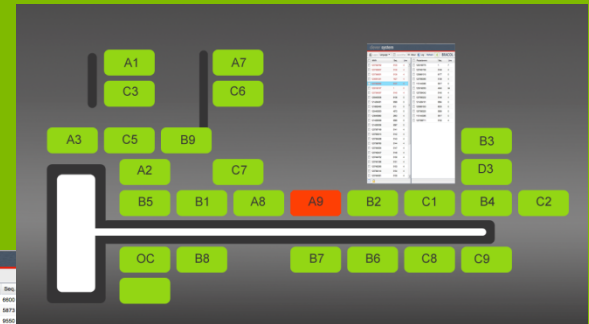


# Clever System for Production Line Control

General description  
of Clever System

Rozpracovanost <b>57</b>		Takt SAS <b>100.</b>		Plán směny <b>297</b>		11 17 27	
plán výroby		skutečnost		diference		Čas výroby	
06:00 - 11:14	<b>194</b>	<b>185</b>	<b>-9</b>			<b>77</b> min	
22:00 - 06:00	<b>297</b>	<b>305</b>	<b>8</b>			<b>-</b>	
na cestě		zásoba		takt		POSLEDNÍ M 100	
A5	<b>34</b>	<b>-</b>	<b>100.</b>			<b>11:12:38</b>	
A7	<b>0</b>	<b>1</b>				<b>#3006</b>	
						<b>04:49</b>	

clever system		Stav pracoviště		Přihlášený pracovník:		Poslední kontrol:	
SM	Posilovač brzd	Running	Stopped	Čas:	121116 13:53:42	Čas:	121116 15:46:24
Up 7 d 5 h 54 m		No output check		Jméno: SAS2064 Richard Váns		ID: 124696427143430	
Konfigurační		Namest					
Polodi	12	24.8 minut	Tempo 2 min	Statistika počet (30-2), minimum: 1.5, median: 1.8, maximum: 4.9 minut			
16	121116 15:46:24	124696427143430	124696427143430				
PE		Stav pracoviště		Přihlášený pracovník:		Poslední kontrol:	
PE	Pedaly	Running	Stopped	Čas:	121116 13:54:14	Čas:	121116 15:46:25
Up 16 d 5 h 11 m		No output check		Jméno: SAS2467 Milan Solka		ID: 124696427143430	
Konfigurační		Namest					
Polodi	3	0.8 minut	Tempo 1.9 min	Statistika počet (30-2), minimum: 1.1, median: 1.8, maximum: 4.2 minut			
17	121116 15:46:24	124696427143430	124696427143430				
KA		Stav pracoviště		Přihlášený pracovník:		Poslední kontrol:	
KA	Kabelaz	Running	Stopped	Čas:	121116 13:53:00	Čas:	121116 15:46:25
Up 155 d 5 h 2 m		No output check		Jméno: SAS2467 Milan Solka		ID: 124696427143430	
Konfigurační		Namest					
Polodi	12	24.1 minut	Tempo 2.0 min	Statistika počet (30-2), minimum: 1.4, median: 1.7, maximum: 4.7 minut			
17	121116 15:46:24	124696427143430	124696427143430				

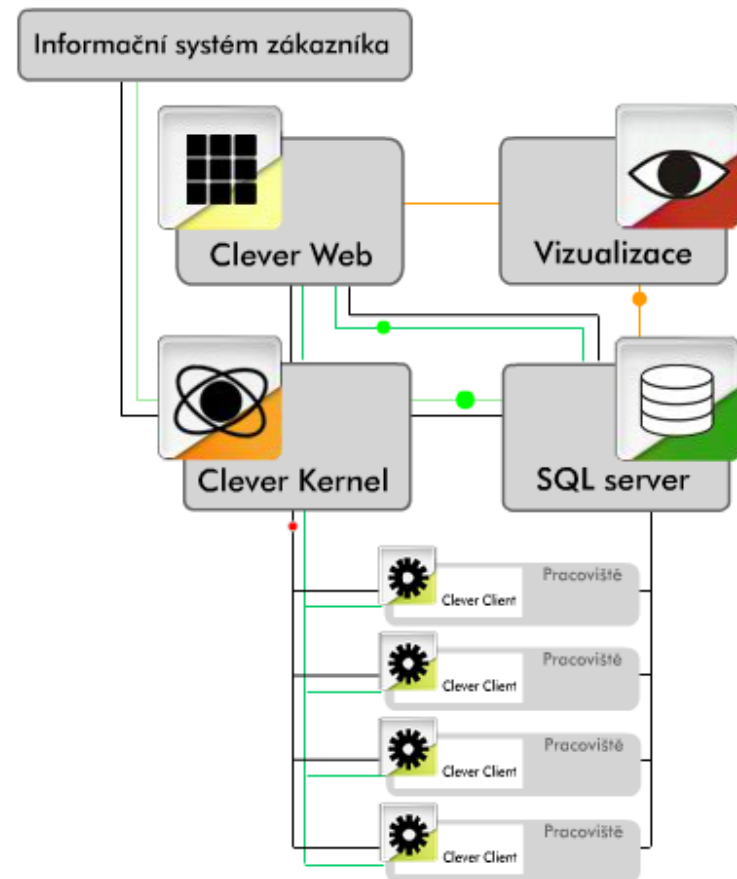


clever system		SEQUENCE CONTROLLER 2	
BRACOL - Testovací kernel CLEVER			
MMN	Seq. Link	Poslavení	Seq. Link
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121116176	5130 A	121116176	5130 A
121116177	5130 A	121116177	5130 A
121116178	5130 A	121116178	5130 A
121116179	5130 A	121116179	5130 A
121116180	5130 A	121116180	5130 A
121116181	5130 A	121116181	5130 A
121116182	5130 A	121116182	5130 A
121116183	5130 A	121116183	5130 A
121116184	5130 A	121116184	5130 A
121116185	5130 A	121116185	5130 A
121116186	5130 A	121116186	5130 A
121116187	5130 A	121116187	5130 A
121116188	5130 A	121116188	5130 A
121116189	5130 A	121116189	5130 A
121116190	5130 A	121116190	5130 A
121116191	5130 A	121116191	5130 A
121116192	5130 A	121116192	5130 A
121116193	5130 A	121116193	5130 A
121116194	5130 A	121116194	5130 A
121116195	5130 A	121116195	5130 A
121116196	5130 A	121116196	5130 A
121116197	5130 A	121116197	5130 A
121116198	5130 A	121116198	5130 A
121116199	5130 A	121116199	5130 A
121116200	5130 A	121116200	5130 A
121116201	5130 A	121116201	5130 A
121116202	5130 A	121116202	5130 A
121116203	5130 A	121116203	5130 A
121116204	5130 A	121116204	5130 A
121116205	5130 A	121116205	5130 A
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121116208	5130 A	121116208	5130 A
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121116210	5130 A	121116210	5130 A
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121116212	5130 A	121116212	5130 A
121116213	5130 A	121116213	5130 A
121116214	5130 A	121116214	5130 A
121116215	5130 A	121116215	5130 A
121116216	5130 A	121116216	5130 A
121116217	5130 A	121116217	5130 A
121116218	5130 A	121116218	5130 A
121116219	5130 A	121116219	5130 A
121116220	5130 A	121116220	5130 A
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121116223	5130 A	121116223	5130 A
121116224	5130 A	121116224	5130 A
121116225	5130 A	121116225	5130 A
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121116227	5130 A	121116227	5130 A
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121116229	5130 A	121116229	5130 A
121116230	5130 A	121116230	5130 A
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121116232	5130 A	121116232	5130 A
121116233	5130 A	121116233	5130 A
121116234	5130 A	121116234	5130 A
121116235	5130 A	121116235	5130 A
121116236	5130 A	121116236	5130 A
121116237	5130 A	121116237	5130 A
121116238	5130 A	121116238	5130 A
121116239	5130 A	121116239	5130 A
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121116253	5130 A	121116253	5130 A
121116254	5130 A	121116254	5130 A
121116255	5130 A	121116255	5130 A
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121116257	5130 A	121116257	5130 A
121116258	5130 A	121116258	5130 A
121116259	5130 A	121116259	5130 A
121116260	5130 A	121116260	5130 A
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121116263	5130 A	121116263	5130 A
121116264	5130 A	121116264	5130 A
121116265	5130 A	121116265	5130 A
121116266	5130 A	121116266	5130 A
121116267	5130 A	121116267	5130 A
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121116272	5130 A	121116272	5130 A
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121116279	5130 A	121116279	5130 A
121116280	5130 A	121116280	5130 A
121116281	5130 A	121116281	5130 A
121116282	5130 A	121116282	5130 A
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121116285	5130 A	121116285	5130 A
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121116288	5130 A	121116288	5130 A
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121116300	5130 A	121116300	5130 A

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# General description of Clever System

- ➔ Possibilities of Clever System
- ➔ Main functions of Clever System
- ➔ Clever System workstation Client
- ➔ Dedicated rework station
- ➔ Clever System control Kernel
- ➔ SQL server and database
- ➔ Data archiving
- ➔ Clever System WWW interface
- ➔ Configuration of the system



# The brief description of Clever System

- 1 The software system Clever System is designed for a control of industrial production lines according to JITdata from a manufacturer.
- 2 The system controls a sequence of products on an assembly line, defines technological data for work positions and checks technological operations during the assembly.
- 3 The whole system is composed by specialised software modules. These modules are running on PCs on a LAN network. All technological data are processed in accordance to ISO 9000.



## 3 main functions



### Control function

Data are sent to modules on each work position and these modules control an assembly.



### Checking function

All supervised operations on each product are checked in real time during an assembly.



### Documentation function

Data are stored into an SQL database and then can be archived onto non-rewritable media (e.g. CD-R discs).  
A www search engine for finding the data is available.



# Possibilities of the CLEVER System

- Receiving of the product configuration data from a customer or PPS
- Distribution of the production data to workstations at assembly lines
- Checking of the product sequence at the assembly line in real time
- Different systems of product identification (bar code, holder ID, RFID, MODAS,...)
- Line conveyor control, decision points (forks), merge points
- Check of assembled parts in real time, pick-to-light and delivery points control
- Registration of serial numbers of assembled parts
- Collecting of technological data (tightening, pressing,...) and its check
- Control of technological devices (tightening machines, stock systems, camera systems... )
- Input signals processing (end switches,...)
- Complete check on each work position in real time (check if all operations were done OK)
- Data import from external systems (e-checks, safety coding,...)
- Output check for each product at the end of an assembly line and at internal check points
- Pre-assembly workstations
- Printing of product labels, build-sheets and output protocols
- Dedicated rework station
- Backward finding of the technological data, SQL data queries, export to html or csv format
- Overviews of product amounts in time periods, possibility to filter a configuration of products
- Data archiving according to ISO 9000
- Web modules for a data searching, a production check, a control of the whole system

# Language possibilities

Clever System is from its nature multilingual and is ready to run in the following languages:

- ➔ English (include the web interface)
- ➔ German (include the web interface)
- ➔ Spanish
- ➔ French
- ➔ Dutch
- ➔ Czech (include the web interface)
- ➔ Romanian
- ➔ Chinese
- ➔ Turkish

There is no problem to add any other dictionary

Our on-line support and hot line is available in English and Czech



# The workstation Client

Each workstation at a production line is equipped with the Clever Workstation Client module. All operations are authorized by an operator and stored into an SQL database with its timestamp. The following features are available and configurable:

- **Sequence check**
- **Previous workstations check**
- **Part check**  
Assembled parts are checked by its bar codes and it is possible to store serial numbers of that parts as well.
- **Poka-yoke check** (unique part check) is a special type of the part check (cabling systems,...)
- **Tightening data check and a tightening machines control**  
It is possible to collect tightening data from following machines: Atlas Copco, Georges Renault (Chicago Pneumatics), Clecon and Bosch Rexroth. Values of torque, angle and rundown angle are checked and stored. It is possible to control tightening unit – choosing tightening programs for various screws, machine blocking, reverse run control.
- **Serial numbers evidence** include a duplicity prevention and cross-station verification
- **Measurement in real time** – press sensors,...
- **Input signals** (end switches, position sensors,...)
- **Part codes storing**  
For example security codes of radios (separated secure database with a password-protected access)
- **Visual Check** – visual confirmation with an operator sign
- **Rack Part Check (Pick to light)** – part check for parts without a suitable identification (barcode). Different systems as light sensors or buttons can be used.
- **Camera inspection** – automated visual check and measurement

# Sequence check

Correct sequence of a production  
Prevents from a product skipping

PLC - Client v. 9.26.38 0501181124 Pos: T4 (c) CLEVER Soft 2003 - 2005  
Worker: SAS4001 Albani Marco

Sequence	Started cockpit
012188 #4558	
482829 #4559	
060281 #4560	
500273 #4561	
480317 #4562	
501135 #4563	
052387 #4564	
471574 #4566	
484778 #4567	
503295 #4568	
049901 #4569	
492964 #4570	
498092 #4571	
500124 #4572	
491721 #4573	
430558 #4574	
491434 #4576	
502312 #4577	
431605 #4578	
053367 #4579	
471633 #4580	
501424 #4581	
440544 #4582	
502307 #4583	
500122 #4584	
480118 #4585	
501468 #4586	

16:29:10 Login a worker  
16:37:55 Scanned: SAS4001  
16:37:55 Scan cockpit number

F5 Keyboard input OnLine

PLC - Client v. 9.26.38 0501181124 Pos: T4 (c) CLEVER Soft 2003 - 2005  
Worker: SAS4001 Albani Marco

Sequence Started cockpit

012188 4558

Airbag S/N (T41)

Topper pad S/N (T42)

(T43)

Plan 04

16:29:10 Login a worker  
16:37:55 Scanned: SAS4001  
16:37:55 Scan cockpit number  
16:44:24 Scanned: 012188  
16:44:25 Scan the airbag S/N

F5 Keyboard input OnLine

PLC - Client v. 9.26.38 0501181124 Pos: T4 (c) CLEVER Soft 2003 - 2005  
Worker: SAS4001 Albani Marco

Sequence Started cockpit

500273 4561

Airbag S/N (T41)

Topper pad S/N (T42)

(T43)

Plan 04

SEQUENCE ERROR!  
500273 4561  
17:02:20 Scan right cockpit number

Tempo: 9.8 min (2-0) OnLine



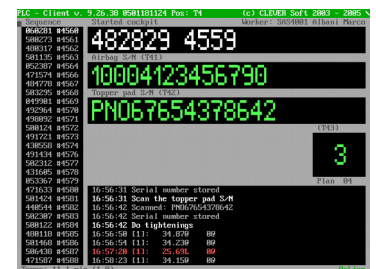
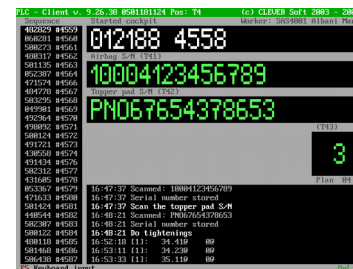
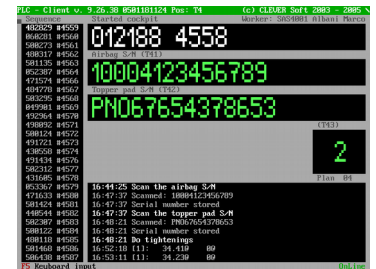
# Tightening

Stored values: torque, angle and rundown angle



## Possible tightening machines:

Atlas Copco Power Focus 2000, 3000, 4000, DS, DL  
CP (Georges Renault) 5200, Cvi, CviS  
Clecon-E  
Bosch Rexroth TS 300, ExaConnect



# Part check

The part check data depends on:

Incoming data of a product (list of assembled parts) obtained from pps system

PartDistribution table – a conversion table between part numbers and bar codes.

The requested part type is displayed on a screen after a reading of a product ID, then the bar code of a part is scanned and compared with the requested one.

# Part check

PLC - Client v. 9.26.38 0501181124 Pos: P4		(c) CLEVER Soft 2003 - 2005 ✓
Sequence	Started cockpit	Worker: SAS4001 Albani Marco
052385 #4553	491399 4552	Navigation screen S/N (P41)
483405 #4554		
434903 #4555		IP Pack (P42)
480449 #4556		
434904 #4565	YAC 500 055 PVJ	17:09:08 Login a worker
434905 #4575		
503261 #4557		17:09:59 Scanned: SAS4001
012188 #4558		
482829 #4559		17:09:59 Scan cockpit number
060281 #4560		
500273 #4561		17:10:59 Radio (S Skidmore) 0: P: 1 F: 0 (Login Product)
480317 #4562		
501135 #4563		17:10:59 Radio (S Skidmore) 1: P: 1 F: 0 (Login Product)
052387 #4564		
471574 #4566		17:11:01 Scan IP Pack
484778 #4567		
503295 #4568		
049901 #4569		
492964 #4570		
498092 #4571		
500124 #4572		
491721 #4573		
430558 #4574		
491434 #4576		
502312 #4577		
431605 #4578		
053367 #4579		

F5 Keyboard input OnLine

PLC - Client v. 9.26.38 0501181124 Pos: P4		(c) CLEVER Soft 2003 - 2005 ✓
Sequence	Started cockpit	Worker: SAS4001 Albani Marco
483405 #4554	052385 4553	Navigation screen S/N (P41)
434903 #4555		
480449 #4556		IP Pack (P42)
434904 #4565		
434905 #4575	YAC 500 045 PVJ	17:18:18 Scan IP Pack
503261 #4557		
012188 #4558		
482829 #4559		
060281 #4560		
500273 #4561		
480317 #4562		
501135 #4563		
052387 #4564		
471574 #4566		
484778 #4567		
503295 #4568		
049901 #4569		
492964 #4570		
498092 #4571		
500124 #4572		
491721 #4573		
430558 #4574		
491434 #4576		
502312 #4577		
431605 #4578		
053367 #4579		
471633 #4580		

Tempo: 6.5 min (1-0) OnLine

# Serial number registration

PLC - Client v. 9.26.38 0501181124 Pos: T4 (c) CLEVER Soft 2003 - 2005 ✓

Sequence	Started cockpit	Worker: SAS4001 Albani Marco
482829 #4559	012188 4558	
060281 #4560		
500273 #4561		
480317 #4562	Airbag S/N (T41)	
501135 #4563	10004123456789	
052387 #4564		
471574 #4566		
484778 #4567	Topper pad S/N (T42)	
503295 #4568		
049901 #4569		
492964 #4570		
498092 #4571		(T43)
500124 #4572		
491721 #4573		
430558 #4574		
491434 #4576		
502312 #4577		
431605 #4578		
053367 #4579	16:29:18 Login a worker	
471633 #4580	16:37:55 Scanned: SAS4001	
501424 #4581	16:37:55 Scan cockpit number	
440544 #4582	16:44:24 Scanned: 012188	
502307 #4583	16:44:25 Scan the airbag S/N	
500122 #4584	16:47:37 Scanned: 10004123456789	
480118 #4585	16:47:37 Serial number stored	
501468 #4586	16:47:37 Scan the topper pad S/N	
506438 #4587		

F5 Keyboard input OnLine

CLEVER System can automatically validate the scanned bar code and eliminate not authorized bar codes.

PLC - Client v. 9.26.38 0501181124 Pos: T4 (c) CLEVER Soft 2003 - 2005 !

Sequence	Started cockpit	Worker: SAS4001 Albani Marco
482829 #4559	012188 4558	
060281 #4560		
500273 #4561		
480317 #4562	Airbag S/N (T41)	
501135 #4563	10004123456789	
052387 #4564		
471574 #4566		
484778 #4567	Topper pad S/N (T42)	
503295 #4568		
049901 #4569		
492964 #4570		
498092 #4571		(T43)
500124 #4572		
491721 #4573		
430558 #4574		
491434 #4576		
502312 #4577		
431605 #4578		
053367 #4579	16:37:55 Scan cockpit number	
471633 #4580	16:44:24 Scanned: 012188	
501424 #4581	16:44:25 Scan the airbag S/N	
440544 #4582	16:47:37 Scanned: 10004123456789	
502307 #4583	16:47:37 Serial number stored	
500122 #4584	16:47:37 Scan the topper pad S/N	
480118 #4585	16:48:21 Scanned: PN067654378653	
501468 #4586	16:48:21 Serial number stored	
506438 #4587	16:48:21 Do tightenings	

F5 Keyboard input OnLine

# Non standard situations

```

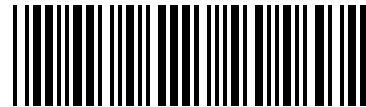
PLC - Client v. 9.26.38 0501181124 Pos: P4 (c) CLEVER Soft 2003 - 2005 -
Sequence Started cockpit Worker: SAS4001 Albani Marco
434903 #4555 483405 4554
480449 #4556
434904 #4565
434905 #4575 Navigation screen S/N (P41)
503261 #4557
012188 #4558
482829 #4559
060201 #4560
500273 #4561 IP Pack (P42)
480317 #4562 VISUAL - 155 PUJ
501135 #4563
052387 #4564
471574 #4566 17:19:02 Scanned: 0100456789012500045
484778 #4567 17:19:02 Part checked OK
503295 #4568 17:19:02 Scan cockpit number
049901 #4569 17:19:45 Scanned: 483405
492964 #4570 17:19:45 Radio (S Skidmore) 0: P: 1 F: 0 (Login Product)
498092 #4571 17:19:45 Radio (S Skidmore) 1: P: 1 F: 0 (Login Product)
500124 #4572 17:19:47 Scan IP Pack
491721 #4573 17:20:10 Scanned: PLC
430558 #4574 17:20:10 IL: Invalid label, part YAC 500 055 PUJ was checked v
491434 #4576 17:20:10 Scan cockpit number
502312 #4577
431605 #4578
053367 #4579
471633 #4580
501424 #4581
Tempo: 4.4 min (2-0) OnLine
  
```

Yellow messages: missing operations on previous workstations. Internal self check with operators

CLEVER System – Invalid label

This code skips the serial number

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## Usage:

When label with a serial number is destroyed or unreadable.

Workstation client control is done by a set of control bar codes. Each responsible person can have different bar codes with his ID inside the code. A keyboard is not used on most of client stations.

# Clever System Control Kernel

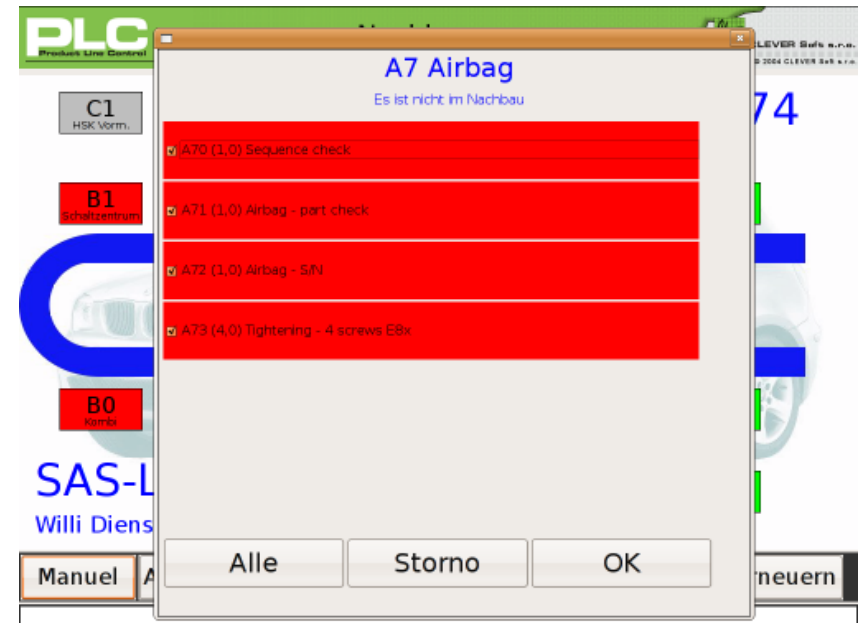
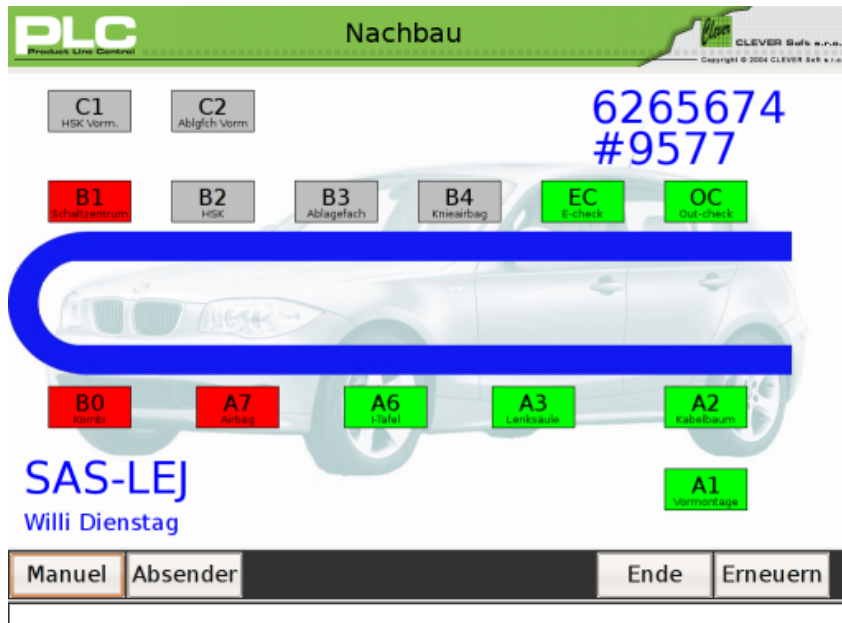
**Clever System Control Kernel enables the communication with other Clever System modules at an assembly line and provides an access to a technological and status database.**



Clever System Control Kernel generates technological data for all Clever System workstations and can prepare data for some external systems as for example e-check testers.

This module is not necessary on some small production lines, where client workstations can work standalone.

# Dedicated rework station



A dedicated rework station can substitute any workstation at the assembly line. There is displayed the layout of an assembly line with workstations depending on each reworked product. Any of workstation operation can be selected for a rework procedure.

# SQL Server



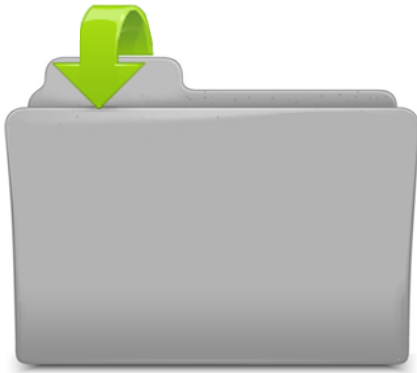
All technological data are safely stored into SQL database where it is easy to search and archive the data.

MySQL SQL server is used. Data are stored in one database with several tables. The specifications of cockpits and assembly times (data receiving time, start of an assembly) are stored in configuration table (SQLProductCfgTable).

Records of each technological operation at each assembly position is stored into the operation table (SQLProductTable).



# Data archiving



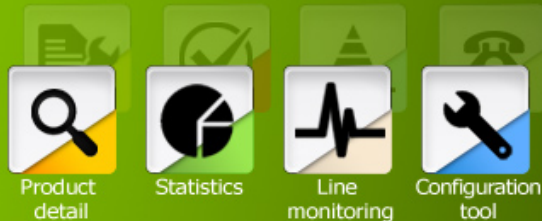
All technological data are automatically archived from SQL database into \*.paf files (Plc Archive File) by a software module plc\_arch.

These text files are copied to a customer file server and then it is possible to record them to non-rewritable discs (CD-R discs).

Text files \*.paf are possible to use for data import into another external systems, data statistics, central database, etc.

## Clever System - Web interface

The data stored in an SQL database are accessible via Web interface. This interface enables searching for the technological data of products, overview of products in a time period, overview of assembled parts by their serial numbers and much other.



Web interface is independent on client's operating system - it is possible to use it from MS Windows, Linux, OS/2, Mac,...

Full user management system is available. It provides detailed system of access rights and privileges for all users of Clever System web applications.

# Clever System Web interface (cont.)

CLEVER System Web interface is a modular system. It contains modules as the following:



Configuration tool



Plan configuration



Parts configuration



Product configuration



Database of operators



Barcode generator



Line administration



Line monitoring



Sequence controller



Trigger manager



Equivalence Manager



Denied Parts



Product list



Product detail



Query manager



Report manager



Statistics



Technological corrections



Technological changes



Technological notes



Safety codes



Graph of waiting  
sequence



Preassembly



Checking Reports



Documentation









Checksum



Support request







# Clever System Web interface (cont.)

## ***System configuration***

-  Configuration tool - Configuration of a whole system
-  Plan configuration - Configuration of planned operations
-  Parts configuration - Configuration of assembled parts
-  Product configuration
-  Database of operators - Database of operators and their access to workstations
-  Barcode generator - Creating of control barcodes for workstations







# Clever System Web interface (cont.)

## ***System CONTROL***

-  Line administration
-  Line monitoring
-  Sequence controller - Manager of an assembly sequence
-  Trigger manager
-  Equivalence Manager - Enables an usage of equivalent parts during an assembly
-  Denied Parts - Manager for denied parts







# Clever System Web interface (cont.)

## ***SQL data treatment***

-  Product list - Overview of assembled products
-  Product detail - Details of product assembly
-  SQL Query manager - Searching and viewing of SQL data
-  Report manager - Access to SQL reports
-  Production statistics – Andon systems
-  Technological corrections - Records of technological corrections

# Clever System Web interface (cont.)

## ***SQL data treatment***

-  Technological changes - Documentation of technological changes
-  Technological notes - Technological notes
-  Safety codes
-  Graph of waiting sequence - Graph and statistics of waiting sequence, other time analysis
-  Preassembly
-  Checking Reports - Manager for a control of sending of checking reports

# Clever System Web interface (cont.)

## ***Other modules***



Documentation



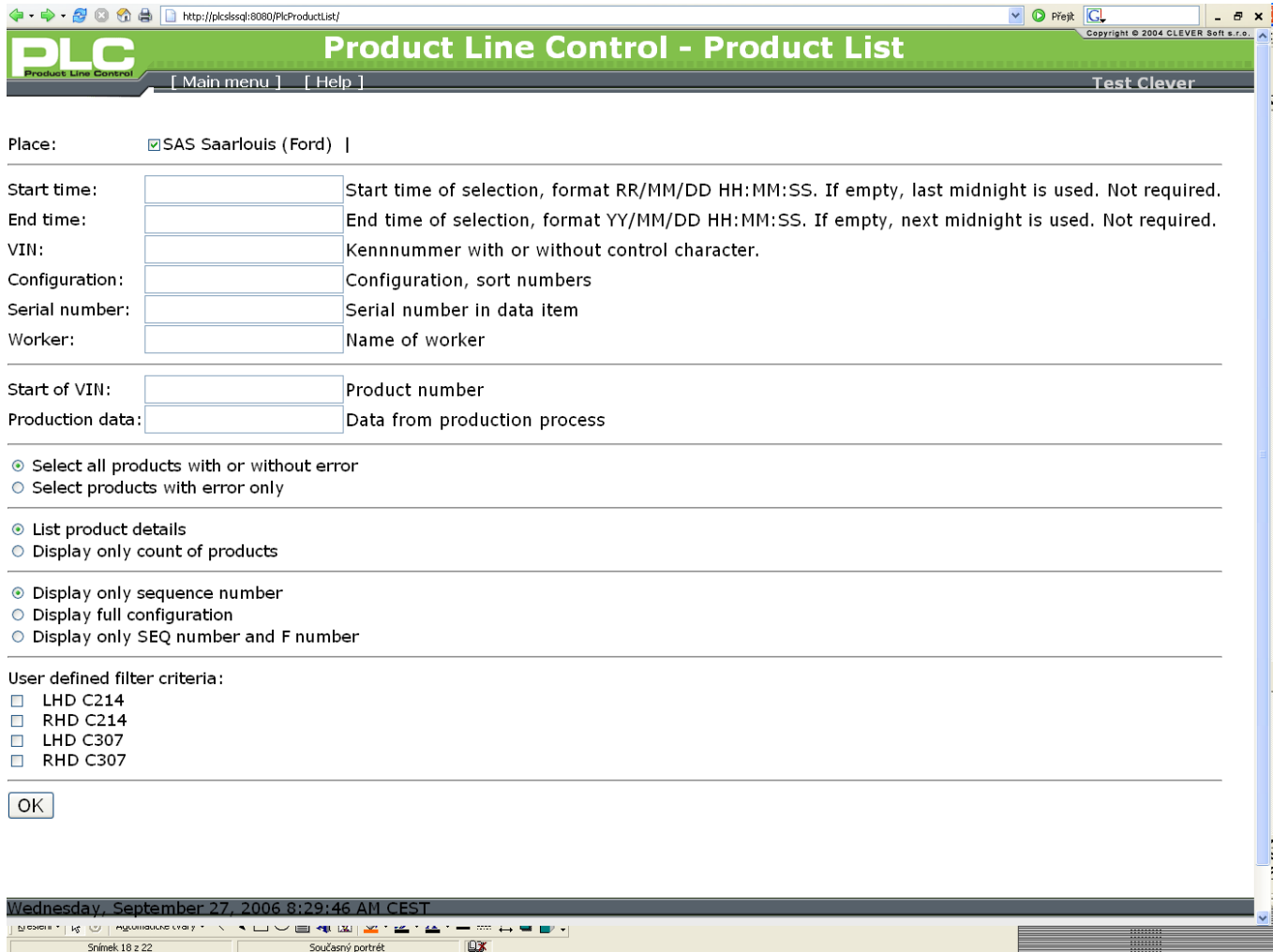
Check sum - Checksum calculation



Support request



# Web interface – selection criteria



The screenshot shows a web browser window with the URL `http://plc1ssq1:8080/PlcProductList/`. The page title is "Product Line Control - Product List". The interface includes a navigation bar with "Main menu" and "Help" links, and a "Test Clever" button. The main content area contains several form fields and radio button options for selecting products.

Place: ☒ SAS Saarlouis (Ford) |

Start time:  Start time of selection, format RR/MM/DD HH:MM:SS. If empty, last midnight is used. Not required.

End time:  End time of selection, format YY/MM/DD HH:MM:SS. If empty, next midnight is used. Not required.

VIN:  Kennnummer with or without control character.

Configuration:  Configuration, sort numbers

Serial number:  Serial number in data item

Worker:  Name of worker

Start of VIN:  Product number

Production data:  Data from production process

☒ Select all products with or without error  
☐ Select products with error only

☒ List product details  
☐ Display only count of products

☒ Display only sequence number  
☐ Display full configuration  
☐ Display only SEQ number and F number

User defined filter criteria:

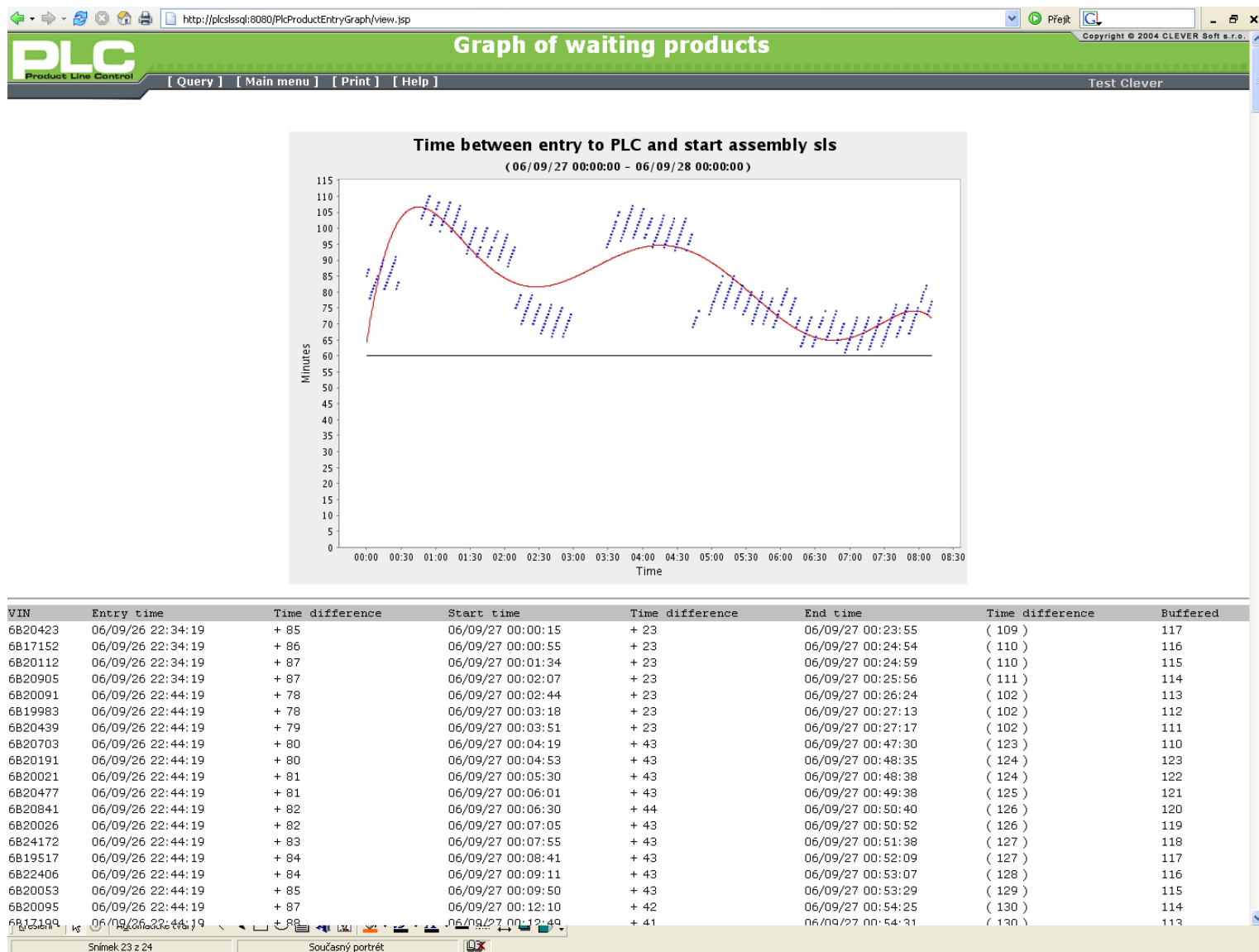
☐ LHD C214  
☐ RHD C214  
☐ LHD C307  
☐ RHD C307

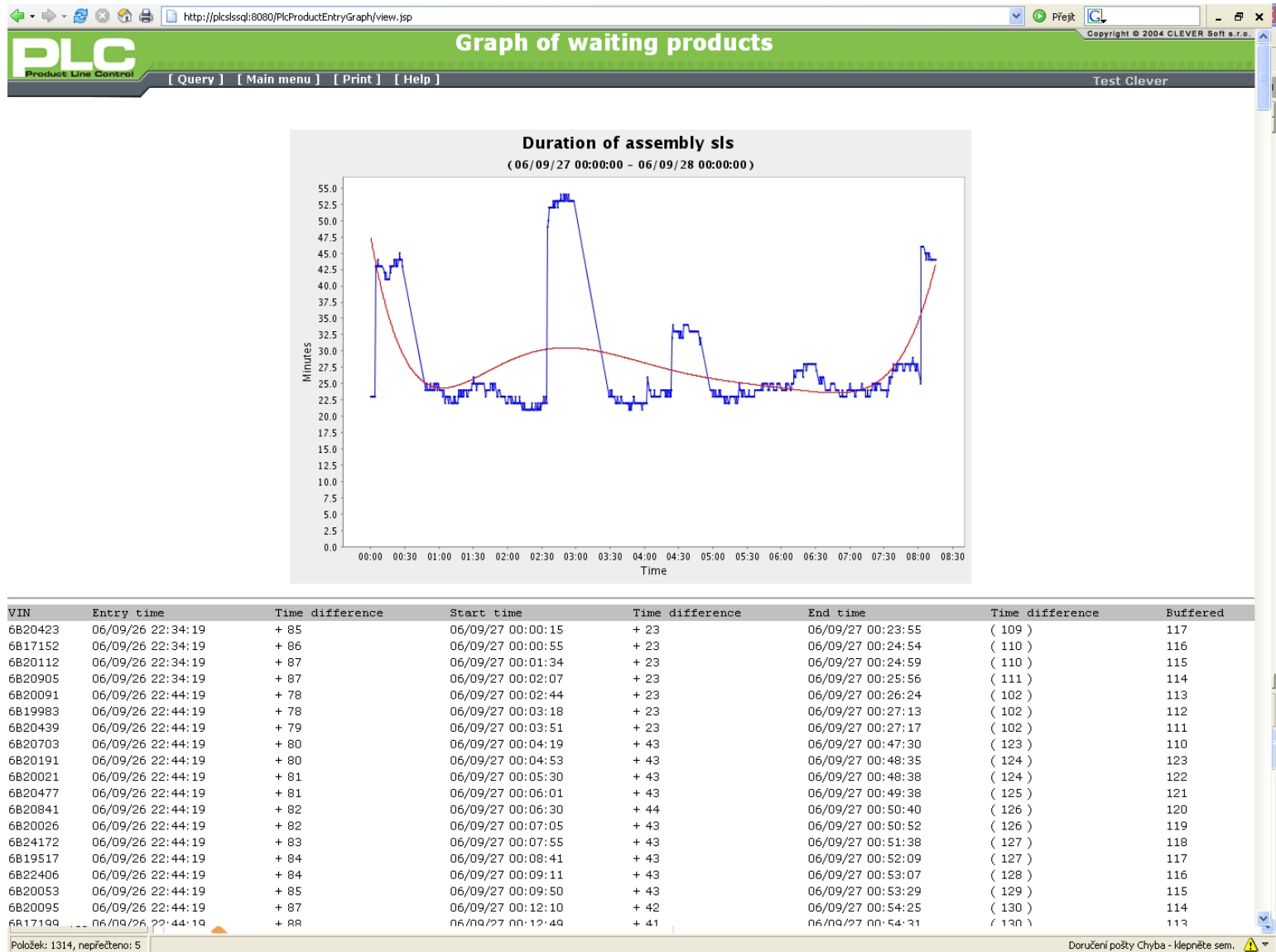
Wednesday, September 27, 2006 8:29:46 AM CEST

Snímek 18 z 22      Současný portrét

# Sample of product detail

Product Line Control - Product Detail			
sls - - 6B19196			
Entry time: 2006-09-27 06:34:19.0 Start time: 2006-09-27 07:44:16.0 End time: 2006-09-27 08:13:04.0			
T1:Startposition Sequenz Check			
T10	Sequence check(1:1)		
	2006-09-27 07:44:16.0	SAS5370 Isik Tacim	Sequenz OK
T11	HVAC Partcheck(1:1)		
	2006-09-27 07:44:17.0	SAS5370 Isik Tacim	4M51 19B555 C
T8:Vormontage Airbag und IP			
T80	Sequence check(1:1)		
	2006-09-27 07:48:02.0	SAS5247 Lamm Martine	Sequenz OK
T81	IP S/N(1:1)		
	2006-09-27 07:48:07.0	SAS5247 Lamm Martine	S/N: 9101000716143
T82	Airbag S/N(1:2)		
	2006-09-27 07:48:07.0	SAS5247 Lamm Martine	6M51 A042B84 A - C307 links
	2006-09-27 07:48:07.0	SAS5247 Lamm Martine	S/N: 06264C70620
T84	Tightening(8:8)		
	2006-09-27 07:48:13.0	SAS5247 Lamm Martine	008.11 @ 00045 @
	2006-09-27 07:48:14.0	SAS5247 Lamm Martine	008.11 @ 00051 @
	2006-09-27 07:48:16.0	SAS5247 Lamm Martine	008.08 @ 00044 @
	2006-09-27 07:48:18.0	SAS5247 Lamm Martine	008.07 @ 00041 @
	2006-09-27 07:48:19.0	SAS5247 Lamm Martine	008.17 @ 00063 @
	2006-09-27 07:48:22.0	SAS5247 Lamm Martine	008.08 @ 00055 @
	2006-09-27 07:48:23.0	SAS5247 Lamm Martine	008.21 @ 00043 @
	2006-09-27 07:48:25.0	SAS5247 Lamm Martine	008.11 @ 00067 @
TB:Airbag Shoot			
TB0	Sequence check(1:1)		
	2006-09-27 07:53:05.0	SAS5026 Balzer Raymond	Sequenz OK
TB1	Tightening(2:2)		
	2006-09-27 07:53:13.0	SAS5026 Balzer Raymond	002.02 @ 00051 @
	2006-09-27 07:53:18.0	SAS5026 Balzer Raymond	002.00 @ 00011 @
T90	Sequence check(1:1)		
	Hotovo		





# Operational Method Sheets

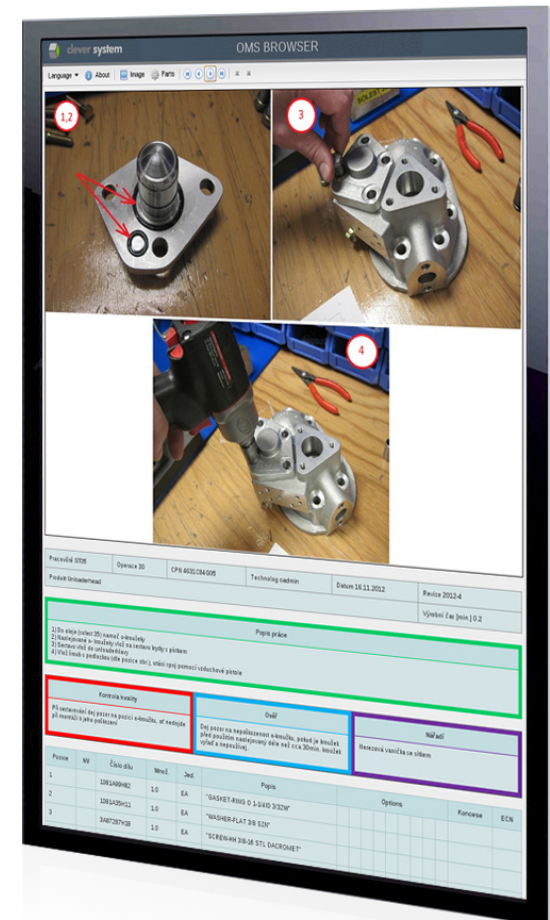
This application is designed for a management of operational method sheets placed on workstations. It enables an assignment of bill of material to operations defined on workplaces.

A documented history of revisions is available as well.

A database of tools used on workplaces is handled by this application.

## Outputs:

- An electronic operational method sheet on a workstation screen.
- PDF file available for a printing.
- Technologists are notified by an e-mail about changes in the bill of material.



# Configuration of Clever System

All software modules are configured by configuration files. It is possible to edit these text files with common text editors.

A user-friendly configuration tool (cct) is available as well.

All PCs with Clever System system support a remote access via IP protocol. It enables remote configuration with responsible person or our support.

The production on workstations doesn't need to be interrupted during configuration changes.

No MS Windows licenses are required.



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