

Leading Software Solutions for Wire Harness Production



0100010110001001100000010010001000001101000101000011000001111000  
00101010001011000011010001010000110000011000001111000  
0111010101110011010001011000100110000011001000  
1101011000010001001010100010110000110100010100  
0011000001111000011101010111001101000101100010  
011000001100100001010110000100010010101000101  
0000110100010100001100000111100001110101011100  
1104Wire CAO100010011000001100100001010110000100  
010Cutting and Assembly Optimization101000011000001111  
1001110101011100110100010110001001100000110010  
000101011000010001001010100010110000110100010  
1100110000011110000111010101110011110000011110  
0001110101011100110100010110001001100000110010  
000101011000010001001010100010110000110100010  
000011000001111000011100000111100001110101011  
101101000101100010011000001100100001010110000  
000100101010001011000011010001010000110000011  
1000011100000111100001110101011100110100010110  
001001100000110010000101011000010001001010100

# 4Wire CAO - Cutting and Assembly Optimization

## Next Generation Cutting and Assembly Control

### 4Wire CAO

#### Experience over 25 years

4Wire CAO is the most powerful and comprehensive cutting and assembly 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.

4Wire CAO 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

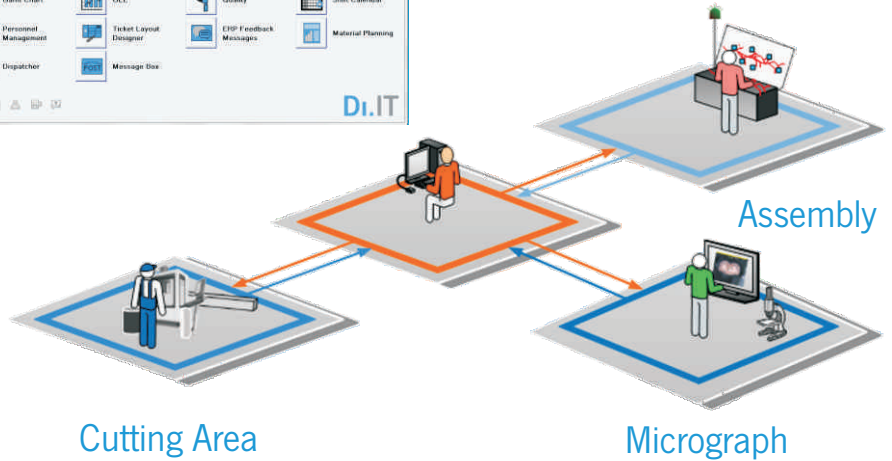
The basic version already includes the most important 4Wire CAO functions. A single platform allows you to integrate and centrally control machines from different manufacturers, like Schleuniger, Artos, Komax, ShinMaywa, Schäfer, Yazaki, etc. in the cutting area.

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.

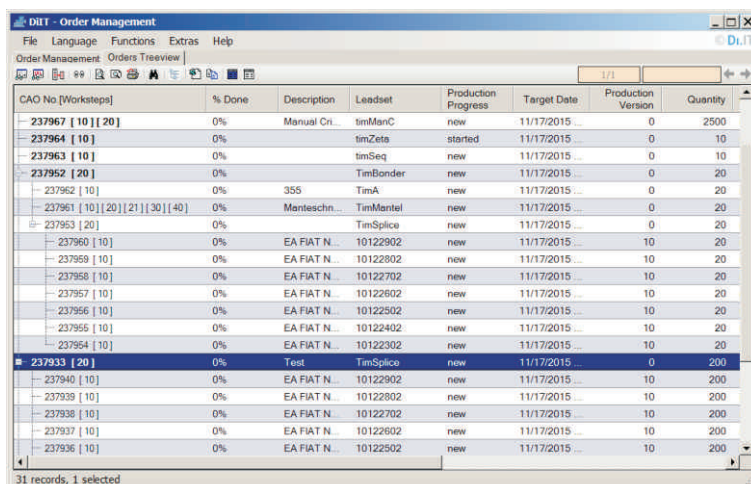
The centralization of this process expertise gives you added flexibility, reduces training time and lays the ground for consistent quality standards.

#### 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 Cr...	tmMsnC	new	11/17/2015	0	2500
237964 [10]	0%		tmZeta	started	11/17/2015	0	10
237963 [10]	0%		tmSeq	new	11/17/2015	0	10
237952 [20]	0%		TimBonder	new	11/17/2015	0	20
237962 [10]	0%	355	TimA	new	11/17/2015	0	20
237961 [10] [20] [21] [30] [40]	0%	Menieschn...	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)

4Wire CAO 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 assembly area

4Wire CAO is already prepared for the integration and control of the assembly. Bench Top machines, ultra-sonic welding, and all other processes are optimally controlled by 4Wire CAO.

## 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

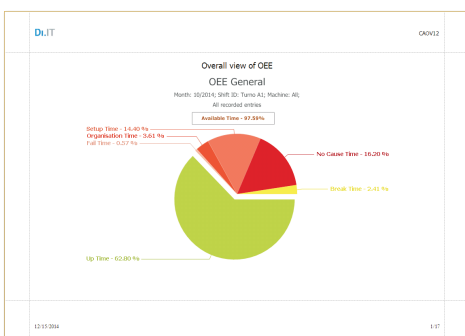
Analyse your business process and discover hidden potential through the automatic calculation of the Overall Equipment Effectiveness OEE and other KPI values. Compare your plants with non-manipulable key indexes.

# 4Wire CAO - Features

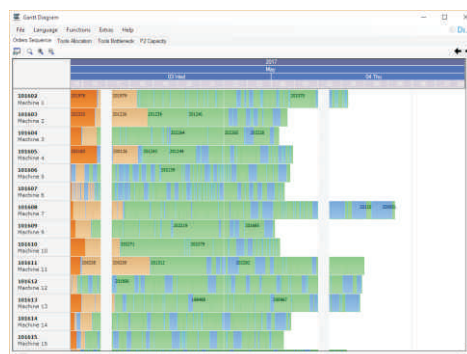
- Integration of up to 100 machines
- Standard operator interface
  - setup validation with barcodes
  - integrated quality processes
  - production data acquisition
  - standardized process control
- Data administration
  - leadsets, seals, terminals, wires
  - machine configuration
  - crimp data
  - 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 and standard ERP interface
- Ticket layouter
- Material requirements
- 4Wire PPG

# 4Wire 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, 4Wire PPG
- Seamless integration in your IT-landscape



OEE report



Gantt chart

## 4Wire CAO 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
- SMG, MIKO
- Electronic and automatic transfer
- Evaluation of machine feedback

### WINDOWS OPERATING SYSTEM

- Windows 7 and higher



## Complementary Systems

### 4Wire PLS Production and Logistics Suite

4Wire 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, 4Wire PLS functionality depends on the project at hand. There are no unnecessary, missing or convoluted functions in 4Wire 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".

### 4Wire PPG Production Plan Generation

4Wire PPG is a comprehensive software solution for wire harness engineering to automatically create production data and documents.

Based on the engineering drawing, 4Wire PPG generates production modules rule based with bill of materials, work plans and operating instructions.

4Wire PPG supports your complete manufacturing chain, from the cutting machine to the final assembly, for batch size wire harnesses and customer specific wire 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, 4Wire PPG generates optimized production modules for your production.

## Locations

### Head Office Krailling/Munich

Justus-von-Liebig-Ring 11a  
D-82152 Krailling near Munich  
Phone +49 (0)89 - 89 32 50 - 0  
Fax +49 (0)89 - 89 32 50 - 50  
info@diit.de  
www.diit.de

### Branch Office Berlin

Am Borsigturm 33  
D-13507 Berlin  
Phone +49 (0)30 - 64 0996 - 37  
Fax +49 (0)30 - 64 0996 - 36  
berlin@diit.de

### Branch Office Romania

Strada Mihai Eminescu Nr.35  
RO-310085 Arad  
Phone +40 357 411 500  
info@diit.ro

### Branch Office Mexico/USA

1370-B Pullman Drive, Suite A  
TX-79936 El Paso  
Phone +1 915 856 8868  
Fax +1 915 856 7825

### Branch Office China

108, BH Center  
7755 Zhongchun Rd  
Shanghai 201101  
Phone +86 (21) 6252 6677  
Fax +86 (21) 6240 8655