

# logi.CED 5.2

Welcome to our Power Day  
logi.CED



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logi.cals®  
all the more power



- Create Cause-Effect tables for the description of logics for Emergency Shut Down systems (ESD) and other
- Link to logi.DOC (signal exchangement)
- Link to Smartplant-P&ID (Linde Engineering GmbH, Pullach)
  - Exchange and automatic update of all Cause/Effect/Actions with the P&ID
- Documents are generated by Excel export
- Cooperative development between logi.cals Germany and Linde Engineering GmbH, Pullach
- MultiClient access, Cytrix compatible
- Control Naratives for all objects and generation of the operational manual for Cause-Effects
- Code generation for logi.RTS and logi.SIL



- Cause-Editor / Effect-Editor
- Action-Editor / Notes-Editor
- Logic-Block and Group-Block-Assignment
- View-Editor (Action view)
- View-Editor (X-Action view)
- View-Editor (Logic-View)
- View-Editor for OPC-Online
- Revision management with Delta Check
- Append and copy Unit with tree-view
- Excel-Export for all elements and views
- Control narratives for documentation
- Code generation for logi.RTS and logi.SIL
  - logi.CED as plc-programming tool



- Cause-Editor
  - Name, Longname, P&ID Tag, Notes, Description, Remark
  - SIL, AIL, Voting, InputNo
  - OPCTags, Inverting for OPC inquiry
  - Automatic Ranking
  - LimitValues, Hysteresis, TimeTripDelay
  - Revision management (Create, Modify, Revision)
  - 10 free usable fields
  - Documentation and remark fields for control narratives



# Cause Editor (Screen Shot)

**Cause Editor**

Cause Cause Info Description Remark Modification

Name: 1101.21.H01.L Group: 1201

Longname: VK COMPRESSORS - UNLOAD InputNo:

OPCTag:  Invert AIL:

OPCTag2:  Invert SIL:

SystemTag: Rating:

P&ID Tag: PFP002 Structure Level:

Voting: Import Info: Manual

Note:

Add Update Cancel Help



# Cause to Effect CRF

Suche  Find

Cause	Effect	Signale	Views
TagNo +	PIDTag	Retir	
11.00.PU			
1101.01.H01.H	PPF002		
1101.01.H01.L	PPF002		
1101.21.H01.L	PPF002		
12.00.PU			
1201.00.K06.H	PPF15		
1201.00.K07.H	PPF011		
1201.00.K08.H	PPF011		
1201.00.K09.H	PPF011		
1201.00.X35.H	PPF011		
1201.00.X36.H	PPF011		
1201.00.X45.H	PPF011		
1201.00.X46.H	PPF011		
1201.01.P01.HH	1201.1		
1201.01.P01.LL	PPF011		
1201.01.T31.HH	1201.4		
1201.01.V31.HH	1201.4		
1201.01.V35.HH	1201.4		
1201.01.Y01.L	PPF011		
1201.02.T01.HH	1201.1		
1201.02.T31.HH	1201.4		
1201.02.V31.HH	1201.4		
1201.02.V35.HH	1201.4		
1201.03.T01.HH	1201.1		
1201.03.T31.HH	1201.4		
1201.03.V31.HH	1201.4		
1201.03.V35.HH	1201.4		
1201.04.P02.HH	PPF011		
1201.04.T02.HH	PPF011		
1201.04.T31.HH	1201.4		
1201.04.V31.HH	1201.4		
1201.04.V35.HH	1201.4		
1201.04.Y01.L	PPF011		
1201.05.T01.HH	1201.2		
1201.05.T31.HH	1201.4		
1201.05.V31.HH	1201.4		
1201.05.V35.HH	1201.4		
1201.10.T01.HH	PPF011		

Effect	Action	ImportInfo
2401.00.X01	S	Manual
2401.16.Y01	R	Manual
2401.29.Y01	R	Manual
2601.01.X01	S	Manual
2602.26.Y01	R	Manual
3001.15.H01	R	Manual

Effect	Action	ImportInfo
2401.00.X01	S	Manual
2401.16.Y01	R	Manual
2401.29.Y01	R	Manual
2601.01.X01	S	Manual
2602.26.Y01	R	Manual
3001.15.H01	R	Manual

Dieter Goltz, KSD | 14.08.2009 | 3 | DG | 30.11.2010 | 2.0.0



- Effect-Editor
  - Name, Longname, P&ID Tag, Notes, Description, Remark
  - OutputNo
  - OPCTags, Inverting for OPC inquiry
  - Revision management (Create, Modify, Revision)
  - 10 freely usable fields
  - Documentation and remark fields for control narratives



# Effect editor (Screenshot)

**Effect Editor**

Effect | Effect Info | Description | Remark | Modification

Name: I1101.21.H02      OutputNo:

Longname: MIN BYPASS OPEN VK 100, VK 85, VK 85      Rating:

OPCTag:   Invert      Logic Block:

OPCTag2:   Invert      Structure Level:

SystemTag:       ImportInfo: Manual

P&ID Tag: PFP002

Note:

Add    Update    Cancel    Help



# Effect to Cause CRF

CED\_SIL\_Galati.mdb - logi.CED - [Cause Liste]

Verwendung Extras Export Hilfe

Suche  Find

TagNo +	PIDTag	Ratir	Cause	Action	ImportInfo
11.00.PU			2401.16.L01	R	Manual
1101.00.X36	PFP002		2401.16.L01	R	Manual
1101.01.H01	PFP002		2401.16.T04	R	Manual
1101.01.Y01	PFP002		2601.01.X08	S	Manual
1101.21.H01	PFP002		3001.15.P01	R	Manual
1101.21.H02	PFP002		3001.15.T01	R	Manual
12.00.PU			3001.15.Y01	S	Manual
1201.00.K06	PFP011		3001.99.P01	R	Manual
1201.00.K07	PFP011		3001.99.P01	R	Manual
1201.00.K08	PFP011		3002.99.P01	R	Manual
1201.00.K09	PFP011		3002.99.P01	R	Manual
1201.00.SU			8301.90.P01	N	Manual
1201.00.X02	PFP011				
1201.00.X35	PFP011				
1201.00.X36	PFP011				
1201.00.X45	PFP011				
1201.00.X46	PFP011				
1201.01.Y01	PFP011				
1201.04.Y01	PFP011				
1201.21.H01	PFP011				
1201.21.H02	PFP011				
1201.21.Y01	PFP011				
1201.22.H01	PFP011				
1201.22.H02	PFP011				
1201.22.Y01	PFP011				
1201.29.Y01	PFP011				
1201.59.X01	1201.4				
1201.70.Y01	1201.1				
1201.94.X04	PFP011				
1202.00.SU					
1202.00.X55	PFP15				
1202.00.X56	PFP15				
1202.81.E06	PFP15				
1202.81.N01	PFP15				
1202.81.N02	PFP17				
1203.00.SU					
1203.10A.N01	PFP17				
1203.10B.N01	PFP17				

Dieter Goltz, KSD 14.08.2009 3 DG 30.11.2010 2.0.0



- .. where used to describe the relation between Cause and Effect
- 3 different types of action check
  - Advanced
    - Freely usable first and second char
  - Simple
    - Syntax checked usage of first and second char
  - SIL
    - Pre-defined action for SIL-applications



- Action-Editor
  - Free definition of an action character set (3 letters for first char and 10 letters for second char)
  - Assignment of Notes to Action chars



- Action-Editor

- 1. Letter set could be used to define

- SIL,
    - ESD,
    - AIL,
    - DCS - Class

3 - SIL3; Safety Integrity Level 3, classified by TAS

2 - SIL2; Safety Integrity Level 2, classified by TAS

1 - SIL1; Safety Integrity Level 1, classified by TAS

E - ESD; Realization in ESD System, no classification

A - AIL; Assets Integrity Level 8equal to SIL 1), classified by XDB

D - DCS; Process Interlocks, typical realised in the DCS

M - MCC; Process interlocks realised in the Motor Control Center



- Action-Editor – 2. Letter
  - 2. Letter set could be used to define
    - Interlocks like
      - Force Close (FC)
      - Force Open (FO)
      - Interlock Open (IO)
      - Interlock Close (IC)
      - ..

C - close,  
O - open  
RO - reset open  
RC - reset close  
R - reset  
M - set to manual  
A - set to auto  
FC - force close,  
FO - force open  
FM - force to manual  
FA - force to auto  
IO - interlock open,  
IC - interlock close  
GO - start open,  
SO - stop open  
GC - start closing,  
SC - stop closing  
G - start (go),  
S - stop  
X - execute  
E - enable,  
D - disable



- Notes Editor
  - Define free usable remarks
  - Could be assigned to Cause, Effect and Action
  - Exported into the CE-Excel output



- Logic Block-Editor
  - Definition of free names for Logic block
  - Assign to Effects
  - Sorting and filtering
  - Exported into the CE Excel output



# View Editor – Action View

- Action View

Pearl.mdb - [Precooling]

View Filter Extras Export OPC Display Help

Cause Effect Signals Views

Name +	Description	Effect	Longname
Molesieve		FCA-30005	Blowdown flow controller
Precooling		FCSA-30002	Flow controller to DCAC
		HC-30001	Start-up valve to evap cool
		LCA-30005	Evaporation cooler level co
		LCSA-30004	DCAC level controller
		UC-30250	Start/Stop logic for IP2431 UC-30250
		UC-30300	Start/Stop logic for IP2431 UC-30300
		UC-30700	Automatic pump change
		US-30151	Blowdown solenoid valve
		US-30501	Chilled water control valve
		US-30550	Stop chemical dosing
		XA-30001	Common precooling fault

Cause	Longname	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	Effect	
FCSA-30002LL	Chilled wate			-FL																
GB10001B	Machine trai	-FLM			S1FL	-FL	S1CL	S1C		-CL										
LSA30006LL	Level transn						-PL	-PL												
LZA-30001HH	DCAC level	-FLM			S1FL		S1CL	S1C	-PL	-CL										
LZA-30001LL	DCAC level	-FL				-FL				-CL										
LZA-30002HH	DCAC level	-FLM			S1FL		S1CL	S1C	-PL	-CL										
LZA-30002LL	DCAC level	-FL				-FL				-CL										
LZA-30003HH	DCAC level	-FLM			S1FL		S1CL	S1C	-PL	-CL										
LZA-30003LL	DCAC level	-FL				-FL				-CL										
UC-10150A	MAC on load	-PH		DC			-PH													-PL
UC-10150B	MAC on unic			-FL																
UC-30250A	Pump Start					-CV														
UC-30250B	Pump stop					-FLMN			-CH						-CL	-CL				
UC-30300A	Pump Start					-CV														
UC-30300B	Pump stop					-FLMN			-CH						-CL	-CL				
UC-30350	Coldbox sh																			
US-30500	Chilled wate					-CV														DC
US-30650	Flow LL Pur																			
UZ-10050	ASU Emergi							S1CL	S1C											
YS-592486.7	High conduc	-FH																		
YS-592486.8	Chemical dc	-FL																		

Torben Sölken, KSD    Never    None    logiDOC\_V42    23.01.2007    3.2.0



# View Editor – Cross table (X-Action-View)

- Cross table (X-Action view)

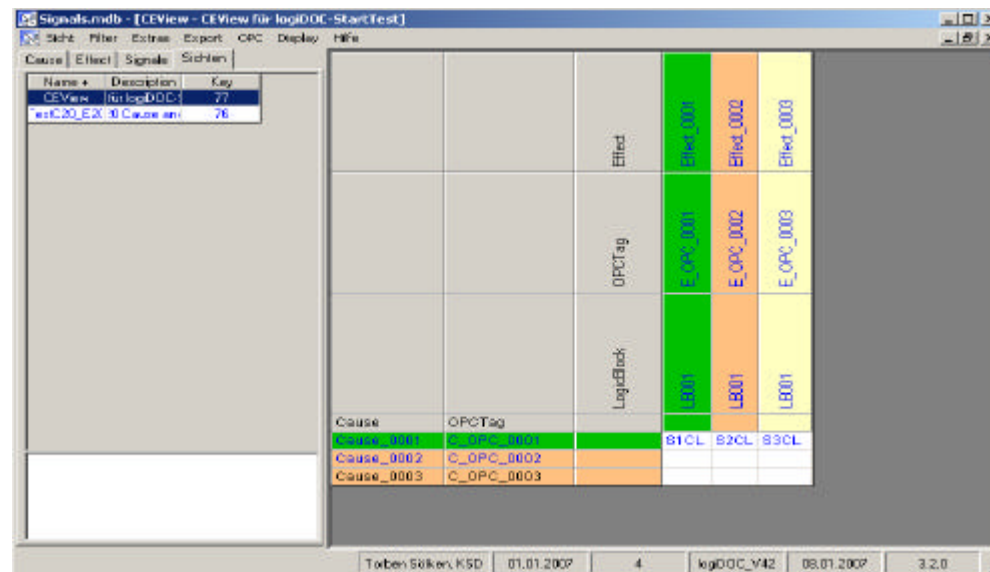
Cause	Longname	Action	Effect
FCSA-30002LL	Chilled water flow LL	DCS	FCSA-30005
GB1 0001 B	Machine train not running	DCS	FCSA-30002
LSA30006LL	Level transmitter evaporation cooler	DCS	HC-30001
LZA-30001HH	DCAC level HH	DCS	LCA30005
LZA-30001LL	DCAC level LL	DCS	LCA30004
LZA-30002HH	DCAC level HH	DCS	UC-30050
LZA-30002LL	DCAC level LL	DCS	UC-30000
LZA-30003HH	DCAC level HH	DCS	UC-30700
LZA-30003LL	DCAC level LL	DCS	US-30151
UC-10150A	MAC on load	SIL1	US-30501
UC-10150B	MAC on unload	DCS	US-30250
UC-30250A	Pump Start	DCS	XA-30001
UC-30250B	Pump stop	DCS	
UC-30300A	Pump Start	DCS	
UC-30300B	Pump stop	DCS	
UC-30350	Coldbox shutdown	DCS	
US-30500	Chilled water trip	DCS	



# Onlinetest/Offline Simulation

## OPC Runtime

- Test of the diagrams by means of OPC Client
- Direct selection of process signals
- Colour mark to show the binary and analog signal state



The screenshot shows a software window titled "Signals.mdb - [CEView - CEView für logiDDC-StartTest]". It features a menu bar with "Sicht", "Filter", "Extras", "Export", "OPC", "Display", and "Hilfe". Below the menu is a toolbar with "Cause", "Effect", "Signale", and "Sichten". A small table on the left lists "Name", "Description", and "Key" for "CEView für logiDDC" (key 7) and "estC20\_E23\_0 Cause an" (key 76). The main area contains a large table with columns for "Cause", "OPCTag", "LogicBlock", and "Effect". The "Cause" column lists "Cause\_001", "Cause\_002", and "Cause\_003". The "OPCTag" column lists "C\_OPC\_001", "C\_OPC\_002", and "C\_OPC\_003". The "LogicBlock" column lists "LB001", "LB001", and "LB001". The "Effect" column lists "E\_OPC\_001", "E\_OPC\_002", and "E\_OPC\_003". The cells are color-coded: green for "Cause\_001", orange for "Cause\_002", and yellow for "Cause\_003". Below the main table is a summary table with columns "Cause", "OPCTag", and "Effect". The summary table shows "Cause\_001" with "C\_OPC\_001" and "E\_OPC\_001", "Cause\_002" with "C\_OPC\_002" and "E\_OPC\_002", and "Cause\_003" with "C\_OPC\_003" and "E\_OPC\_003". The status bar at the bottom shows "Tobias Süker, KSD", "01.01.2007", "4", "logiDDC\_V42", "08.01.2007", and "3.2.0".

Cause	OPCTag	LogicBlock	Effect
Cause_001	C_OPC_001	LB001	E_OPC_001
Cause_002	C_OPC_002	LB001	E_OPC_002
Cause_003	C_OPC_003	LB001	E_OPC_003

Cause	OPCTag	Effect
Cause_001	C_OPC_001	E_OPC_001
Cause_002	C_OPC_002	E_OPC_002
Cause_003	C_OPC_003	E_OPC_003



- Representation through the OPC-Client (signals)
  - Red: Variable on the OPC-Server -> Signalstate = 0
  - Green: Variable on the OPC-Server -> Signalstate = 1
  - Yellow: Variable on the OPC-Server either no value or variable is missing (Not good)
  - Colours are free designable



- Revision management
  - All changes in logi.CED the data base are pursued and stored user referred
- Creating of Revisions (Issues)
- Creating of Sub-Revisions
- Back-Up revision database for Delta check
- Delta comparision between logi.CED data bases



- Delta engineering
  - Each issue/revision or sub revision create a CE-database copy
  - Delta Engineering creates a delta CE-database between two issue/revision or sub revision



- Presentation for the project data base
  - Red: Noted for deletion, deleted before the next issue/revision or sub revision
  - Black: Unchanged and or revisioned
  - Blue: Was changed after the last issue/revision or sub revision
- Presentation of a revisioned data base
  - Blue: Revisioned data base (file: Rev) can only be represented but not worked on
- Presentation of a delta data base
  - Red: Deleted or missing
  - Black: Invariably and/or taken over again
  - Blue: Was changed or recently added



- Using of Tree Views
  - Structure of Cause&Effect designators
  - Copying/inserting entire Units/Subunits
- Filter for Views



# TreeView for Cause Effect

CED\_SIL\_Galati.mdb - logi.CED - [Tree View]

Suche

Datenbank  
 Diese Datenbank  
 Externe Datenbank

Cause Effect Signale Views

TagNo +	PIDTag	Ratir
11.00.PU		
1101.00.X36	PFP002	
1101.01.H01	PFP002	
1101.01.Y01	PFP002	
1101.21.H01	PFP002	
1101.21.H02	PFP002	
12.00.PU		
1201.00.K06	PFP011	
1201.00.K07	PFP011	
1201.00.K08	PFP011	
1201.00.K09	PFP011	
1201.00.SU		
1201.00.X02	PFP011	
1201.00.X35	PFP011	
1201.00.X36	PFP011	
1201.00.X45	PFP011	
1201.00.X46	PFP011	
1201.01.Y01	PFP011	
1201.04.Y01	PFP011	
1201.21.H01	PFP011	
1201.21.H02	PFP011	
1201.21.Y01	PFP011	
1201.22.H01	PFP011	
1201.22.H02	PFP011	
1201.22.Y01	PFP011	
1201.29.Y01	PFP011	
1201.59.X01	1201.4	
1201.70.Y01	1201.1	
1201.94.X04	PFP011	
1202.00.SU		
1202.00.X55	PFP15	
1202.00.X56	PFP15	
1202.81.E06	PFP15	
1202.81.N01	PFP15	
1202.81.N02	PFP17	
1203.00.SU		
1203.10A.N01	PFP17	
1203.10B.N01	PFP17	

Cause Action ImportInfo

2401.16.L01	R	Manual
2401.16.L01	R	Manual
2401.16.T01	R	Manual
2601.01.X02	S	Manual
3001.15.P01	R	Manual
3001.15.T01	R	Manual
3001.15.Y01	S	Manual
3001.99.P01	R	Manual

TreeView

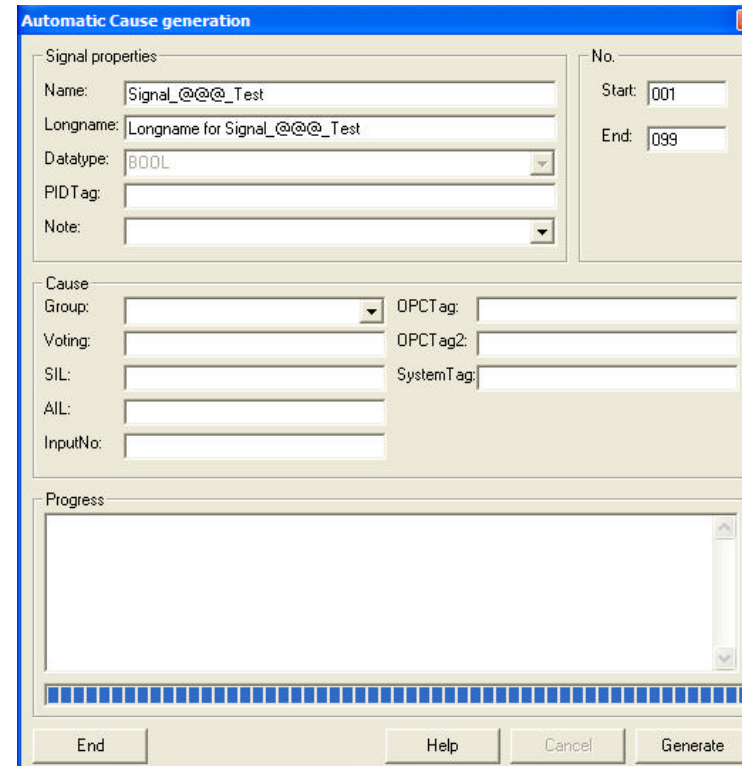
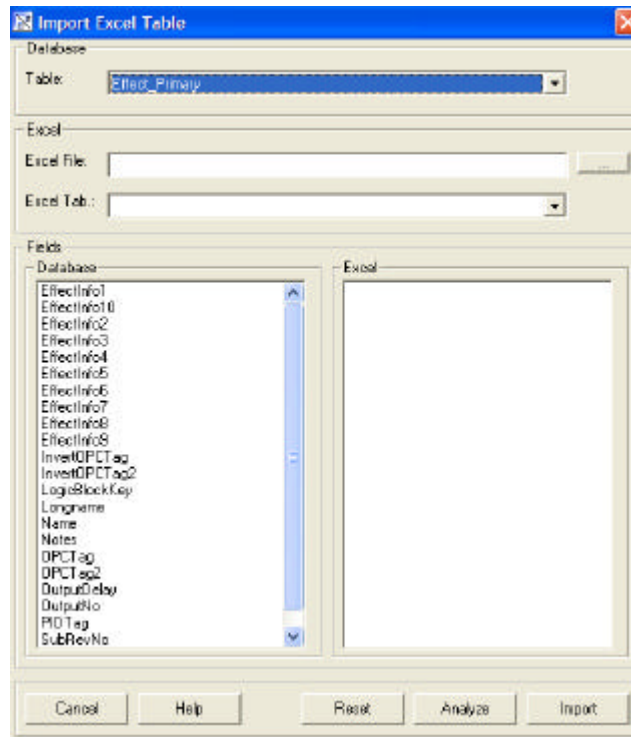
- 11
  - 1101
    - 00
      - 1101.00.X36 Effect
    - 01
      - 1101.01.H01 Effect
      - 1101.01.H01.H Cause
      - 1101.01.H01.L Cause
      - 1101.01.Y01 Effect
  - 21
  - 12
    - 00
      - 12.00.PU Cause
      - 12.00.PU Structure Level 1
  - 1201
    - 00
      - 1201.00.K06 Effect
      - 1201.00.K06.H Cause
      - 1201.00.K07 Effect
      - 1201.00.K07.H Cause
      - 1201.00.K08 Effect
      - 1201.00.K08.H Cause
      - 1201.00.K09 Effect
      - 1201.00.K09.H Cause
      - 1201.00.SU Structure Level 2
      - 1201.00.X02 Effect
      - 1201.00.X35 Effect
      - 1201.00.X35.H Cause
      - 1201.00.X36 Effect
      - 1201.00.X36.H Cause
      - 1201.00.X45 Effect
      - 1201.00.X45.H Cause
      - 1201.00.X46 Effect
      - 1201.00.X46.H Cause
    - 01
      - 1201.01.P01.HH Cause
      - 1201.01.P01.LL Cause
      - 1201.01.T31.HH Cause
      - 1201.01.V31.HH Cause
      - 1201.01.V35.HH Cause
      - 1201.01.Y01 Effect
      - 1201.01.Y01.L Cause
    - 02
      - 1201.02.T01.HH Cause
      - 1201.02.T31.HH Cause
      - 1201.02.V31.HH Cause
      - 1201.02.V35.HH Cause

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# Import and mass data production

- Excel Import



- Mass data production with - „Wildcard“



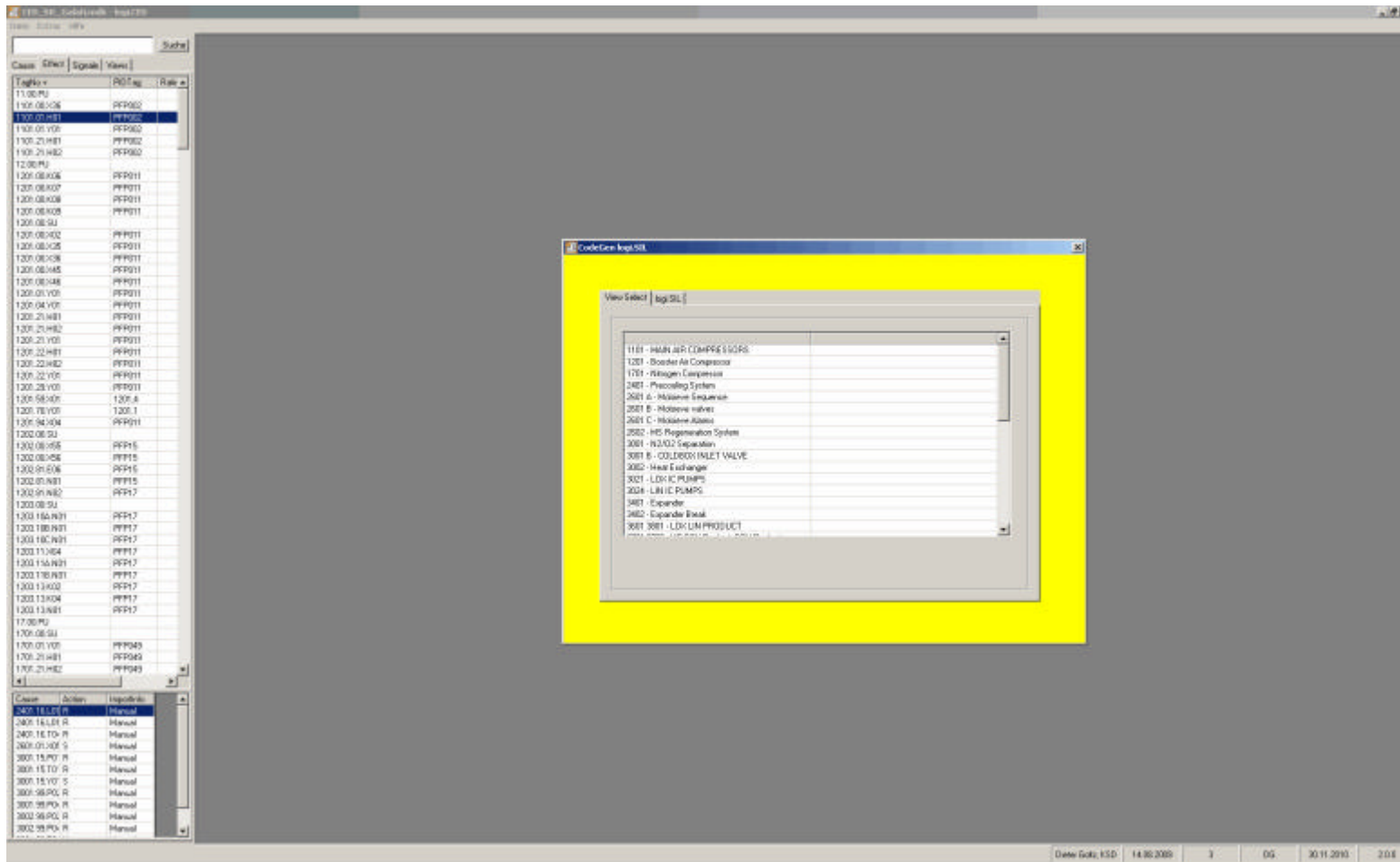
- Cause- Effects as PLC programming
- Generate XML-files for logi.RTS and logi.SIL Runtime
- Debugging in logi.CAD
- Debugging in logi.CAD with WatchPages



- Pre-defined Action characters
  - A(nd), O(r), S(et), R(eset), N(ot stored), DT#1s(Delay)
  - CE-DB-Type setting to SIL
  - CE-Views and Logic-Views could be used
- Code generation for logi.RTS
  - Generates XML-File
  - Could be loaded in logi.RTS and executed in the PLC
  - Use Watchpages for Online-Visualization
  - Fully supported for all logi.cals-OEM-PLCs


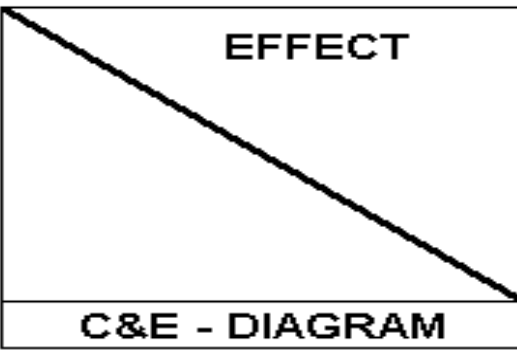


# Codegenerator for logi.SIL and logi.RTS



# Output from logi.CED

- CE-Excel-Export

 kirchner SOFT Deutschland GmbH <b>Langenfeld</b>		Project: Document Title:												
<b>Process Unit:</b>														
		Output No.												
		Notes												
		P&ID No.	11-PE-1002-002											
		Signals / Effect.	11-ESV-5000											
			11-ESV-5001											
			11-ESV-5002											
			11-ESV-5003											
			11-ESV-5004											
Input No.	Notes	Signals / Cause	P&ID No.	Voting	SIL	AIL	Group	Rev	1	1	1	1	1	
		11-LSH-5000		1001			2	1	3					<b>E</b>
		11-LSH-5001		1001			2	1		2				<b>A</b>
		11-LSH-5002		1001			2	1			1			<b>D</b>
		11-LSH-5003		1001			2	1						<b>M</b>



# Thanks for your attention

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## Let's take a look into logi.CED

