contain summarized capability and defect data by product.
- Assistance functions to listing identifiers and settings, archiving, copying databases or part of database, export, import.



H-9027 Győr, Industrial Park, Gesztenyefa u. 4.
 Phone: +36 (96) 506-930
 Fax: +36 (96) 506-931
 E-mail: office@hns.eu
 Web: www.hns.eu

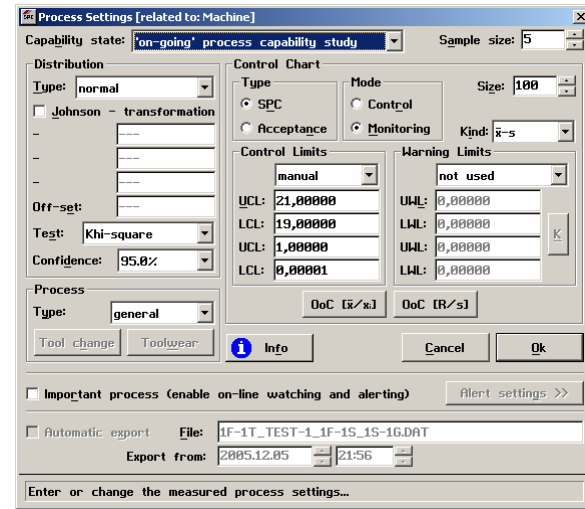


H-9027 Győr, Industrial Park, Gesztenyefa u. 4.
 Phone: +36 (96) 506-930
 Fax: +36 (96) 506-931
 E-mail: office@hns.eu
 Web: www.hns.eu

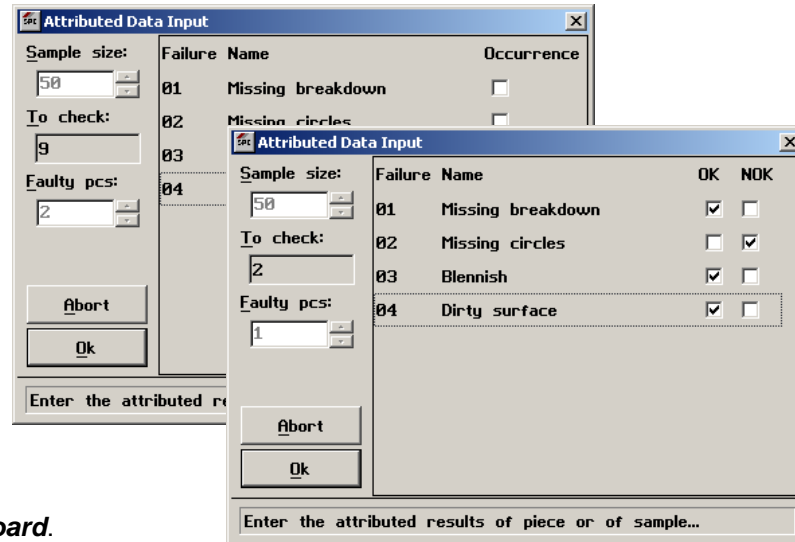
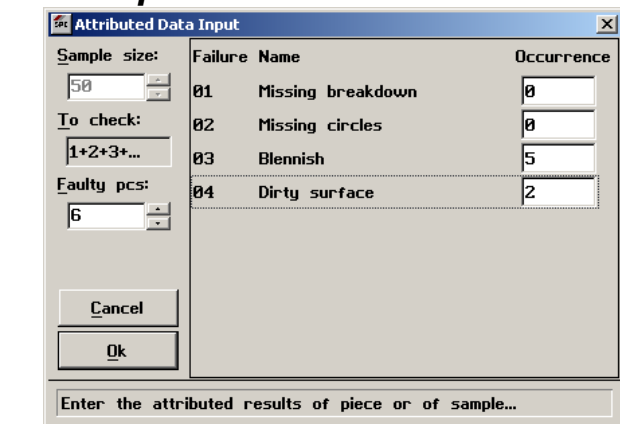


Database

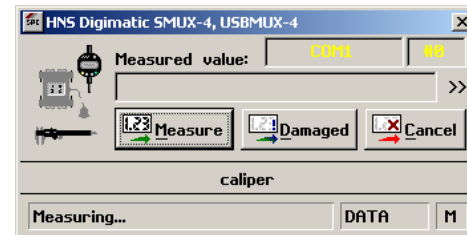
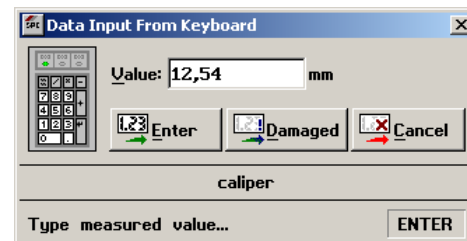
- Structured database with close approach to the manufacturing system - database contains SPC data of more factories - . Multiple production processes supported; there is a possibility to acquire and analyse data of simultaneously processes of a product, when a product made by more production place. Main and sub-processes are supported too.
 - Workgroups - machines (head, position).
 - Products - measured parameters.
 - Products - failure groups.
 - Machine - parameter and machine – failure group assigning for processes.
- Adjustable database terminology, the users can set their local terminology.
- Possibility of separation of processes to head and position in the case of **multi-heads** and **multi-positions** machines.
- More identifier data can be assigned to the samples.
 - Sampling date and time.
 - Operator ID.
 - Shift and team ID.
 - Tool ID.
 - General mask ID for selecting of data according to the desired purpose (e.g. LOT number).
 - Outstanding status of a whole sample or a measurement in sample.
 - Intervention name and optional text comment.



Data input

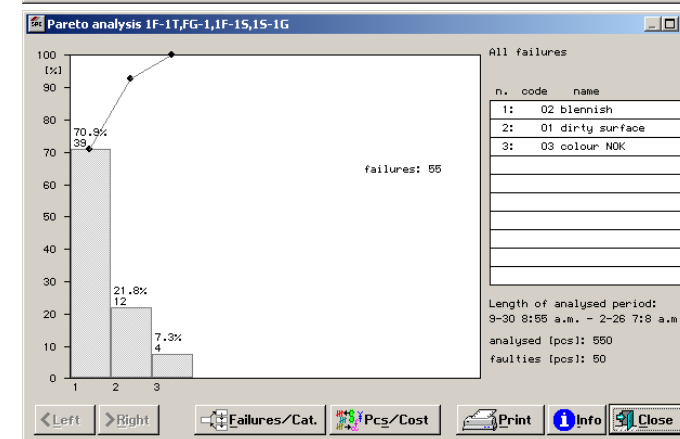
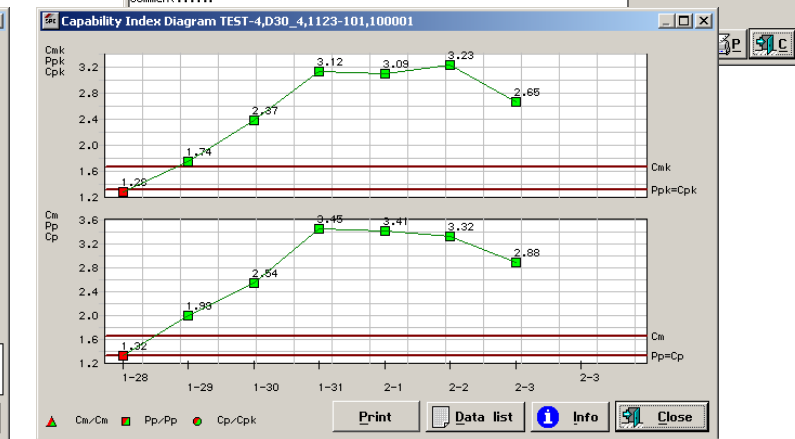
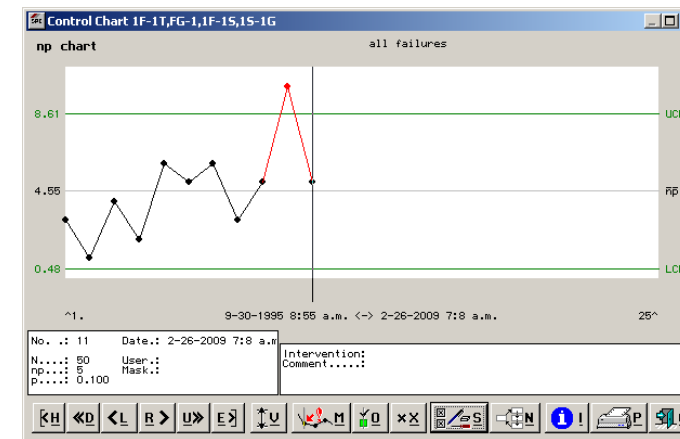
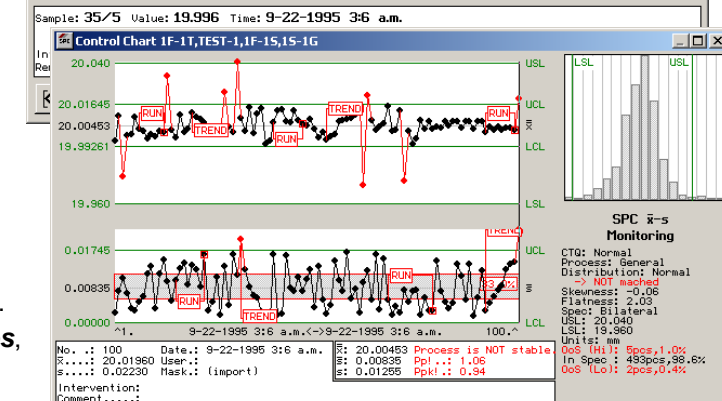
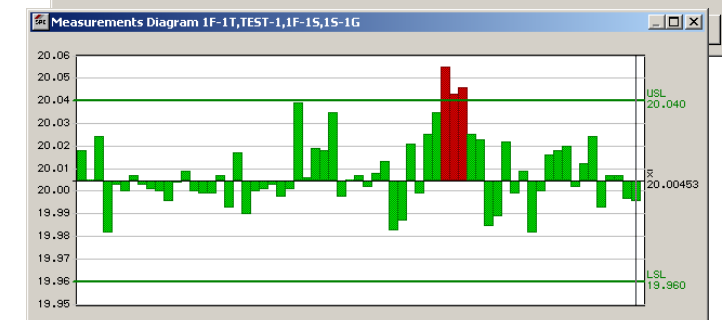
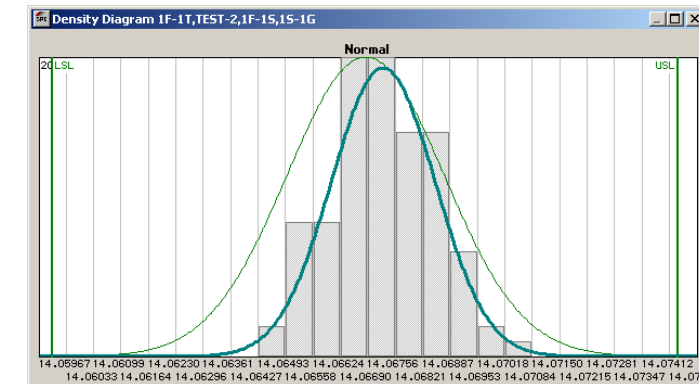


- Input of variables and attributive data **from keyboard**.
- Attributive data can be input **in one step** - summarised attributive data of all pieces in tested sample can be input in one step - or piece by piece - the test results of the single elements of the sample can be input piece by piece -. In case of **piece by piece** input the program counts rejected pieces automatically.
- Measurements from **directly connected gauges**.
 - MAV Digital tester,
 - Simplex and duplex Opto-RS232 gauges (TESA, Bowers),
 - KERN EC, METTLER, Sartorius, Precisa precision scale,
 - Mitutoyo Digimatic family - HNS SMUX-4, USBMUX-4, USBMUX-8, Mitutoyo Digimatic MUX-10 and MUX-50, Mitutoyo DP-1HS, Mitutoyo DMX-1, DMX-3, DMX-8 és DMX-16 interface,
 - Gretag DensitoMeter,
 - Dr Lange colours gauge,
 - AMETEK AccuForce family - force and torque gauges - ,
 - HEIDENHAIN length gauge with counters - .
- Analog-signal measuring with PC cards (wide-range adjustment and special peak measurement possibilities).
- Data loading from **external data loggers** using RS-232C interface,
 - Mitutoyo MicroPak mkII two dimension evaluation unit,
 - Mitutoyo DL/DT-10 data collector,
 - Mitutoyo DP-3DX és DP-7 Mini-Processor.
- ASCII file export and import by adjustable format.



Analysis

- Machine capability**, preliminary and on-going **process capability** studies and reports.
- Automatic detection of **outstanding values** and **outstanding samples**.
- Six **several distribution types**; Johnson-transformation normal lognormal Weibull Rayleigh folded normal.
- Automatic **parameter estimation** of non-normal distributions.
- Four distribution best-fit tests with selectable confidence levels.
- Dynamic attitude examination of process using **bar chart of measured values**. Direct set possibility on the diagram for outstanding value and damaged measuring status.
- Wide range of control charts for measured processes to **process control** and **monitoring**, and control charts with control limit calculated from tolerance limits;
 - $\bar{x} - R$ $\bar{x} - R$ $x_i - R$ $mx - mR$
 - $\bar{x} - s$ $x_i - s$ $mx - ms$
- Attributive control charts (individual charts for all failures and failure categories);
 - np p c u
- Automatic **calculated** and **fixed** control limits with optional warning limits.
- Automatic **Out of Control analysis** using user configured detection strategies by processes;
 - CL violation Middle-Third TREND RUN
 - Near to limits Western Electric - rules.
- Warnings on violation of distribution and when capability index goes below **user expected limit** (individual index specifications for all process and types of capability studies).
- Special support for **Tool-Change** and **Tool-Wear processes**, specific parameters calculated automatically.



- Sample status changing** directly on displayed control chart.
- Pareto analysis with operator's interventions frequencies.
- Capability index diagram for defined time. Capability index can be calculated for user-defined period - by a month, a week, a day, or more days.
- Pareto diagrams** for all failures and for failure categories inside failure list. Pareto diagrams with summarised data regarding a selected product or regarding a selected machine.
- Pareto analysis can be based **on frequencies** or **costs**.