AESA CORTAILLOD

SoftDLC 2.0

SPC
Statistic Control System

Actual Value **74,11**

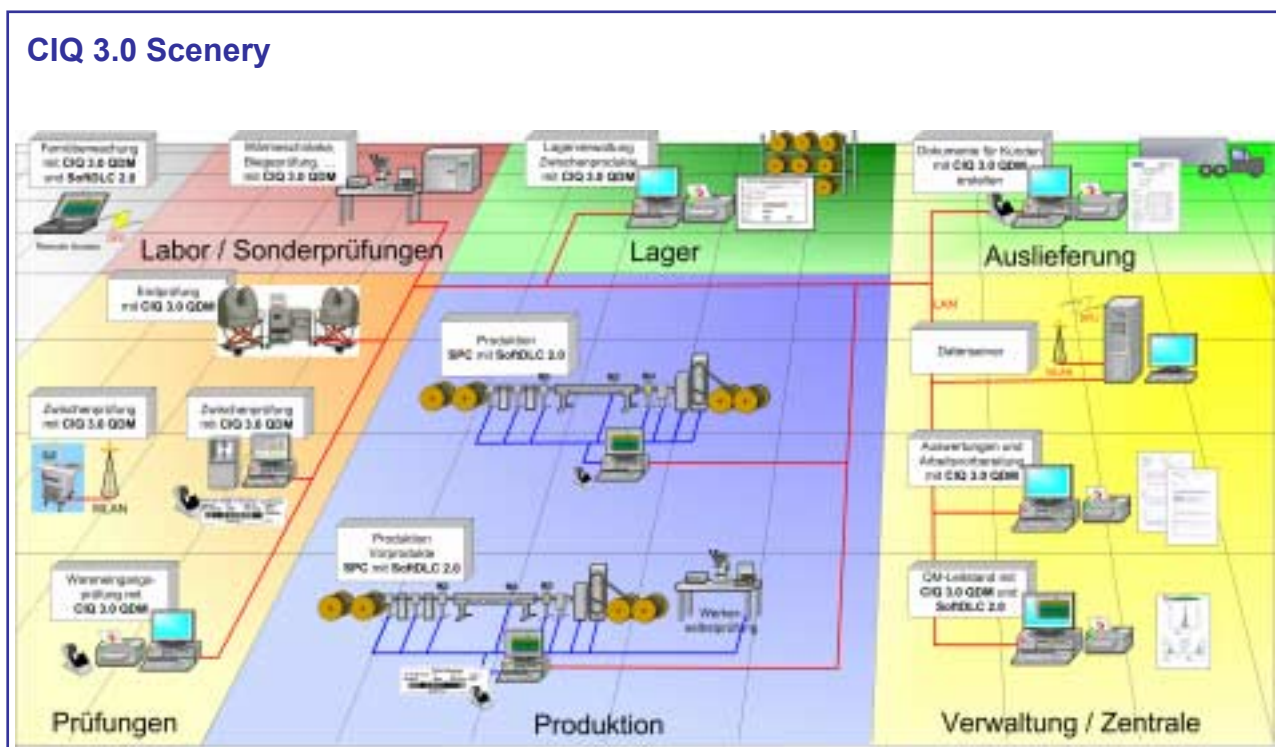| Upper Value	Lower Status	Mean Value	σ
81,32	73,86	74,39	1,030

Cold Ovality
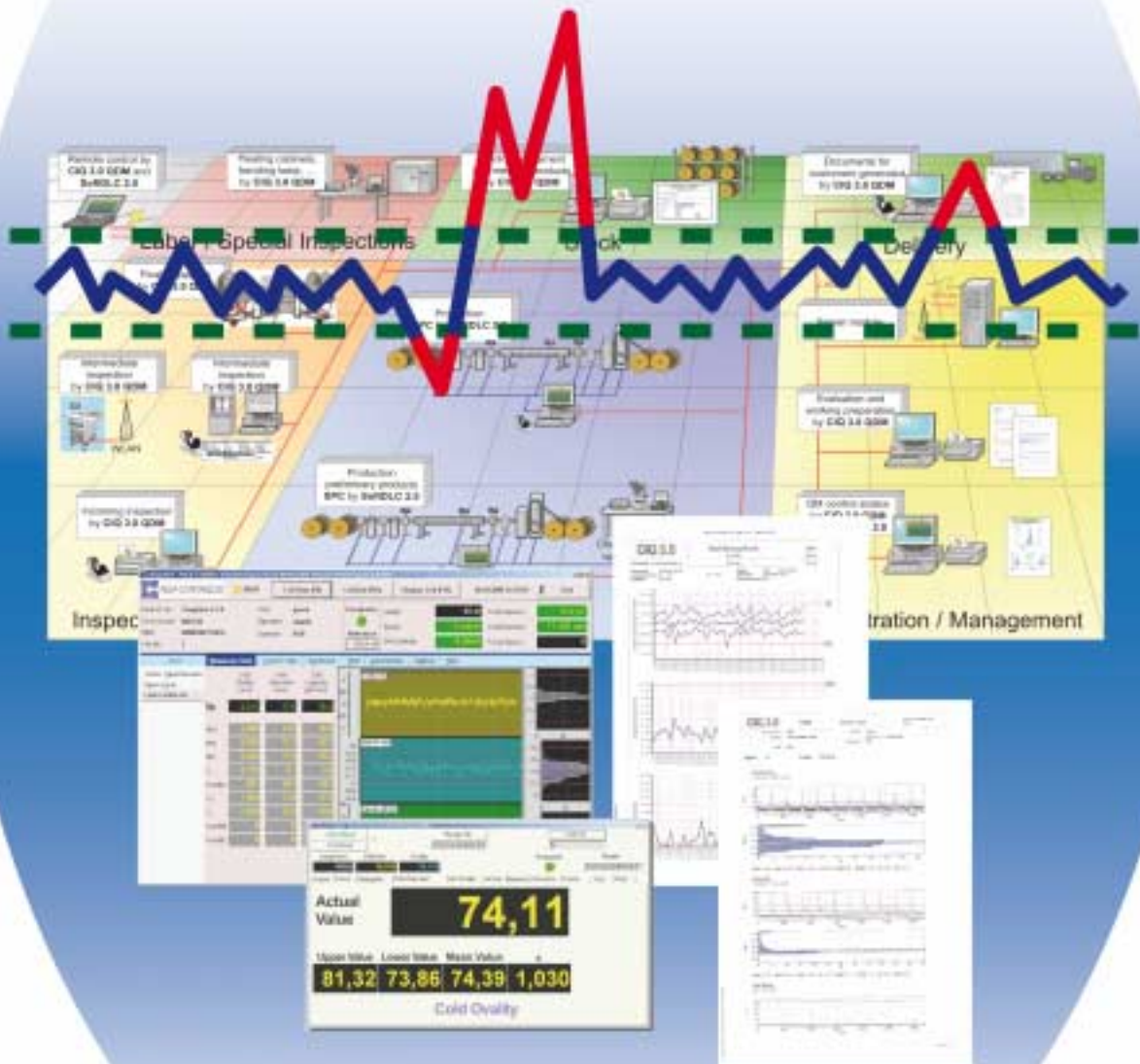
Process Data Acquisition and Visualization

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CIQ 3.0 Scenery

## 1   Process Data Acquisition and Visualization with SoftDLC 2.0

SoftDLC 2.0 is a module of the CIQ 3.0 software solution for quality assurance in the cable and conductor industry.

It continuously captures all process data necessary for monitoring and logging product quality and visualizes these data during the running production process. By visualizing the measured values at the production equipment and the control station it is possible to identify trends at a very early stage during production and take corrective measures before defects occur. This ensures that only completely flawless material leaves the factory.

In the event of an occurring defect or violation of tolerance limits by the measured data or operating data, SoftDLC 2.0 can immediately trigger different types of alarms. The earlier deviations are noticed and remedied, the fewer defects occur. This means: constant quality at reduced production costs.

The captured and archived data provide the basis for provable quality documentation for the customers. SoftDLC 2.0 fulfils the requirements of statistical process control (SPC). It provides the basic data for the analysis of weak points and hence the prerequisites for permanent process improvement.

Linked with CIQ 3.0-QDM the program centrally stores the measured, operating and administrative data. Additionally the process data can be displayed on other computers within the network or relayed via long-distance data transmission.
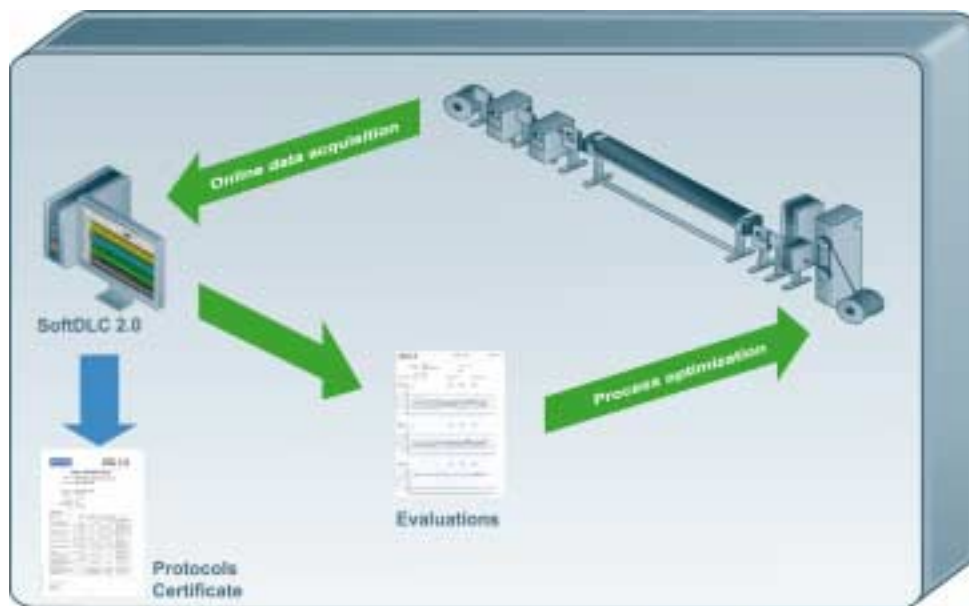

Quality monitoring and control evaluations can be created in the form of reports, labels or certificates. It is also possible to transmit data to other EDP systems (for example, material management systems such as SAP), send them as e-mail messages, export them to SQL evaluation databases or store them in dedicated file formats (for example, XLS for Microsoft Excel or as a PDF).

Together with CIQ 3.0-QDM, data (such as design data or tolerance values) can also be shared with other EDP systems (for example, SAP).

As the user interface of SoftDLC 2.0 and the system drivers can be adapted and configured to individual requirements, operation of the system is handy and highly user-friendly. Help menus and instructions – configurable by the user - support the operating staff at the production line.

2   Process Data Acquisition with SoftDLC 2.0

SoftDLC 2.0 captures the data generated by all measurement equipment installed along the production line.
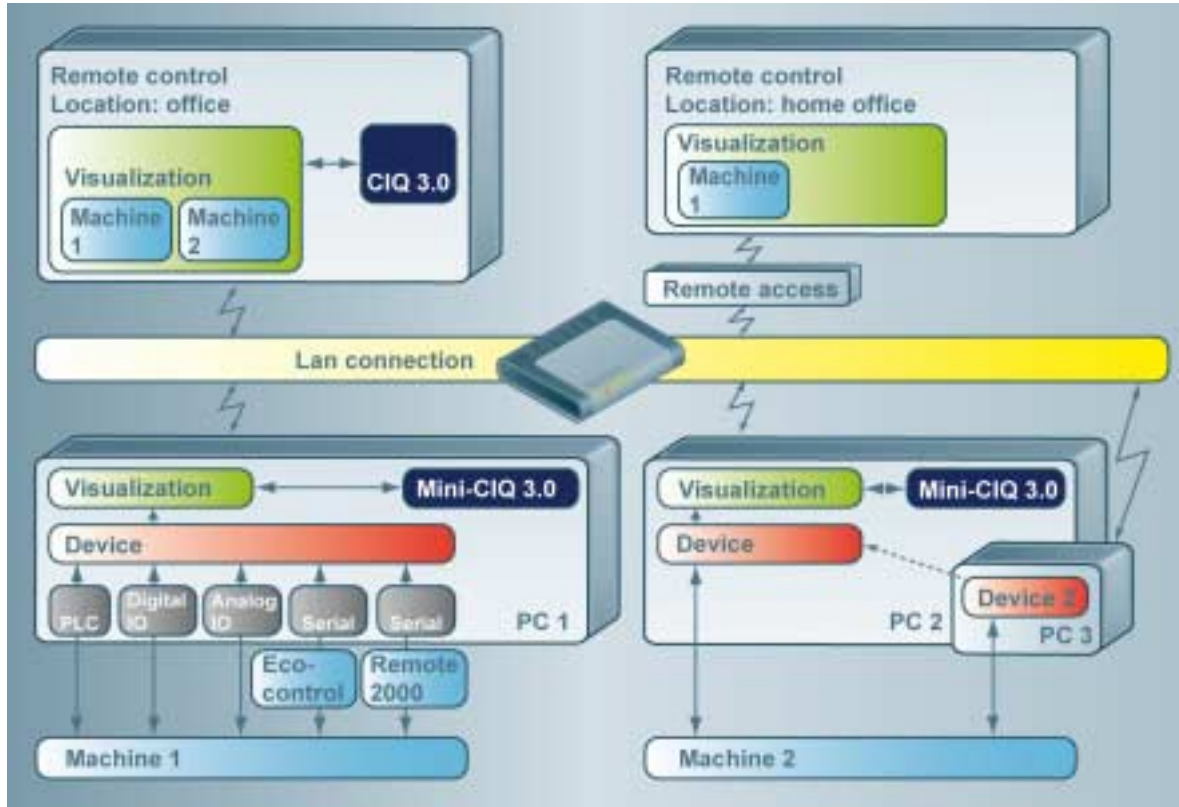
SoftDLC 2.0 provides interfaces with data sources such as:

- Beta LaserMike:
  - Controls, e.g. BB1000,
  - Diameter and ovality measurement systems BetaAccuscan
- Sikora
  - Ecocontrol 2000, Remote 2000
- Extrumatik
  - Controls
- Siebe
  - Controls
- Zumbach
  - Controls, e.g. USYS
- Leimbach
  - Control
- Other PLC via serial interface
- Analog / Digital I/O boards
  - Plug-in cards for PCs
- USB interface
- OPC 2.0
- and others.

Please contact us for information about special interfaces, if your inspection equipment is not included in the above list. The adaptation effort for new devices is minimal. Other device drivers can be programmed to customer specifications.

The current status of production (for example, stable production / start up production) can be directly influenced via dedicated control buttons. Function keys and ALT key codes these buttons may be allocated to these buttons.

SoftDLC 2.0 supports the acquisition of administrative data (such as coil number, coating, colour) via intuitive input masks.

Apart from these features the software logs all events, administers a log file and generates event, material and operator lists. It also sends label or report printing requests to CIQ 3.0-QDM.

Alarm function

SoftDLC 2.0 recognizes and signals tolerance violations. The alarm can take different forms:

- The operator at the line can be made aware of an alarm directly on the screen display by switching colours, other graphical effects or message windows. The alarm type can be individually configured by the user.

- The alarm can be flagged on all visualization devices (also remote control devices) interfacing with the respective SoftDLC 2.0 driver of the production plant.

- Sending of error emails and SMS, if linked with CIQ 3.0.

3   Visualization
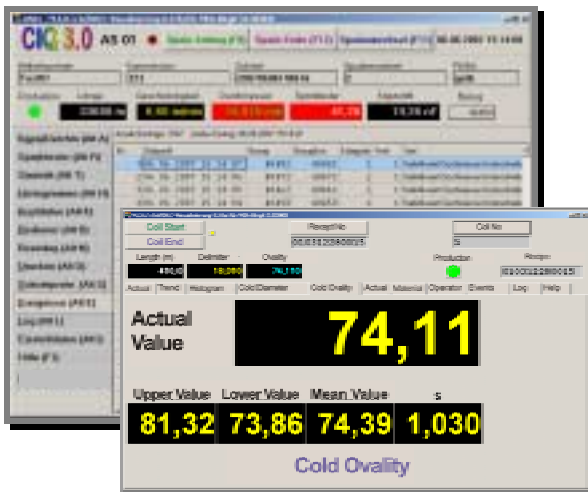
SoftDLC 2.0 regularly scans and displays the measured and process data (optionally with or without run time correction).

Measured values, operating data, and computed and statistical values are displayed discretely or in graphical form as line diagrams or bar charts. The line diagrams contain a zoom-in function enabling the display of selected line values or the magnification of a line area.

All components (fields (labels), buttons, graphics, histograms as well as event, log and operator lists), which are linked with visualization or measuring channels, events or lists, at all times have on display the most current values. The data can optionally be indicated in logarithmic or linear form. The visualization is according to defined rules or product-related.

Predefined thresholds or limits transmitted by CIQ 3.0-QDM are also indicated in the diagrams.

Apart from current measured values, SoftDLC 2.0 also displays evaluations (for example, statistical values) and the results of computations (for example, mean values or ovality).

Likewise it displays texts and drawings, such as work instructions, help texts, international standards or recipes. PDF files (for example, product data sheets) can be directly called up without the inconvenience of opening the Adobe Reader.

The display is freely configurable (for example, by status channel, measurement channels, visualization channels, event channels) and at any time adaptable to specific requirements. Screen masks can be individually designed by means of a high-capacity screen mask editor.

For special evaluation reports and labels, freely definable search requests may be relayed to CIQ 3.0 QDM which handles the print-out.

4   Networking of CIQ 3.0 and SoftDLC 2.0

If linked with CIQ 3.0-QDM, additional functionalities are available, for example:

- Expanded alarm functions in the event of violations of tolerances of measured values or operating data; alarm messages are sent as emails, SMS or FAX
- Messages and logging performed by the CIQ 3.0-QDM quality data module
- Messages to other EDP systems (e.g. SAP)
- Storage and logging of all data
- Editing of reports and labels
- Comprehensive evaluation options
- Further processing of data using Office products such as Microsoft-Excel
- Import of design data (e.g. tolerances) from other EDP systems (e.g. SAP)
- Export of data to other EDP systems – e.g. SAP – or SQL evaluation databases
- Data transmission to all PCs within the network
- Long-distance data transmission
- Multiple reporting options, including
    - Test certificates for the customer
    - Generation of quality control charts
    - Graphical display of shift logs
    - Labels in freely configurable formats

Protocols

Shift Protocol

Test Certificate

Qualitätsregelkarte

Evaluation Coil

Protocol Measured Values

Protocol Ecocontrol

Labels

Label for Coil

Labeling for Intermediate Products

5   Screen Mask Editor WSForm

The visualization interface can be custom-tailored to specific requirements and adjusted at any time by the WSForm Editor (**W**EKA**S**cript **Form** Editor). The user himself may configure the user interface to meet any specific requirements of the processes.

The WSForm Editor helps the user to solve the following tasks:

- edit any desired form and insert all required components,
- actively trigger events,
- define the layout of process data,
- exchange data with CIQ 3.0-QDM.

It makes available components for the design of control buttons, labels, input windows, LED displays, graphics and lists. These can be linked with visualization channels or lists (event lists, material data, operator data or log file) administered by the visualization functions.

The task realizable by the components and functions include, but are not limited to:

- start, end, interrupt and continue the visualization,
- trigger events such as "Coil/Drum Start", "Coil/Drum End", "Store" and "Program End",
- store, delete or reject measured values (in connection with CIQ 3.0-QDM),
- input data such as order no., sample no., recipe or text of any kind,
- display values from individual channels and key events,
- display the log file,
- manage and display operator and material lists,
- graphical display of the process data as curves, trends or histograms,
- communication between SoftDLC 2.0 and CIQ 3.0-QDM.

The editor consists of:

- **Menu bar**. It contains all editor functions, e.g. save, copy, search and the library with the available components

- **Form Window**, Serves as designing area for the screen masks.

- **Object Inspector**, List of properties of the selected components.

- **Object Tree View** is the hierarchical view of all used components.

- **Formula WIndow** contains the WEKAScript source code.

- **Alignment Palette** facilitates the alignment of the components.
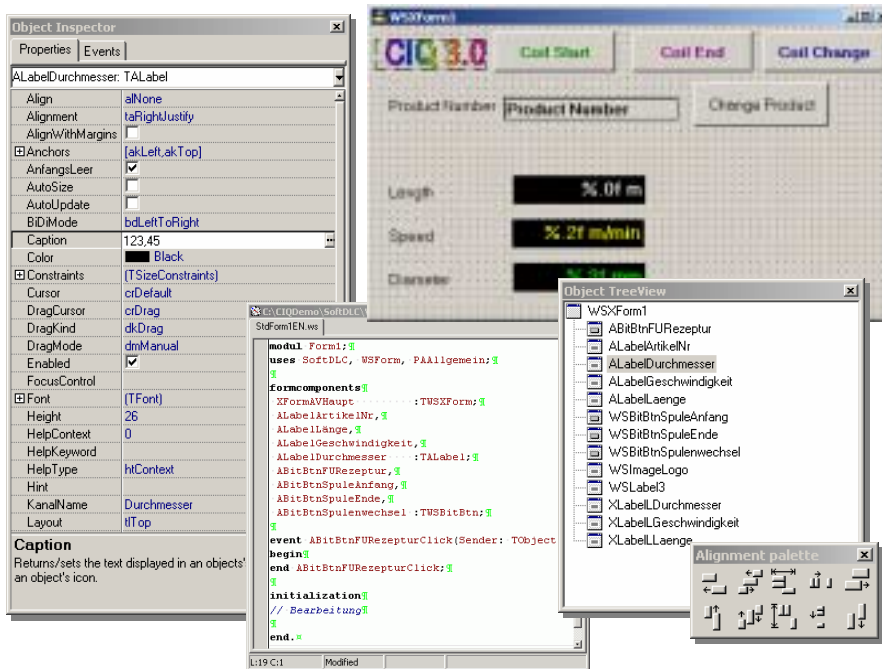
6   System Structure

SoftDLC 2.0 consists of two modules:

- Driver module and
- Visualization module.

The driver module forms the interface between SoftDLC 2.0 and the measuring equipment and operating resources (operating data control). It enables performance of the monitoring and control functions independent of device-specific adjustments.

The visualization module takes care of the evaluation, display and relaying of process data.
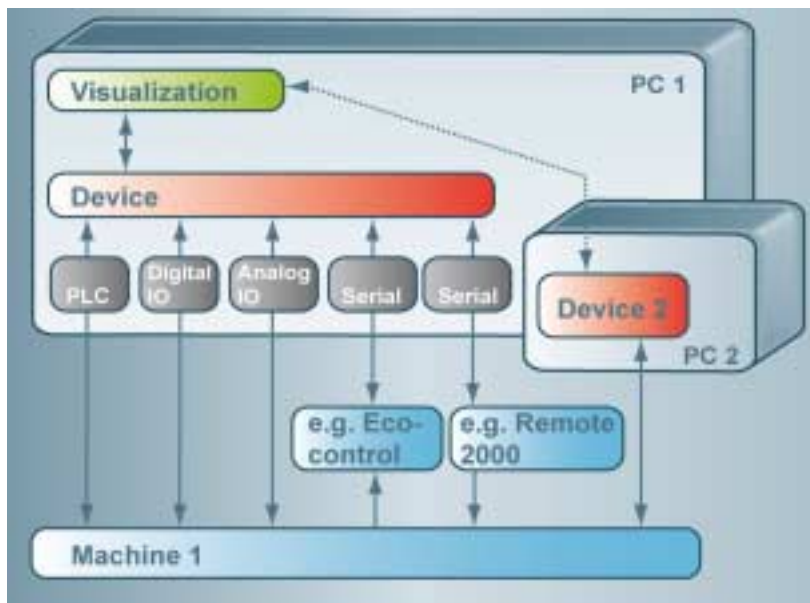
Communication between the two modules usually takes place within the PC. However, it is also possible to connect additional drivers via network links.

The driver module is an independent process without graphical user interface. This provides high functional reliability, as it is a protection against external failures (e.g. network failure).

It is configured by means of a configuration file, in which information such as adjustment parameters for the manufacturing equipment as well as set points for measuring devices and controls are defined.

Process data are continuously captured and stored by dedicated measuring device drivers.

Measured values are administered length- and time-related, and run time corrected as necessary, for example when measuring the diameter before and after the extrusion process.

Standard drivers are available for digital and analog PC I/O boards as well as various other sources, e.g. Ecocontrol2000, Accuscan, Extrumatik and OPC 2.0.

The modular arrangement facilitates the implementation of special drivers for other interfaces and measuring devices.

7 Run Length Correction

Due to the special requirements of the cable manufacturing process, it is of utmost importance to store the measured values and operating data relative to the product length.

The problem: a specific point of the cable length is scanned by the measuring devices at different times.

For this reason SoftDLC 2.0 automatically takes into account the distance between the locations of the measuring device and the length counter when displaying and storing the measured values. The distances between the measuring devices as well as operators and material feeding equipment are entered as correction values according to the specific machine configuration.

Example: A measuring device located 20 m ahead of the length meter signals a defect. The length meter is located at 150 m (reference value = product length). This means that the defect occurred at 170 m of the product length (corrected reference value).
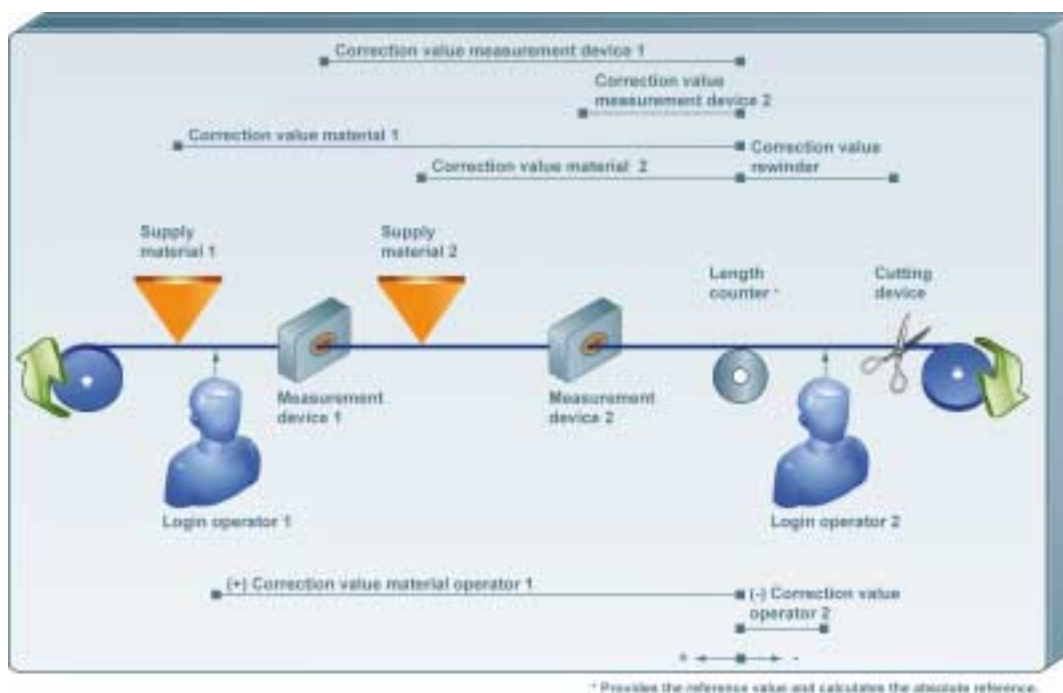
8 System Requirements for SoftDLC 2.0

Hardware:

Industrial-type PC near the state of the art with at least 256 MB RAM, 10 GB hard disc, digital and analog PC I/O boards as needed.

Operation system:

Windows2000 Professional, WindowsXP or Windows Vista.

Software:

For data storage and printing functions a link must be established to CIQ 3.0.

The system requirements for CIQ 3.0 QDM are detailed in the CIQ 3.0 data sheet.

9 Installation of SoftDLC 2.0

Configuration of the interfaces for the measurement devices takes place on site, followed by a system test of the complete machine. SoftDLC 2.0 does not require any bulky external libraries. This largely prevents version problems caused by the installation of other programs.
The installation of CIQ 3.0 is described in the CIQ 3.0 data sheet.

AESA CORTAILLOD, Your Partner in Quality Assurance

AESA CORTAILLOD develops and supplies measurement systems for electrical and mechanical testing procedures as well as a quality assurance software for the cable industry.

Today's AESA evolved from two enterprises:

- The Swiss AESA, founded in 1978, has its origins in the field of laboratory cable measurement technology.
- Established in 1979 in Wipperfürth/Germany, M.E.A. Mauf und Rudow GmbH set new standards already in the 1990s with the development of the "CIQ 3.0" software solution, which made it possible for the first time to capture process and testing data in cable production across the various stages of the production chain and realize all-the-way-through quality assurance.

The joint product portfolio of the two companies today comprises automatic measuring systems for telecommunications, data and energy transmission cables. Apart from these, AESA develops special systems, for example for type approval and laboratory test as well as monitoring of bending testers, drag chain systems and heating cabinets.

The company is headquartered in Colombier, Switzerland, and has two locations in Germany.

References

Products from the CIQ 3.0 family are in use at renowned companies throughout the world:

Nexans, Draka Transportation, Draka Comteq, Draka Industrial Cable, Leoni, Radio Freqency Systems, Twentsche Kabelfabriek, Bayka, Belden, Furukawa, Prysmian.

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