Examples of Measuring System Construction

The following introduces system construction examples in which the measurement results from various Mitutoyo measuring instruments are recorded and integrated as quality information.

- **When recording measurement results:**
  - **To avoid handwriting**
  - **To input data to a PC**

- **When requiring the packaged software dedicated to inspection and quality control:**
  - **To perform statistical process control**

- **When networking quality information dispersed in factories:**
  - **To centralize and share the quality information of measurement results**
MeasurLink Family
Measurement Data Network System

Centralized management of data dispersed in factories

MeasurLink SPC Process Analyzer
Process analysis

MeasurLink Manager
Process monitoring

MeasurLink STAT Measure
STAT Measure PLUS
Inspection information record

MeasureReport
Inspection report creation

Database server
Centralized management

Machining shop floor

Factory/shop floor

Inspection
report creation

Office

LAN

Data acquisition (from system products)

MeasurLink Real-Time
Real-Time PLUS
Data acquisition (from system products)
The Measurlink Quality Management Software combines real-time data acquisition, on-line SPC analysis, integrated networking, and quality information sharing into a comprehensive solution for your company. The Measurlink family consists of a number of different software modules that allow users to determine the level of depth they want in a quality management system. Starting with a Real-Time package, users can acquire and analyse data in real-time and check variable, attribute and short-run inspection to maximise production and minimise defects. Other Measurlink packages allow for management of the manufacturing process, process analysis, gauge management, gauge repeatability and reproducibility, gauge tracking and statistical analysis.

### Basic Software
- **Data acquisition & real-time process control**
  - SPC Real-Time (PLUS) for Digimatic instruments
  - STATMeasure (PLUS) for measuring system products

### Related Software
- Inspection report creation
  - MeasureReport
  - MS-Excel (separately sold)

### Optional Software
- **Process monitoring**
  - Measurlink SPC Process Manager
- **Process analysis**
  - Measurlink SPC Process Analyzer
- **Gage R&R**
  - Calibration history management
  - Measurlink Gage Management

**Package name**
- **Basic software**
  - Measurlink SPC Real-Time (PLUS) (for Digimatic instruments)
  - Measurlink STATMeasure (PLUS) (for measuring system products)
- **Optional software**
  - Measurlink SPC Process Manager (for process monitoring)
  - Measurlink SPC Process Analyzer (for process analysis)
  - Measurlink Gage R&R (for gage R&R calculation)
  - Measurlink Gage Management (for calibration history management)
- **Related software**
  - MeasureReport (for inspection report creation)

Note: Database software is separately required for network construction.
This software performs data acquisition, registration, and real-time statistical processing.

**Major specifications**

- Control chart by indiscrete value: X, X-S, X-Rs, pre-control chart, histogram, dia-chart, run chart, short-run X-R, short-run X-Rs
- Control chart by discrete value: p, pn, c, u, Pareto diagram
- Statistical calculation item: Mean, maximum value, minimum value, percent defective, standard deviation, Cp, Cpk, CR, CPL, CPU, Pp, Ppk, PR, X, Rbar, means 2s/4s/6s, PPM
- Check item: Out-of-tolerance, out-of-control limit, luck, trend, vibration trend, various checks based on sigma, others
- Alarm level: Select one from among four levels, (1): none, (2): status bar setting display, (3): beep sound + (2), and (4): pop-up window + (3).
- Item information: Part name, item name, measurement value, design value, upper limit value, lower limit value, sub-group No., sample data No., revision No., process ID
- Result: Cp, Cpk, Pp, Ppk, standard deviation, X, R, MAX, MIN
- Chart: Select optionally from various control charts and meter charts, histogram, box whisker, indicator bar, and control indicator light.
- Additon of part history/process history information: Historical information about operator, machine tool, delivery destination, purchase destination, etc., can be registered and printed. This information can be used for analysis with "ML Analyzer".
- Statistics report: Report print function that can optionally mix charts and statistical values.
- Integrated report print based on part in a fixed format.
- Security function: The administrator can set the restrictions on operation range and read/write according to the content of user task.
- File input/output: Input/output of text data.

**Recommended Operating Environments**

*The specification in parentheses ( ) indicates that of servers.

**OS**: Windows95/98/NT4.0/2000

**Database**: Sybase SQL Anywhere*

**CPU**: Pentium II 266MHz (333MHz)

**Memory**: 128MB or more

**Hard disk**: 500MB or more (1GB or more)

**Display**: SVGA

**Others**: CD-ROM drive, keyboard, mouse**

* If used in a network, it is necessary to purchase the database license according to the number of servers and clients.

** If used in a network, the parts comprising the network environments such as LAN card, LAN cables and hub are required.

** MeasurLink SPC Real-Time (PLUS)

Real-time Process Control Program (for Digimatic Instruments)

**MeasurLink STATMeasure (PLUS)

Real-time Process Control Program (for Measuring Instrument Products)

Visceral and user-friendly measurement screen

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MeasurLink SPC Real-Time (PLUS)

Real-time Process Control Program (for Digimatic Instruments)

MeasurLink STATMeasure (PLUS)

Real-time Process Control Program (for Measuring Instrument Products)
Optional Software

MeasurLink SPC Process Manager
Process Monitoring Program

- Displays the list of entire process states to check process in detail.
- This program can monitor each inspection process state on the network even in the QC office.
- This program quickly notifies the administrator of a problem that occurs in a process with the alarm function.

MeasurLink SPC Process Analyzer
Process Analysis Program
- This program supports verification of problems through various analyses according to historical information (such as environment, time, machine tool, and operator) about parts and processes using the database in which data has been acquired and accumulated by MeasurLink SPC.
- This program allows differential analysis under a specific condition with the filter function and grasp of long-term trend with the combination function.

MeasurLink Gage R&R
Gage R&R Assessment Program

(1) Selection of an assessment method
Select one from among seven assessment methods.
(2) Selection of trial conditions
Select the number of assessors, number of parts, and number of trial times.
(3) Measured data input

Display of evaluation results
(1) Gage R&R
(2) EV (Equipment Variable)
(3) AV (Assessor Variable)
(4) PV (Part Variable)
Analysis charts (5 types)

- This program can perform gage R&R assessment required by QS-9000 in simple operation.

MeasurLink Gage Management
Calibration History Management Program

- This program allows historical record of each measuring instrument operating states to support proper management of calibrations without omission with the powerful search function.

Powerful search function using an optional item (e.g. next calibration date) as a keyword.