

Leading software solutions for wiring harness production



## Cutting Area Optimization (CAO V12)

# CAO V12 - Cutting Area Optimization

## Next Generation Cutting Area Control

### Scalable, modular, intuitive

CAO V12 is the most powerful and comprehensive cutting area MES to date. To meet the challenges of Industry 4.0 the system, that is operating successfully at major international producers, has been reissued to make it usable for a larger group of customers.

CAO V12 is modular, scalable and in a basic version also suitable for smaller companies. As your requirements grow, the system can be extended to control cutting centers from 2 up to 100 machines efficiently and in a flexible way, meeting the highest standards in process control and traceability.

### The Basic Version

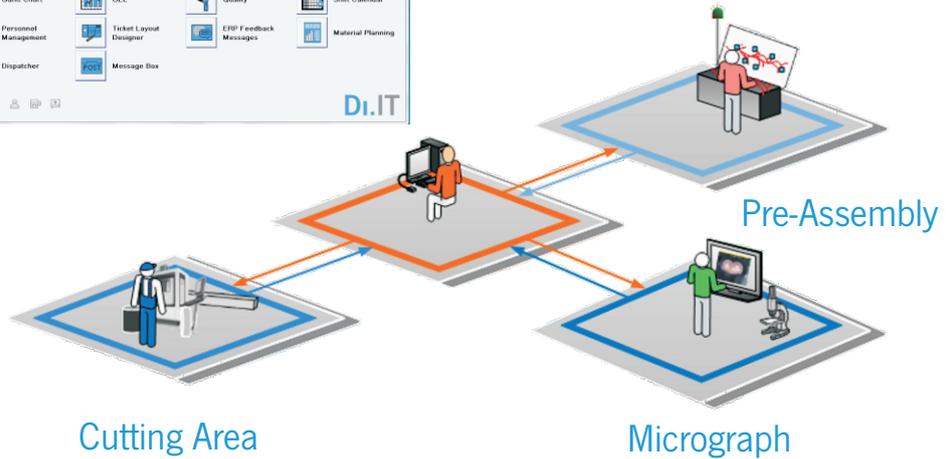
The basic version already includes the most important CAO functions. A single platform allows you to integrate and centrally control machines from different manufacturers, like Komax, Schäfer, Schleuniger, Artos, Yazaki, etc. in the cutting area.

With simple tools and interactive graphics, you create your own production database, so that order and article data along with process-specific parameters can be transferred directly into the connected machines.

All machines are integrated by means of a standardized operator interface with order list and process control to assure best quality and high productivity to our customers.

### Master data

Purchased and produced parts are centrally administered in the master data. With Excel you can insert all your available data easily. These data, along with order data and crimping standards, are available to all machines and will be automatically transferred in the shop floor machines.



### Order management

The overview gives you an overall picture of orders and current states of processing. From here, you can control the production, access quality and process data. Finished orders can be retrieved from order history.

In the optimization view, built-in planning tools help you to find a good distribution and sequencing of your orders. With drag-and-drop you move them onto suitable machines, checking automatically for compliance with the machine configuration.

### Machines

Here, you configure your machines with graphical tools, specify capabilities and resources. The setup parameters can be entered as default values or for each machine.

### Tools management

With the inventory numbers of crimp tools and seal applicators, you decide which tools are the proper ones for specific terminals and seals. During setup, every tool will be identified and verified by the inventory number.

The automatic update of tool beat counters gives you a clear picture of your tools state of maintenance.

### Crimping standards

Crimp specifications are important process parameters that you lay down as standard, valid throughout production. They are transferred electronically to the machine preventing errors and mistakes.

The centralization of this process expertise gives you added flexibility, reduces training time and lays the ground for consistent quality standards.

### Log data

The production process is continuously recorded by evaluating the machine feedback. Longer downtimes have to be justified by choosing a reason for the downtime from a catalogue. The analysis of these data provides you with the information needed to continuously improve your production.

### Personnel management

Using roles, you define which employees may exercise which functions in the system.

CAO No. [Worksteps]	% Done	Description	Leadset	Production Progress	Target Date	Production Version	Quantity
237967 [10] [20]	0%	Manual Cri...	tmManC	new	11/17/2015 ...	0	2500
237964 [10]	0%	tmZeta	tmZeta	started	11/17/2015 ...	0	10
237963 [10]	0%	tmSeq	tmSeq	new	11/17/2015 ...	0	10
237952 [20]	0%	TimBänder	TimBänder	new	11/17/2015 ...	0	20
237962 [10]	0%	355	TimA	new	11/17/2015 ...	0	20
237961 [10] [20] [21] [30] [40]	0%	Manteschn...	TimMantel	new	11/17/2015 ...	0	20
237963 [20]	0%		TimSplice	new	11/17/2015 ...	0	20
237960 [10]	0%	EA FIAT N...	10122902	new	11/17/2015 ...	10	20
237959 [10]	0%	EA FIAT N...	10122802	new	11/17/2015 ...	10	20
237958 [10]	0%	EA FIAT N...	10122702	new	11/17/2015 ...	10	20
237957 [10]	0%	EA FIAT N...	10122602	new	11/17/2015 ...	10	20
237956 [10]	0%	EA FIAT N...	10122502	new	11/17/2015 ...	10	20
237955 [10]	0%	EA FIAT N...	10122402	new	11/17/2015 ...	10	20
237954 [10]	0%	EA FIAT N...	10122302	new	11/17/2015 ...	10	20
237933 [20]	0%	Test	TimSplice	new	11/17/2015 ...	0	200
237940 [10]	0%	EA FIAT N...	10122902	new	11/17/2015 ...	10	200
237939 [10]	0%	EA FIAT N...	10122802	new	11/17/2015 ...	10	200
237938 [10]	0%	EA FIAT N...	10122702	new	11/17/2015 ...	10	200
237937 [10]	0%	EA FIAT N...	10122602	new	11/17/2015 ...	10	200
237936 [10]	0%	EA FIAT N...	10122502	new	11/17/2015 ...	10	200

Hierarchical order structure with subparts

## The Extensions (Option)

CAO V12 grows along with your needs. It meets the highest requirements in terms of quality assurance, order and system control, production documentation, reporting and traceability.

### Integration of pre-assembly area

CAO V12 is already prepared for the integration and control of the pre-assembly. Bench Top machines, ultra-sonic welding, and all other processes are optimally controlled by CAO V12.

### Quality module

Meet your customer's high quality requirements and integrate them into your process (VW-standard, micrograph, quality measurements).

### Optimization

Make the best of your capacities with automatic optimization. It reduces setup cost to a minimum, makes sure that you meet order deadlines and takes account of machine features, current setup, and due dates of orders.

### Gantt chart

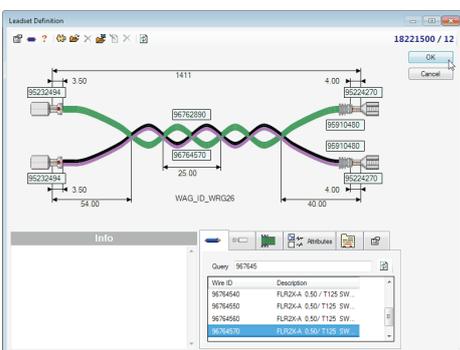
Optimize your production by assessing order distribution and machine workloads with the Gantt chart.

### Electronic Kanban

Reduce your work-in-progress inventories and benefit from smooth production processes through the introduction of demand-driven Kanban production.

### OEE

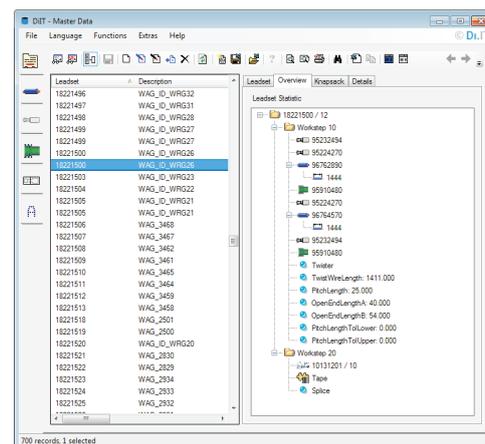
Analyze your business process and discover hidden potential through the automatic calculation of the Overall Equipment Effectiveness OEE and other KPI values. Compare your plants with non-manipulable key indexes.



Master data administration for articles, purchased parts and crimp data

## CAO - Features

- Integration of up to 100 machines
- Standard operator interface
  - setup validation with barcodes
  - integrated quality processes
  - production data acquisition
  - standardized process control
- Data administration
  - leadsets, seals, terminals, wires
  - machine configuration
  - crimp data
  - tool relations for terminals and seals
- Planning and scheduling
  - planning tools for order distribution and sequencing
  - automatic check of compatibility with machine features
- Process documentation
  - recording of inventory and serial numbers of tools and materials
  - measurements
  - tool beat counters
  - log data
- SAP interface
- Ticket layouter
- Material requirements
- PPG interface



## CAO - Benefits

- Significantly improved quality rate
- Higher machine utilization
- Efficient processes
- Considerable savings in time and material
- Full process documentation and traceability
- Full transparency
- Significantly reduced inventory (WIP)
- All languages simultaneously usable
- Micrograph integration
- Worldwide supported
- Complete traceability with HU (Handling Units, serial numbers)
- Covers P1, P2, and P3 - cutting, pre-assembly and final assembly
- Interfaces to ERP, PPG
- Seamless integration in your IT-landscape

## CAO V12 TECHNOLOGY

### CLIENTS IN .NET TECHNOLOGY

- Multi-lingual
- Easy to use with interactive graphics and drag-and-drop
- Tabbed data views
- Individual table layout
- Adjustable application window

### SQL DATA BASE

- Easy access with freely available tools
- Suitable for large amounts of data

### MACHINE INTERFACES

- WPCS, EasyNet, and others
- Electronic and automatic transfer
- Evaluation of machine feedback

### WINDOWS OPERATING SYSTEM

- Windows XP, Windows 7 and higher



## Complementary Systems

### Production and Logistics Suite PLS

PLS is a flexible solution specially made to support customer specific wire harness production (KSK).

Production processes are complex and different in every company contrary to commercial functions, especially in wire harness production with quantity one. Therefore, PLS functionality depends on the project at hand. There are no unnecessary, missing or convoluted functions in PLS.

Since 1990, DiIT develops software modules that are part of a standard package. The modules have been proven and tested hundreds of times and can be used in any combination. Customizations and new objects can be implemented reliably in very short time and with little effort.

Customer specific data structures are generated automatically with no extra effort. This software technology was funded by the European Commission and has been awarded with the highest award category "excellent".

### Production Plan Generation PPG

PPG is a comprehensive software solution for wire harness engineering to automatically create production data and documents.

Based on the engineering drawing, PPG generates production modules rule based with bill of materials, work plans and operating instructions.

PPG supports your complete manufacturing chain, from the cutting machine to the final assembly, for batch size wiring harnesses and customer specific wiring harnesses with JIT/JIS process for cars and utility vehicles.

A powerful set of rules manages the generation of production modules. The existing basic rule set can be adapted flexible to your production method. Therefore, PPG generates optimized production modules for your production .

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