

**PER D. HANSEN**

Project Manager



SPOR 1

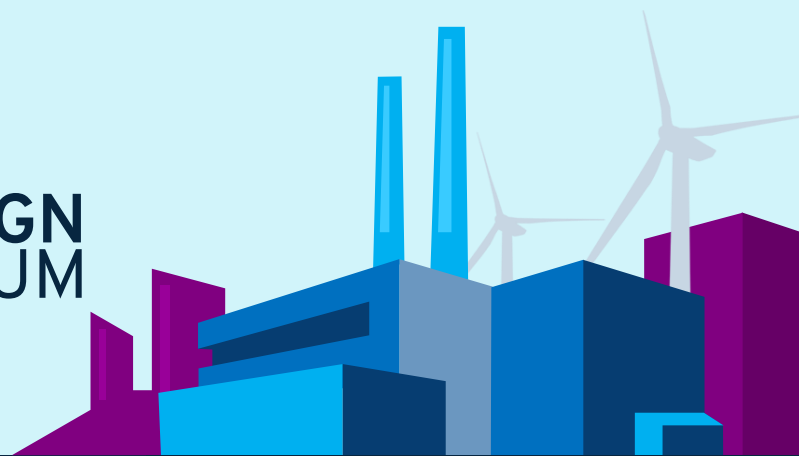
NTI A/S

Håndtér og vedligehold dit procesanlægs komponentdata ét sted

Hvis du arbejder med design og projektering af procesanlæg, kender du måske til udfordringerne med uoverensstemmelse i komponentdata og vedligehold af data på tværs af forskellige systemer og data-øer. Vi stiller skarpt på de problemer, der ofte opstår ved at have separate øer for komponentdata. Vi vil demonstrere, hvordan du på P&ID-, 3D- og stykliste-niveau kan skabe sammenhæng og ensartethed i jeres komponentdata. Desuden viser vi, hvordan du kan opnå et intuitivt overblik over projektstatus, indkøb og leverancer af komponenter.



2024  
**INDUSTRI&DESIGN  
FORUM**



## **Del 2 – Spor 1**

# **AutoCAD Plant 3D**

*Håndtér og vedligehold dit procesanlægs komponentdata ét sted*

# NTI Autodesk Plant Design Team - DK



SCALABLE AND FUTURE PROOF SOLUTIONS

## NTI Salgs Team



System Konsulent  
Per Damsgaard



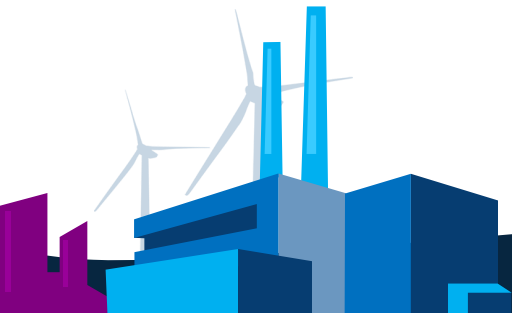
System Konsulent  
Nicolai Broe



System Konsulent  
Jørgen Olesen

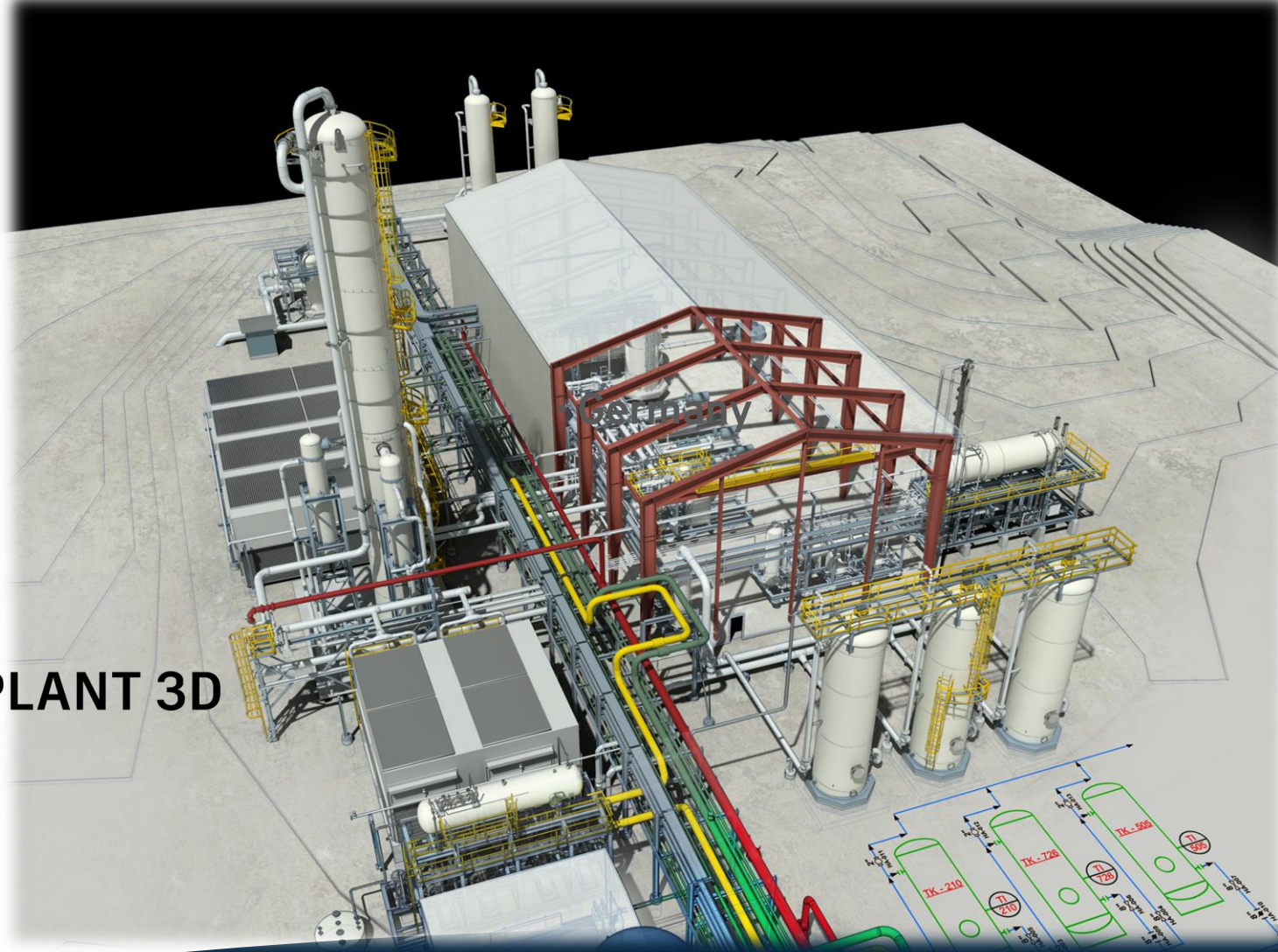


System Konsulent  
Bjarne Blaabjerg

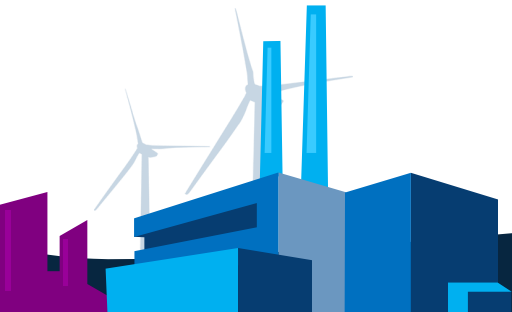


# AutoCAD Plant 3D

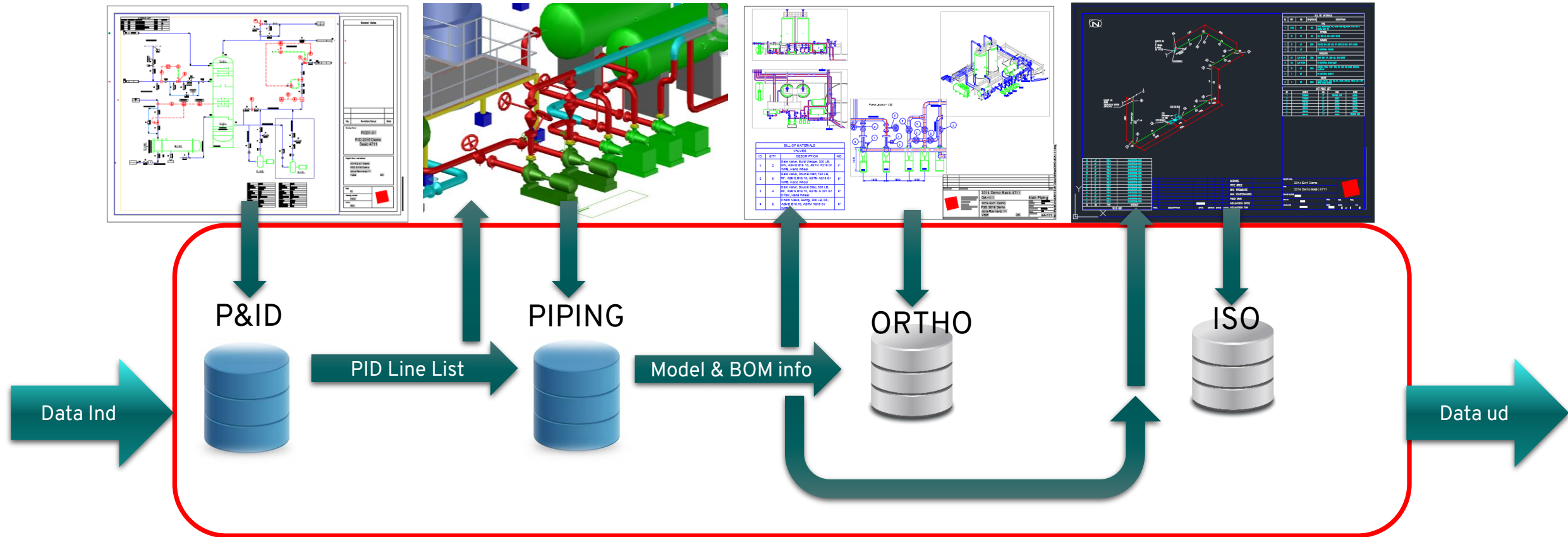
## Komponent Data & Data Workflow



AUTOCAD PLANT 3D



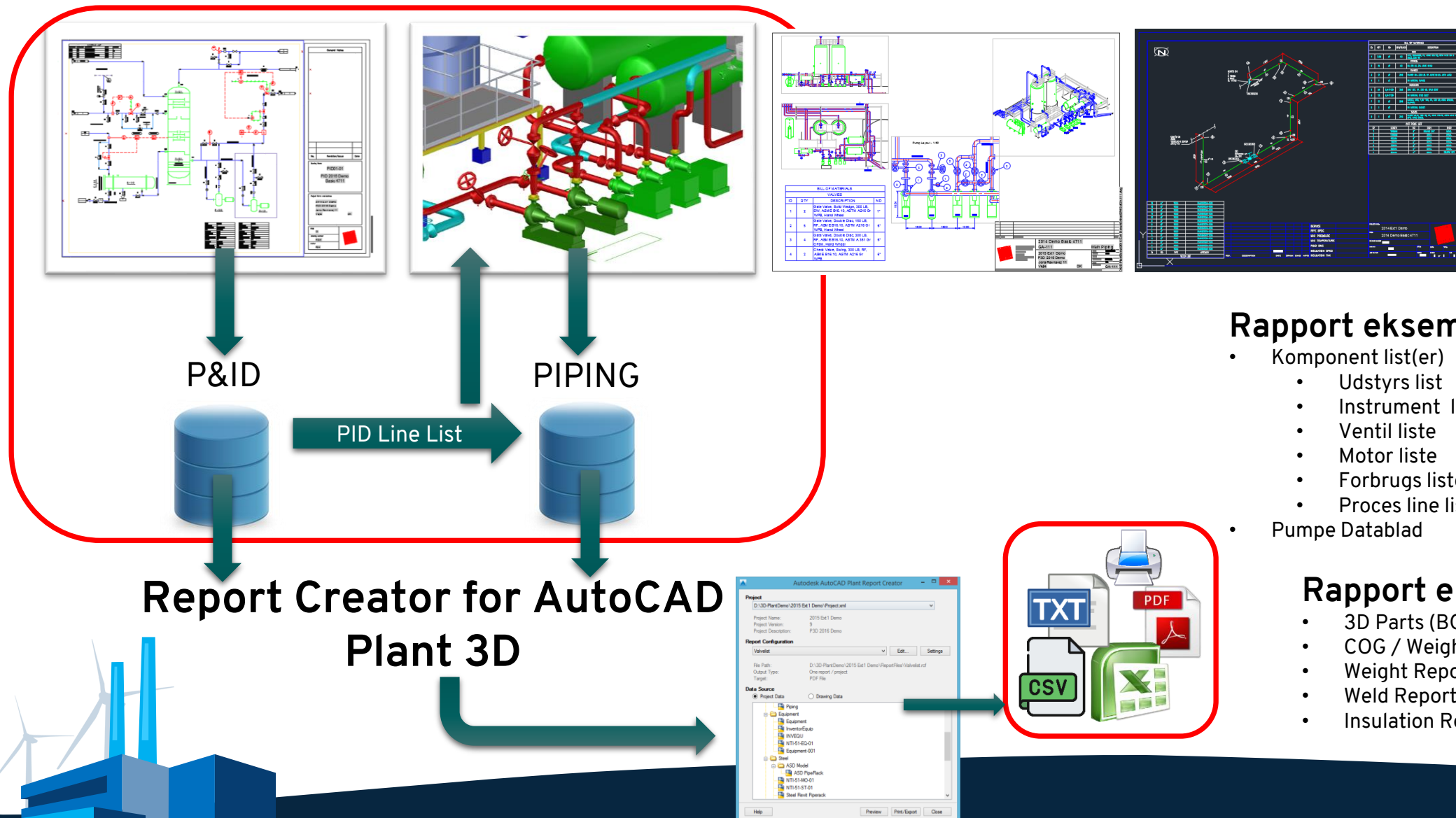
# Disipliner & Data i et Plant 3D projekt



AUTOCAD PLANT 3D



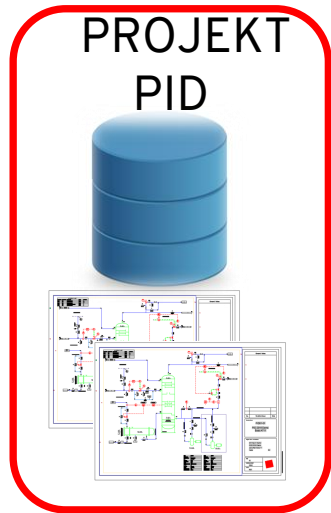
# Discipliner & Data i et Plant 3D projekt



# Data !

## Hvilke data skal afleveres og hvordan?

Komponentliste som PDF fil



nti

SCALABLE AND FUTURE PROOF SOLUTIONS

Projekt: Projekt Beskrivelse

Dato: 21 September, 2018

Tg. Nr. 503182-315\_2019

Ordrenr: 471144

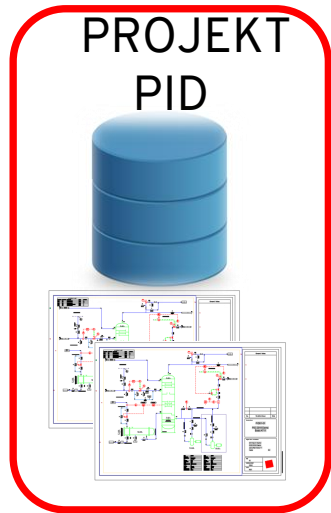
ITEM LIST

Tagnr.	DME Tagnr.	Beskrivelse	Type	Fabrikant	Vare nr.	Funktion	Bemærkning	Setpkt.	Dim	Mat.	Pakn. Mat.	Volt	Amp	Signal	kW	Tryk
Sektion RO011																
RO011-CAT001		Posefilter	Posefilter, type 52		502180-507	Filtrering				AISI 316						
RO011-CAT002		Posefilter	Posefilter, type 52		502180-007	Filtrering				AISI 316						
RO011-FI001		Flowmåler			319004-013	Perm. Flow								4-20		
RO011-FI002	12.34.56	Flowmåler	TPVCMAG	DME	319004-109	Conc. Flow	Husk kabel skal være 5 m	10 ms				24 VDC		4-20		0 bar
RO011-P001	KKS 52252	Pumpe	CRIE 15-3	Grundfos	X37360	Råvandspumpe 1	Husk sokkel			Cast Iron		400v	6,60		4 kw	
RO011-P001-S01		Kontakt	Termoswitch 80°		327490-112	Start Stop Føler										
RO011-PI001		Manometer			307660-010	Inlet filter pressure								4-20		
RO011-PI002		Manometer			307660-010	Inlet filter pressure								4-20		
RO011-PI003		Manometer			307660-025	Pump pressure								4-20		
RO011-PI004		Manometer			307660-025	Conc. Pressure								4-20		
RO011-PV001		Tryk filter	TF25	Silhorko A/S	X47600	Råvandsfilter 4 (res)				Alu						
RO011-PV002		Tryk filter	TF25	Silhorko A/S	X47600	Råvandsfilter 5 (res)				Alu						

# Data !

## Hvilke data skal afleveres og hvordan?

Motor & Instrument liste i Excel format



Project: Tilpasning 2020  
Plant type:  
Country:  
Filename: NTI Standard Projekt V2 - NTI - copy-300  
Rev. no.: Power supply:

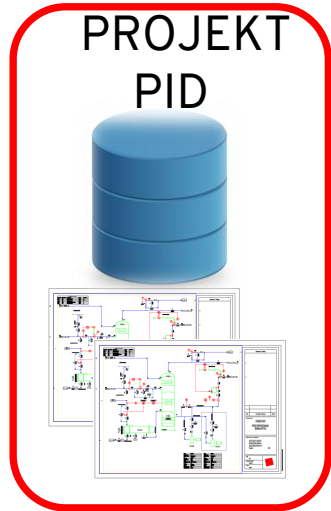
### MOTOR LIST

Tag no.	Customer tag	Main Equipment	Functional Description	Power	Load [Amp]	Voltage	Phase	Starting Device	PLC - I/O				PLC Type	Signal Type
									DI	DO	AI	AO		
				1097	1998	SUM			122	61	0	0	SUM	
??-??		Batch cooker												
??-??MV01								DOL						4-21 mamp
1A01A-B01	B101	Bovine Raw Material bin												
1A01A-B01M01	B101	Bovine Raw Material bin	Motor #1 Bovine Raw material Silo	5.5	10.5	400	3	VFD						300
1A01A-B01M01-M01	B101	Bovine Raw Material bin	Forced Fan, Motor #1 Bovine Raw material Silo	0.16	0.37	400	3	DOL						
1A01A-B01M01-SIC01	B101	Bovine Raw Material bin	Frecurency converter Motor #1 Bovine Raw material Silo	-		400	3	VFD						
1A01A-B01M02	B101	Bovine Raw Material bin	Motor #2 Bovine Raw material Silo	5.5	10.5	400	3	VFD						300
1A01A-B01M02-M01	B101	Bovine Raw Material bin	Forced Fan, Motor #2 Bovine Raw material Silo	0.16	0.37	400	3	DOL						
1A01A-B01M02-SIC01	B101	Bovine Raw Material bin	Frecurency converter Motor #2 Bovine Raw material Silo	-		400	3	VFD						
1A01A-B01M03	B101	Bovine Raw Material bin	Motor #3 Bovine Raw material Silo	5.5	10.5	400	3	VFD						300
1A01A-B01M03-M01	B101	Bovine Raw Material bin	Forced Fan, Motor #3 Bovine Raw material Silo	0.16	0.37	400	3	DOL						
1A01A-B01M03-SIC01	B101	Bovine Raw Material bin	Frecurency converter Motor #3 Bovine Raw material Silo	-		400	3	VFD						
1A01A-B01M04	B101	Bovine Raw Material bin	Motor #4 Bovine Raw material Silo	5.5	10.5	400	3	VFD						300
1A01A-B01M04-M01	B101	Bovine Raw Material bin	Forced Fan, Motor #4 Bovine Raw material Silo	0.16	0.37	400	3	DOL						
1A01A-B01M04-SIC01	B101	Bovine Raw Material bin	Frecurency converter Motor #4 Bovine Raw material Silo	-		400	3	VFD						
1A01A-B01M05	B101	Bovine Raw Material bin	Motor, hydraulic unit	3	6.2	400	3	DOL	2	1				300
1A02A-H01	B102	K-hole screw conveyor #1												
1A02A-H01M01	B102	K-hole screw conveyor #1	Main motor	7.5	14.5	400	3	DOL						300
1A03A-H02	B103	K-hole screw conveyor #2												
1A03A-H02M01	B103	K-hole screw conveyor #2	Main motor	11	21	400	3	DOL						300

# Data !

## Hvilke data skal afleveres og hvordan?

CSV fil for import i f.eks. ERP system



```
File Rediger Søg Vis Kodning Sprog Indstillinger Værktøjer Makro Kør Plugins Vinduer ?
NTI -CSV til NAV-180921-15-01-11.csv
1 ;1;Manuel ventil;Perm. Non-return;;061630-063
2 ;1;Manuel ventil;CIP;Valtor;062102-032
3 ;1;Manuel ventil;Perm. Non-return;Valtor;062102-063
4 ;1;Manuel ventil;Perm. Regulation valve;;307196-063
5 ;1;Manuel ventil;Inlet filter drain valve;Valtor;308500-003
6 ;1;Manuel ventil;Inlet filter drain valve;Valtor;308500-003
7 ;2;Manuel ventil;CIP;Valtor;308600-008
8 ;2;Manuel ventil;Shut off valve;Valtor;308600-010
9 ;1;Manuel ventil;Conc. Regulation valve;;308701-008
10 ;1;Flowmåler ;Conc. Flow;DME;319004-109
11 ;1;Kontakt;Start Stop Føler;;327490-112
12 ;1;Automatisk reguleringsventil;QR valve;;501913-001
13 ;1;Posefilter;Filtrering;;502180-007
14 ;1;Posefilter;Filtrering;;502180-507
15 ;1;Automatisk reguleringsventil;QR valve;;X05056
16 ;1;Endestopskontakt;Pos. Reg;;X36471
17 ;1;Pumpe ;Råvandspumpe 1;Grundfos;X37360
18 ;4;Tryk filter;Råvandsfilter 2;Silhorko A/S;X47600
19
```



# Data !

## Hvilke data skal afleveres og hvordan?

Komplet 3D BoM – alle komponenter i projektet



Bill of Material									
Project: 2021 P3D Demo									
Project No.:									
Quantity	Unit	Description	ND	Standard	Schedule	Material	PN	Angle	
Type: Dairy tubes									
2581	mm	Dairy tubes, DS 76,1 x 1,6 mm	3 in	DS					
713	mm	Dairy tubes, DS 101,6 x 2 mm	4 in	DS					
Type: Pipe									
850	mm	Pipe DIN 2448-1.4571-114.3x36	4 in	DIN 2448		1.4571			
Type: PIPE									
47425	mm	PIPE,ASTM A106 Gr B SMLS,ASME B36.10,4	4 in	ASME B36.10	40	ASTM A106 Gr B SMLS			
145730	mm	PIPE,ASTM A106 Gr B SMLS,ASME B36.10,6	6 in	ASME B36.10	40	ASTM A106 Gr B SMLS			
Type: Pipe, Seamless									
3907	mm	PIPE, SEAMLESS, 1/2" ND, PE, ASME B36.10, ASTM A106 GR B SMLS, SCH 40	0.5 in	ASME B36.10	40	ASTM A106 Gr B SMLS			
1865	mm	PIPE, SEAMLESS, 1" ND, PE, ASME B36.10, ASTM A106 GR B SMLS, SCH 40	1 in	ASME B36.10	40	ASTM A106 Gr B SMLS			
22601	mm	PIPE, SEAMLESS, 2" ND, PE, ASME B36.10, ASTM A106 GR B SMLS, SCH 40	2 in	ASME B36.10	40	ASTM A106 Gr B SMLS			
17940	mm	PIPE, SEAMLESS, 3" ND, PE, ASME B36.10, ASTM A106 GR B SMLS, SCH 40	3 in	ASME B36.10	40	ASTM A106 Gr B SMLS			
4975	mm	PIPE, SEAMLESS, 4" ND, PE, ASME B36.10, ASTM A106 GR B SMLS, SCH 40	4 in	ASME B36.10	40	ASTM A106 Gr B SMLS			
78330	mm	PIPE, SEAMLESS, 6" ND, PE, ASME B36.10, ASTM A106 GR B SMLS, SCH 40	6 in	ASME B36.10	40	ASTM A106 Gr B SMLS			
130013	mm	PIPE, SEAMLESS, 8" ND, PE, ASME B36.10, ASTM A106 GR B SMLS, SCH 40	8 in	ASME B36.10	40	ASTM A106 Gr B SMLS			
Type: PIPE, SEAMLESS									
2289	mm	PIPE, SEAMLESS, 40, 3" ND, PE, ASME B36.10M, API 5L GR.B PSL.1	3 in	ASTM A106	40	1.0457			
Type: Trykrør									
33833	mm	PE100, SDR 26 DN500	20 in				6		
Type: Elbow 90.0°									
3		PH IMPERIAL Elbow 90.0° ND 2"	2 in						
Type: ELL 45 LR									
2		ELL 45 LR, 6" ND, BW, ASME B16.9, ASTM A234 GR WPB SMLS, SCH 40	6 in	ASME B16.9	40	ASTM A234 Gr WPB SML			
Monday, October 7, 2024									
Page 1 of 5									

# Data !

## Hvilke data skal afleveres og hvordan?

Svejsliste / isoleringsliste



### Bill of Material - Svejsninger

Project: 2021 P3D Demo

Quantity	Nominal diameter	Spec	Shop / Field
<b>Type:</b>			
3 Pcs.	6"	Samlet antal: 6	
1 Pcs.	8"	BC21	
2 Pcs.	6"		SHOP
<b>Type: Buttweld</b>			
2 Pcs.	1/2"	Samlet antal: 467	
29 Pcs.	3"	CS150	SHOP
73 Pcs.	4"	BC21	SHOP
258 Pcs.	6"	CS150	SHOP
102 Pcs.	8"	AC21	SHOP
3 Pcs.	12"		SHOP
<b>Type: Fusionweld</b>			
1 Pcs.	500	Samlet antal: 8	
7 Pcs.	500	PE100 SRD26	FIELD
7 Pcs.	500	PE100 SRD26	SHOP
<b>Type: Socketweld</b>			
15 Pcs.	1/2"	Samlet antal: 61	
8 Pcs.	1"	CS150	
38 Pcs.	2"	BC21	
38 Pcs.	2"	CS150	
<b>Type: Tapweld</b>			
1 Pcs.	1/2"	Samlet antal: 8	
3 Pcs.	1"	CS150	SHOP
2 Pcs.	2"	BC21	SHOP
2 Pcs.	2"	CS150	SHOP

### Bill of Material - Insulation

Project: 2021 P3D Demo

Note: Fixed-length pipes are not included in pipes.  
Only components with insulation is showed in this rapport



Quantity	Unit	Description	ND	Insulation Type	Insulation Thickness	Insulation Spec
<b>Type: PIPE</b>						
15031	mm	PIPE,ASTM A106 Gr B SMLS,ASME B36.10,6	6 in	Type 1	50	
<b>Type: Pipe, Seamless</b>						
7211	mm	PIPE, SEAMLESS, 6" ND, PE, ASME B36.10, ASTM A106 GR B SMLS, SCH 40	6 in	C	50	
<b>Type: ELL 90 LR</b>						
5		ELL 90 LR, 6" ND, BW, ASME B16.9, ASTM A234 GR WPB SMLS, SCH 40	6 in	C	50	
5		ELL 90 LR,ASTM A234 Gr WPB SMLS,ASME B16.9,6	6 in	Type 1	50	
<b>Type: Flange</b>						
1		PH IMPERIAL Flange ND 6"	6 in	C	50	
<b>Type: FLANGE WN</b>						
2		FLANGE WN, 6" ND, 300 LB, RF, ASME B16.5, ASTM A105	6 in	C	50	
4		FLANGE WN,ASTM A234 Gr WPB,ASME B16.5,6	6 in	Type 1	50	
<b>Type:</b>						
2		CP IMPERIAL Valve	3 in			
1			6 in	Type 1	50	
<b>Type: Globe Valve</b>						
1		GLOBE VALVE, 6" ND, 300 LB, RF, ASME B16.10, 17 1/2" LG, ASTM A216 GR W	6 in	C	50	

# Data !

## Hvilke data skal afleveres og hvordan?

CSV fil for BoM import i f.eks. ERP system

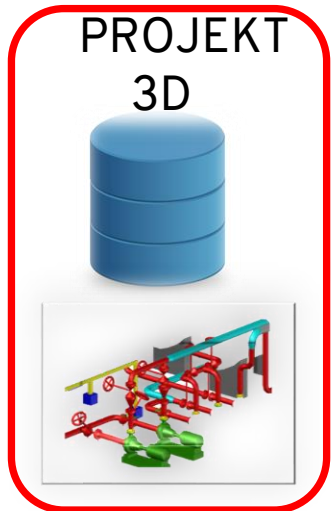


```
BoM_2021-4711.txt
File Rediger Vis

Bill of Material;
Project:2021 P3D Demo;
Project No.:2021-4711;
ItemCode;Quantity;;Unit;;Description;;ND;Standard;Schedule;Material;PN;Angle
568544;2581;;mm;;Dairy tubes, DS 76,1 x 1,6 mm;3 in;DS;;;
568874;713;;mm;;Dairy tubes, DS 101,6 x 2 mm;4 in;DS;;;
568414;850;;mm;;Pipe DIN 2448-1.4571-114.3x3.6;4 in;DIN 2448;;1.4571;;
568403;47425;;mm;;PIPE,ASTM A106 Gr B SMLS,ASME B36.10,4;4 in;ASME B36.10;40;ASTM A106 Gr B SMLS;;
568774;145730;;mm;;PIPE,ASTM A106 Gr B SMLS,ASME B36.10,6;6 in;ASME B36.10;40;ASTM A106 Gr B SMLS;;
568987;3907;;mm;;"PIPE, SEAMLESS, 1/2"" ND, PE, ASME B36.10, ASTM A106 GR B SMLS, SCH 40";0.5 in;ASME B36.10;40;ASTM A106 Gr B SMLS;;
884411;2;;pcs;;"ELL 45 LR, 6"" ND, BW, ASME B16.9, ASTM A234 GR WPB SMLS, SCH 40";6 in;ASME B16.9;40;ASTM A234 Gr WPB SMLS;;
884412;2;;pcs;;"ELL 90, 1/2"" ND, 3000 LB, SW, ASME B16.11, ASTM A105";0.5 in;ASME B16.11;;ASTM A105;3000;
884452;2;;pcs;;"ELL 90, 1"" ND, 3000 LB, SW, ASME B16.11, ASTM A105";1 in;ASME B16.11;;ASTM A105;3000;
884456;8;;pcs;;"ELL 90, 2"" ND, 3000 LB, SW, ASME B16.11, ASTM A105";2 in;ASME B16.11;;ASTM A105;3000;
212121;9;;pcs;;REDUCER (CONC),ASTM A234 Gr WPB SMLS,ASME B16.9,6;6 in;ASME B16.9;40;ASTM A234 Gr WPB SMLS;;
212154;11;;pcs;;"REDUCER (CONC), 8""X6"" ND, BW, ASME B16.9, ASTM A234 GR WPB SMLS, SCH 40";8 in;ASME B16.9;40;ASTM A234 Gr WPB SMLS;;
963255;1;;pcs;;"FLANGE BLIND, 2"" ND, 300 LB, RF, ASME B16.5, ASTM A105";2 in;ASME B16.5;;ASTM A105;300;
968574;1;;pcs;;Clamp ferrule, 101,6 mm;4 in;DS/ISO/SMS;AISI 316L;10;
471112;6;;pcs;;"FLANGE SW, 1/2"" ND, 150 LB, RF, ASME B16.5, ASTM A234 GR WPB";0.5 in;ASME B16.5;;ASTM A234 Gr WPB;150;
471113;8;;pcs;;"FLANGE SW, 2"" ND, 150 LB, RF, ASME B16.5, ASTM A234 GR WPB";2 in;ASME B16.5;;ASTM A234 Gr WPB;150;
836544;1;;pcs;;"TEE, 1/2"" ND, 3000 LB, SW, ASME B16.11, ASTM A105";0.5 in;ASME B16.11;;ASTM A105;3000;
125478;6;;set;;"STUD BOLT M12"" X 60 LG, ASTM A193, GR B7 W/2 HEX. NUT M12""", ASTM A194, GR 2H";10 mm;;ASTM A193 B7, A194 Gr 2;150;
332255;2;;pcs;;"GASKET, 8"" ND, 300 LB, FLEX, CS/PTFE";8 in;FLEX;;CS/PTFE;300;
x858585;2;;;;;"BUTTERFLY VALVE, OFFSET, 6"" ND, 300 LB, WFR, RF, ASME B16.10, 2 10/33"" LG, ASTM A216 GR WPB, HAND LEVER, H=7 3/4""", W=1
x545487;1;;;;;"BUTTERFLY VALVE, OFFSET, 8"" ND, 300 LB, LUG, RF, ASME B16.10, 2 22/25"" LG, ASTM A216 GR WPB, HAND LEVER, H=8 1/4""", W=1
x998855;2;;;;;"CHECK VALVE, SWING, 2"" ND, 150 LB, RF, ASME B16.10, 8"" LG, ASTM A216 GR WPB";2 in;ASME B16.10;;ASTM A216 Gr WPB;150;
```

# Data !

## Hvilke data skal afleveres og hvordan?



**AUTODESK Viewer** > L2-Sub\_Area2.collaboration

Views | Model browser | Properties | Settings

Views

Model

2D View

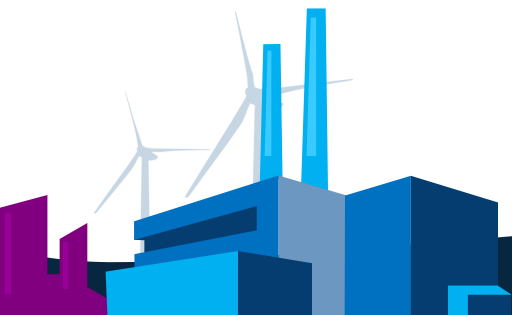
3D Views

- \*Initial\*
- 123D-Ortho1
- 6644
- 6644-1
- 6644\_1
- 6644\_Demo
- 6645
- Instrumentdetail-6644
- L2-Delanlæg2
- L2-Delanlæg2-Billede 1
- OrthoView1
- PDH1
- PDH2
- Rør-nr1
- TEst11

ACPEQUIPMENT [BBB]

Status	New
Position Z	0
Type	P
Material	Cast iron
Manufacturer	Grundfos
PartFamilyLongDesc	Centrifugal pump
PartSubType	HorizontalCentrifugalPump
Source Rev info	CR 10-4 A-FJ-A-E-HQQE
ShortDescription	Centrifugal Pumpe CR
ItemCode	GF_CR10-4A-FJ-A-E-HQQE
Weight	112
DesignPressureFactor	PN25

**AUTODESK  
CONSTRUCTION  
CLOUD™**

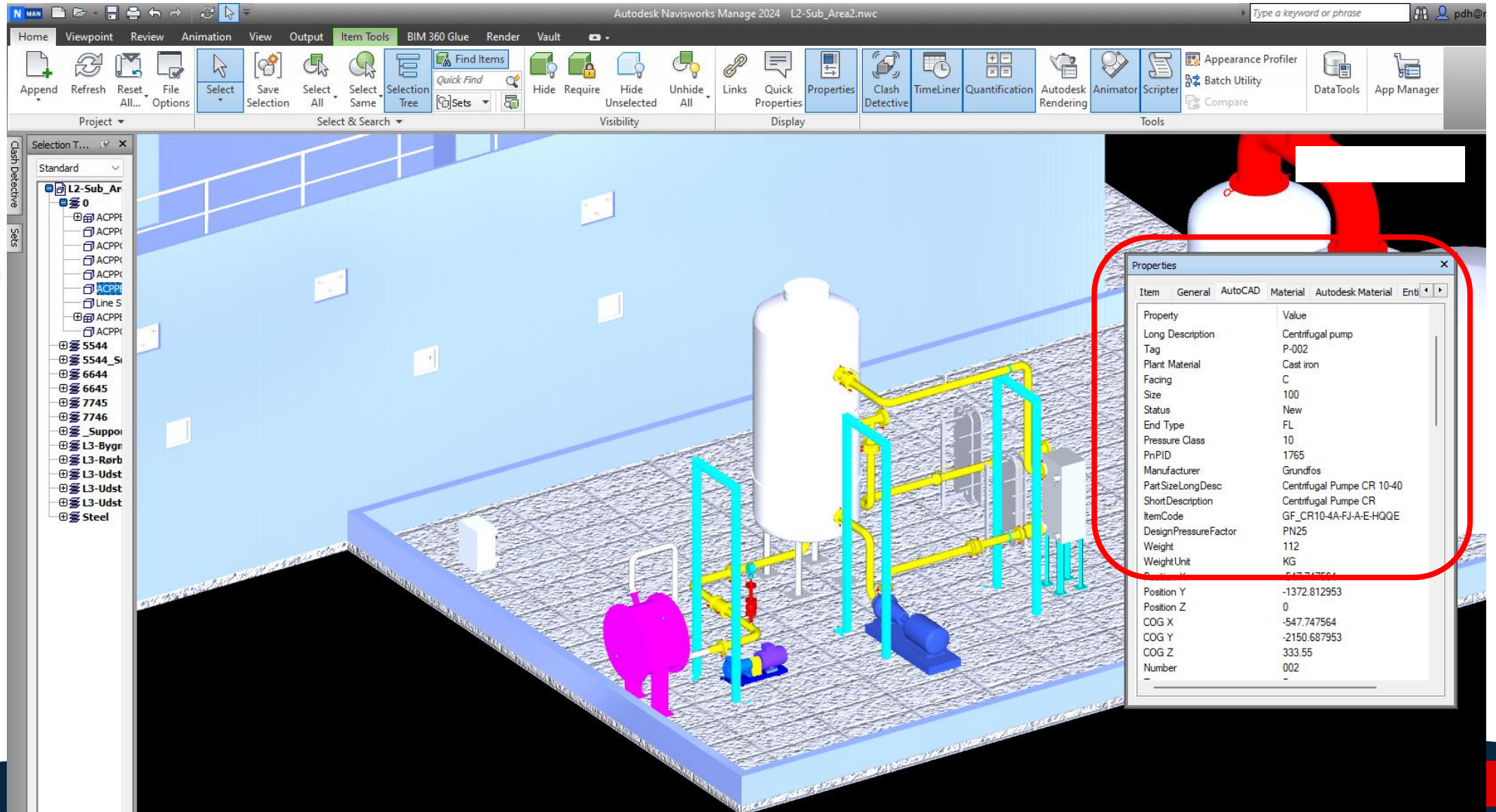
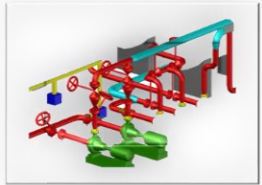




# Data !

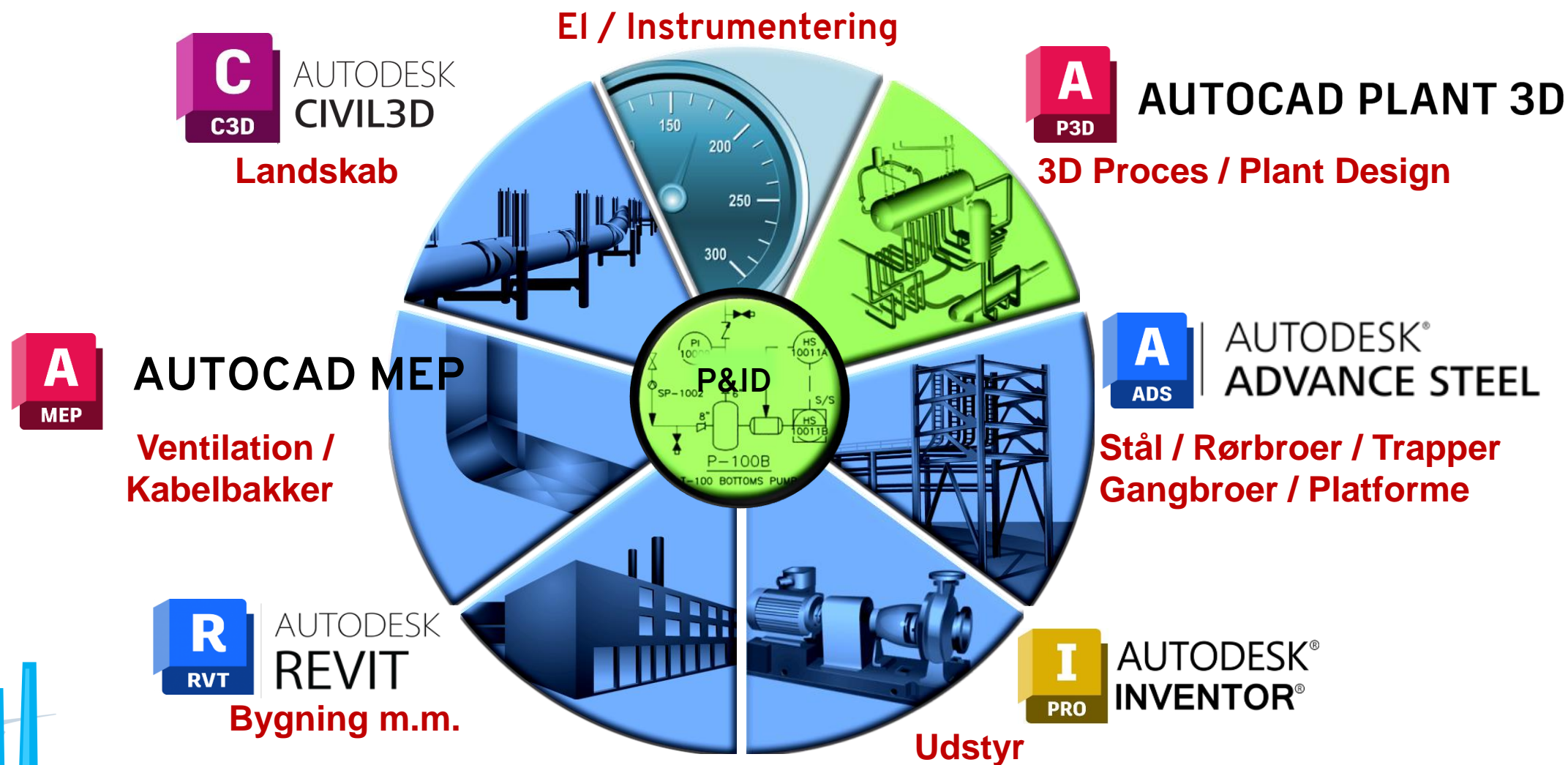
## Hvilke data skal afleveres og hvordan?

PROJEKT  
3D





# Komplete “Multi-discipline” Design









# Data Mapping

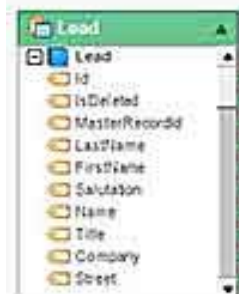
SuperVisor



Kunde

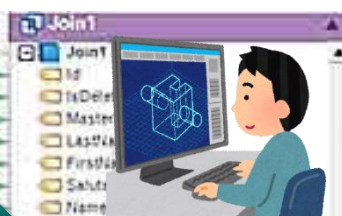


Indkøb

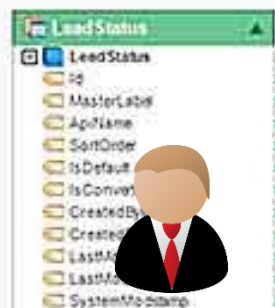
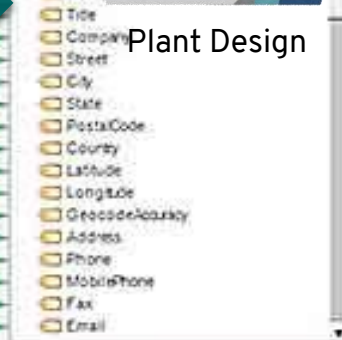


Ingeniør

Data Ind



Plant Design

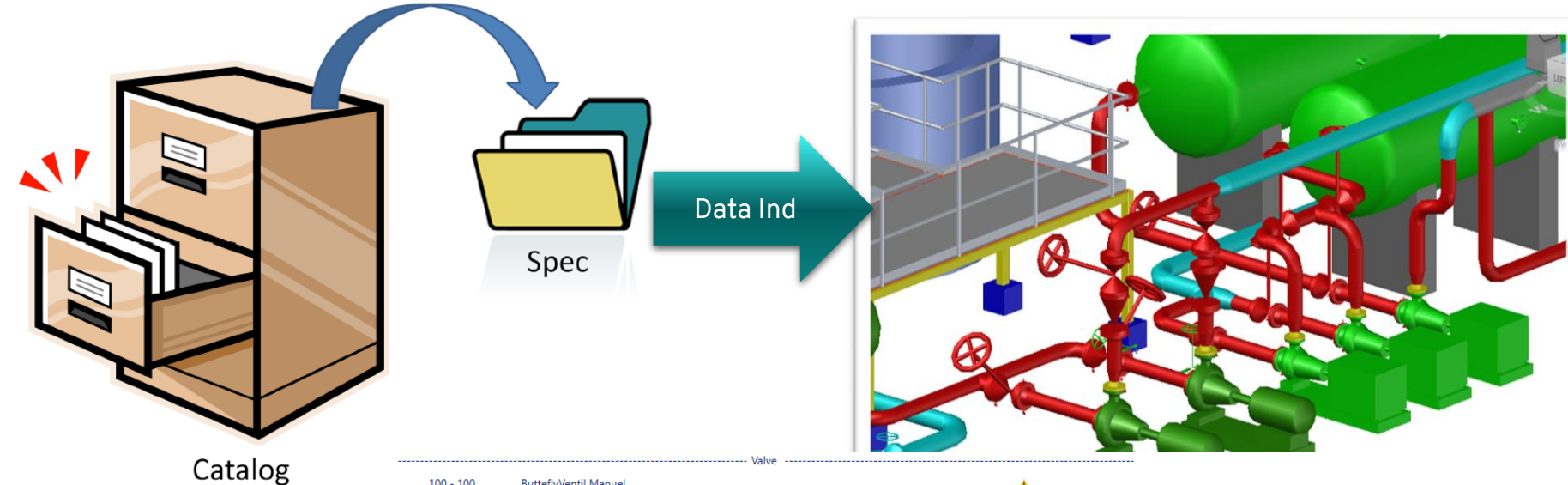


Projektleder

Data ud



# Data input - Plant 3D projekt



Catalog

Valve

100 - 100 ButterflyVentil Manuel  
100 - 100 ButterflyVentil Stern  
15 - 100 Check valve RK46a PN 16, C  
15 - 300

Property Editor

Common filters

Part category:

Main end connection:

Filter Size Range

~ All ~  
25 - 25  
0 - 0  
0 - 0  
20 - 150  
15 - 50  
15 - 100  
0 - 0  
0 - 0  
20 - 600  
65 - 150  
15 - 65  
0 - 0

Spec Property Editor

Display: All Properties

Part List Manage Properties

Remove	Size	Long Description (Family)	Compatible Standard	Manufacturer	Material	Material Code	Long Description (Size)	Short Description	Item Code	Design Std	Design Pres
<input type="checkbox"/>	15	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 15-PN 16, C, L=16.0	Check valve	4713-CV-15	DS/EN 5488-01	
<input type="checkbox"/>	20	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 20-PN 16, C, L=19.0	Check valve	4713-CV-20	DS/EN 5488-01	
<input type="checkbox"/>	25	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 25-PN 16, C, L=22.0	Check valve	4713-CV-25	DS/EN 5488-01	
<input type="checkbox"/>	32	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 32-PN 16, C, L=28.0	Check valve	4713-CV-32	DS/EN 5488-01	
<input type="checkbox"/>	40	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 40-PN 16, C, L=31.5	Check valve	4713-CV-40	DS/EN 5488-01	
<input type="checkbox"/>	50	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 50-PN 16, C, L=40.0	Check valve	4713-CV-50	DS/EN 5488-01	
<input type="checkbox"/>	65	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 65-PN 16, C, L=46.0	Check valve	4713-CV-65	DS/EN 5488-01	
<input type="checkbox"/>	80	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 80-PN 16, C, L=50.0	Check valve	4713-CV-80	DS/EN 5488-01	
<input type="checkbox"/>	100	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 100-PN 16, C, L=60.0	Check valve	4713-CV-100	DS/EN 5488-01	

OK Cancel Apply Help

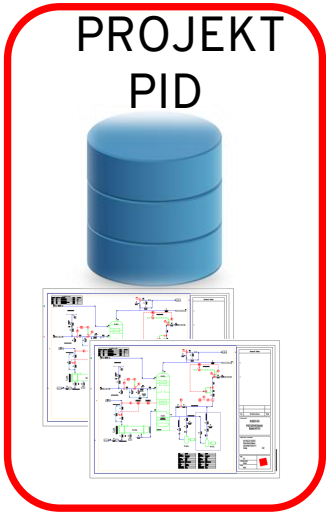
Ball cock PN 40, C  
Hand Wheel

Ball cock  
Hand Wheel

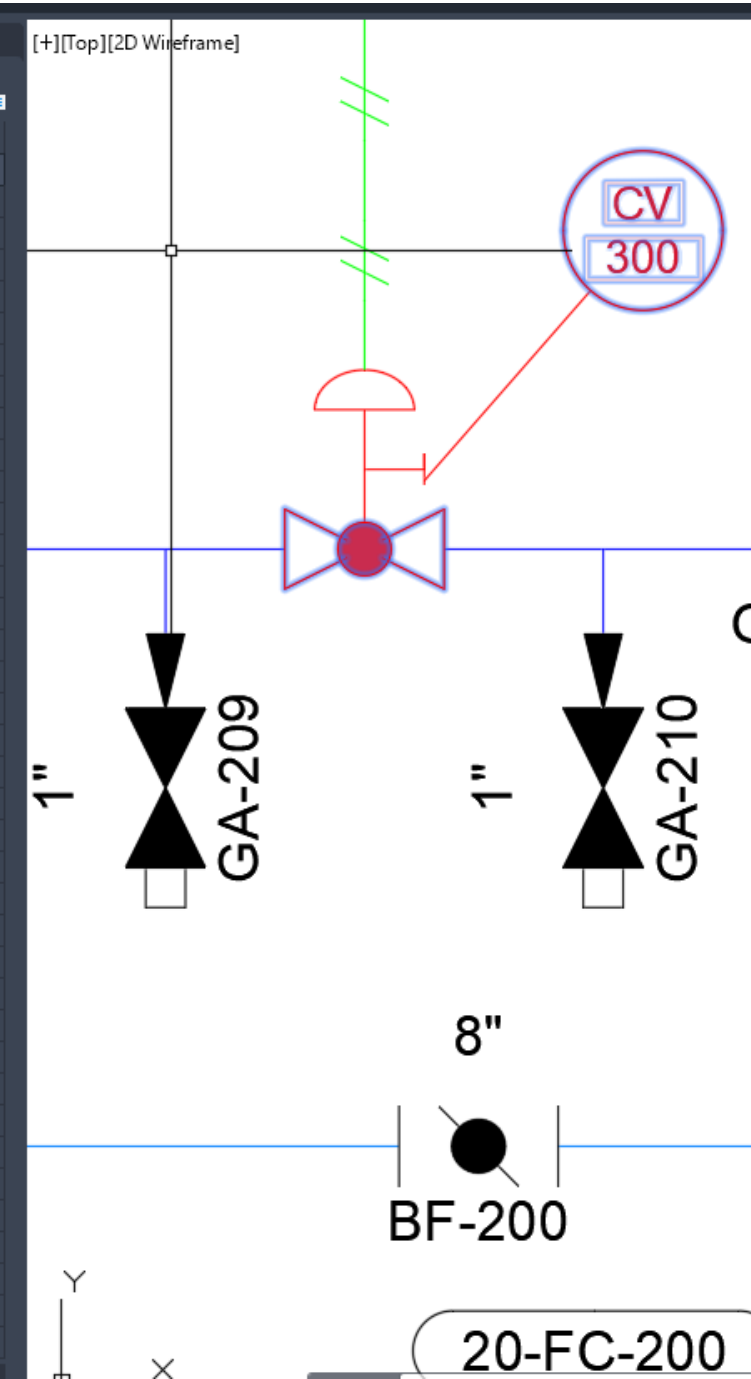
FL C 40

# Data flow !

Hvor kommer data fra?



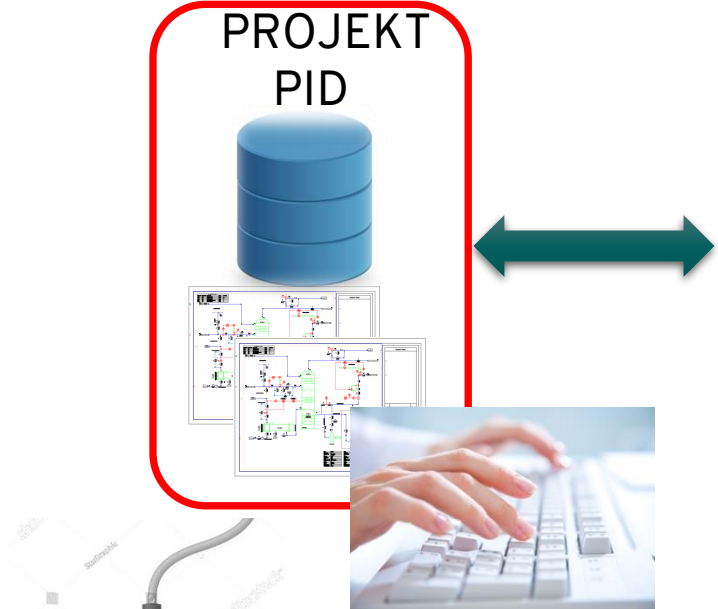
PROPERTIES	
ACPPASSET	
Graphical style	Control Valve Style
General	
PnP GUID	b0226c15-1e43-4746-92e3-0b0156883aba
Description	
Manufacturer	
Model Number	
Supplier	
Comment	
Alt. Tag Number	
Status	
Dokumentation	
Supplier ref no	
Area	20
Type	CV
Loop Number	300
Location	
Signal	
AirPressure	
Communicationtype	
Voltage	
IP Class	
Wiring	
DI	
DO	
AI	
AO	
Safety Zone	
Internal State	
Measuring Range	
Setpoint	
Item Code	
Size	8
End Connections	Unspecified
Valve Code	
Normally	
Failure	
Body Type	Globe Valve
Actuator Type	Hand Wheel Actuator
Pressure Class	





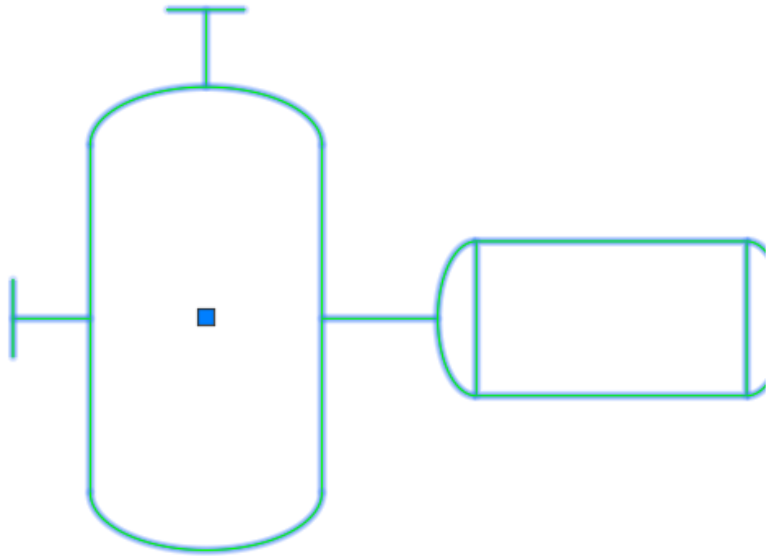
# Data flow !

Hvor kommer data fra?



P&ID	
Class	Horizontal Centrifugal Pump
Tag	
Tag	P-001
Styles	
Graphical style	Horizontal Centrifugal Pump Style
General	
PnPGuid	5cce05c9-dc93-44b2-a593-11f6ad448839
Description	Centrifugal Pump
Manufacturer	
Model Number	
Supplier	
Comment	
Alt. Tag Number	
Status	New
Dokumentation	
Supplier ref no	
Type	P
Equipment Spec	
Weight	
Material of Construction	
Number	001 52
Area	
Internal State	
Item Code	
Flow Capacity	
Power	
Total Dynamic Head	
Voltage	
Phase	
Frequency	
Insulation Type	
Insulation Thickness	
Design Pressure	
IP Class	
Amp	
Connection1_Inlet	
Connection2_Outlet	

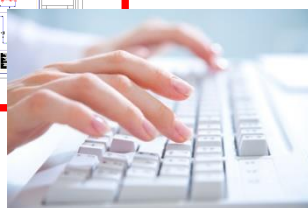
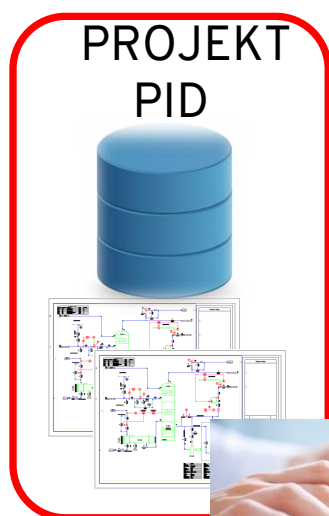
Arbejds-  
regneark



E-100

# Data kvalitet

- Kopi af "i
- tave og s
- Data synt
- Korrekt s



Type	DKBeskrivelse	UKDescription
Click here to define a filter		
AC	Aktiv kulfilter (en og to søjler)	Activated carbon filter
B	Blæser	Blower
C	Kompressor	Compressor
CD	CO2 aflufter	CO2 degasser
DC	Afkarbonisering (en og to søjler)	Dealkalizer
DM	Demineralisering	Demineralization
DO	Dosering	Dosing
E	Diverse udstyr	Equipment
ED	EDI	EDI
FC	Frekvensomformer	Frequency converter
FI	Flowmåler	Flow meter
FQ	Vandmåler (impuls)	Water meter (impulse)
FS	Flow switch	Flow switch
FT	Flowtransmitter	Flow transmitter
HX	Varmeveksler	Heat exchanger
LS	Niveau vippe	Level tilt
LT	Niveau transmitter	Level transmitter
M	Motor	Motor
MB	Mixed bed	Mixed Bed
MD	Membran afgasser (CO2 og O2)	Membrane degasser
MF	Mekanisk filter	Mechanical filter
NF	Nanofiltrering	Nanofiltration
OX	Ultraviolet beholder	Oxidation tank

## Elektrisk data

Volt	Faser	Frekvens
400 V	3x	50 Hz
24 V	AMP	Startstrøm
230 V	3,3	
400 V		

## Elektrisk data

Volt	Faser	Frekvens		
400 V	3x	50 Hz		
kW	AMP	Startstrøm		
1,5	3,3			
AI	AO	DI	DO	Wiring
Communication type	Signal			
	4-20 mA			
Setpoint	0-10 v			
	3xNO + 1xNC			
	NC			
ATEX	Måle område			
No				
IP Class				
IP54				

# Data flow – Data kilde(r)

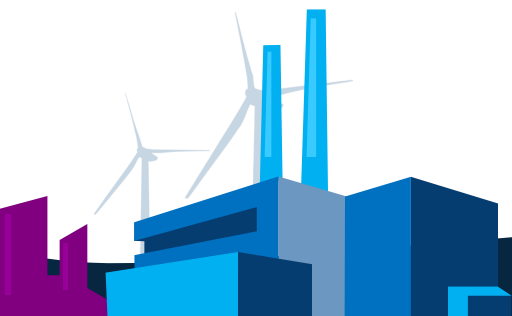
Eksterne databaser



## Eksterne databaser:

(Hvilken som helst datakilde hvor der kan laves et opslag til)

- ERP systemer (SAP, Navision, Axapta, C5 .....)
  - Typisk baseret SQL Databaser
- SQL Databaser (med en front-end, MDOC, Access, OIP...)
- SQLite Databaser
- Access Databaser
- Excel regneark

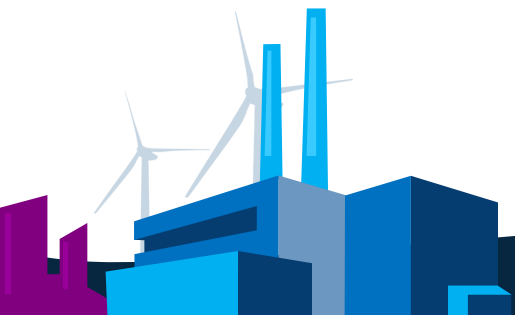


# Data mapping – P&ID & ERP system

H57										Update return									

# Muligheder i AutoCAD Plant 3D

- Overførsel af Metadata / properties fra Spec til 3D model (piping)

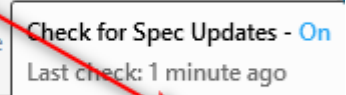




The screenshot shows the 'Spec Update Settings' dialog box in AutoCAD. The 'General Settings' tab is active, displaying a tree view of project data. The 'Spec Update Settings' dialog box is open, showing a table of properties for the selected valve. The table includes columns for Remove, Size, Long Description (Family), Compatible Standard, Manufacturer, Material, Material Code, Long Description (Size), and Short Description. The table lists 10 rows of data for Check valve RK46a PN 16, C, with sizes ranging from 15 to 100. The 'Spec Property Editor' dialog box is also visible, showing the same table of properties.

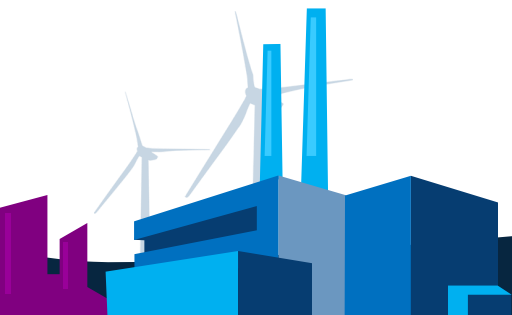
Remove	Size	Long Description (Family)	Compatible Standard	Manufacturer	Material	Material Code	Long Description (Size)	Short Description
<input type="checkbox"/>	15	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 15-PN 16, C, L=16.0	Check valve
<input type="checkbox"/>	20	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 20-PN 16, C, L=19.0	Check valve
<input type="checkbox"/>	25	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 25-PN 16, C, L=22.0	Check valve
<input type="checkbox"/>	32	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 32-PN 16, C, L=28.0	Check valve
<input type="checkbox"/>	40	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 40-PN 16, C, L=31.5	Check valve
<input type="checkbox"/>	50	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 50-PN 16, C, L=40.0	Check valve
<input type="checkbox"/>	65	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 65-PN 16, C, L=46.0	Check valve
<input type="checkbox"/>	80	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 80-PN 16, C, L=50.0	Check valve
<input type="checkbox"/>	100	Check valve RK46a PN 16, C	RK46a	DVC	SS	AISI 316	Check valve RK46a ND 100-PN 16, C, L=60.0	Check valve

OK Cancel Apply Help



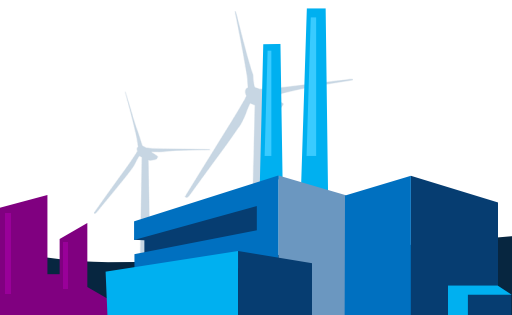
# Muligheder i AutoCAD Plant 3D

- Overførsel af Metadata / properties fra Spec til 3D model (piping)
- Fin funktion, inkl. løbende opdateringer



# Muligheder i AutoCAD Plant 3D

- Overførsel af Metadata / properties fra P&ID til 3D model – via. P&ID Line List funktionen



P&ID LINE LIST

2022-02-ISO-0093

**P-002**  
Centrifugal Pump CR 10-40  
Grundfos  
10 m³/h - 30 m3 @

FROM: P-002 (General Pump)

- N-2 (Assumed Nozzle)
- 100-10HS01-P-7746
- CH-128 (Check Valve)
- 100-10HS01-P-7746
- BA-130 (Ball Valve)
- 100-10HS01-P-7746
- N-1 (Assumed Nozzle)

TO: EP-004 (Plate-type Heat Exchanger)

Project Setup

P&ID Object Mapping

P&ID Classes

Plant 3D Classes

### General Pump

Plant 3D Class Mappings

Pump

Property Mapping

P&ID Property	Plant 3D Property	Validate
select all   none		
PnPGuid	no mapping	<input type="checkbox"/>
PnPTimestamp	no mapping	<input type="checkbox"/>
Description	Long Description (Size)	<input type="checkbox"/>
Manufacturer	Manufacturer	<input checked="" type="checkbox"/>
Model Number	Spec	<input type="checkbox"/>
Supplier	no mapping	<input type="checkbox"/>
Comment	no mapping	<input type="checkbox"/>
Status	no mapping	<input type="checkbox"/>
Coordinates	no mapping	<input type="checkbox"/>
Alternative language 1	no mapping	<input type="checkbox"/>
Alternative language 2	no mapping	<input type="checkbox"/>
DWG Title nedarvet	no mapping	<input type="checkbox"/>
Type_ID	no mapping	<input type="checkbox"/>
System Area	no mapping	<input type="checkbox"/>
MdocDocumentName	no mapping	<input type="checkbox"/>
MdocStatus	no mapping	<input type="checkbox"/>
Type	Type	<input type="checkbox"/>
Equipment Spec	no mapping	<input type="checkbox"/>
Weight	Weight	<input checked="" type="checkbox"/>
Material of Construction	Material	<input checked="" type="checkbox"/>
Number	Number	<input type="checkbox"/>
Area	Area	<input type="checkbox"/>
ItemCode	Item Code	<input checked="" type="checkbox"/>
SupplierRefno	no mapping	<input type="checkbox"/>
InternalState	no mapping	<input type="checkbox"/>

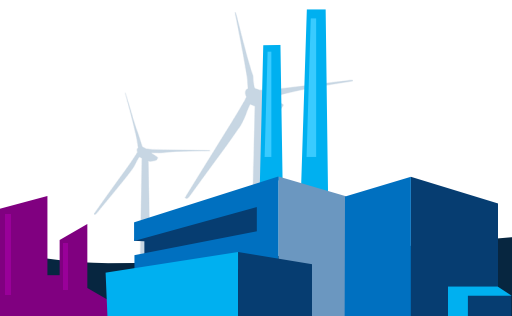
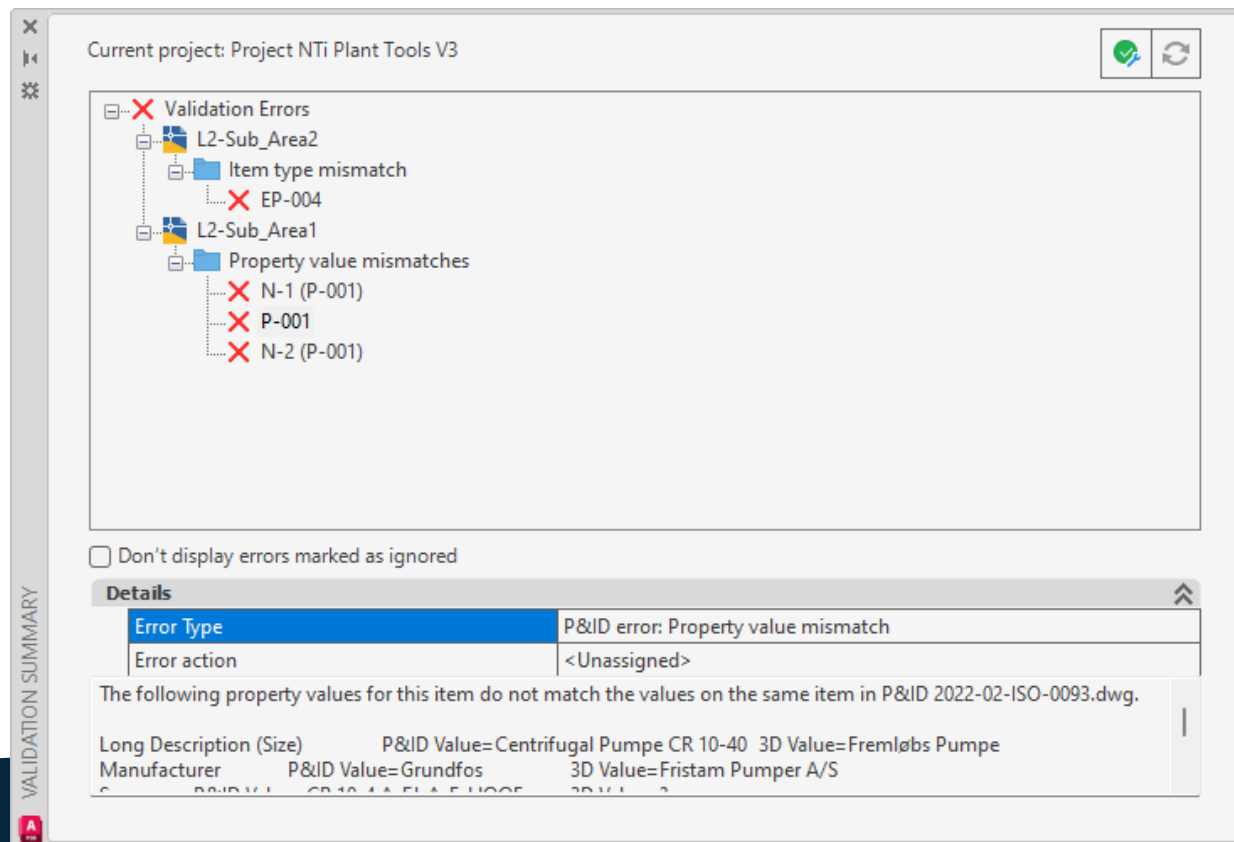
\* These properties are available for validation only.  
✓ Check this item during 3D model to P&ID validation.





# Muligheder i AutoCAD Plant 3D

- Overførsel af Metadata / properties fra P&ID til 3D model – via. P&ID Line List funktionen
- ☹️ ■ ”Linket” (data mellem P&ID og 3D modellen) opdateres ikke ! –
- 😊 ■ men evt. afvigelser fanges dog i validering



# Muligheder i AutoCAD Plant 3D

- Properties Mapping setup (fra P3D 2024)

Eksterne databaser



## Eksterne databaser:

(Hvilken som helst datakilde hvor der kan laves et opslag til)

- ERP systemer (SAP, Navision, Axapta, C5 .....)
  - Typisk baseret SQL Databaser
- SQL Databaser (med en front-end, MDOC, Access, OIP...)
- SQLite Databaser
- Access Databaser
- Excel regneark

Ekstra  
Installerer

# Mapping properties

Command: Regenerating model.

Type a command

Current Drawing Data

Engineering Items

- Equipment
  - Heat Exchangers
  - Plate
  - Pumps
  - Generators
  - Tanks
  - Conic
- Inline Assets
  - Hand Valve
  - Ball Valve
  - Check Valve
- Piping Systems
  - Funnel
- Instrumentation
  - General
    - Auxiliary
    - Field DCS
    - Field Discrete Instrument
- Lines
  - Pipe Line Group
  - Pipe Line Segments
    - NTI TOOL Plant S-Line
    - Primary Line Segment
    - Secondary Line Segment
  - Signal Line Group
  - Signal Line Segments
  - Electrical Signal Line

Tag

Tag	Type	Description	Manufacturer	Model Number	Supplier	Duty	Surface Area	Ins Typ
EP		PLATE-TYPE HE...						

Collapse All

Export...

Import...

Print...

Remove Filter

Reset Node Column Order

Reset All Child Node Column Orders

Show All Nodes

Show Only Nodes with Content

Reload Mapped Properties...

- Reload All
- EngineeringItems\_Mapping\_1
- Equipment\_Mapping\_1
- HeatExchangers\_Mapping\_1

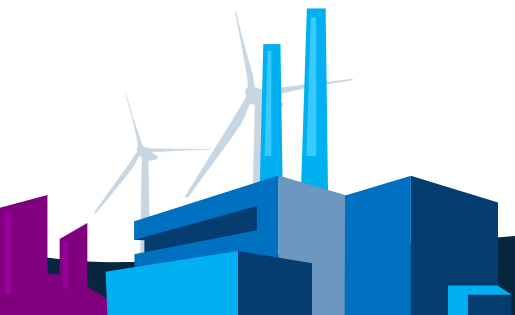
Piping Connection Settings

Tag format

Annotation

# Muligheder i AutoCAD Plant 3D

- Properties Mapping setup (fra P3D 2024)
  - 😊 ■ Gode muligheder for at få eksterne data ind i Plant projekter
  - 😐 ■ Administrativt ”tungt”
  - 😐 ■ Udfordringer med data fra SQLite databaser og Excel, pga. ekstra software skal installeres pr. client
  - 😐 ■ Manuel opdatering af brugerne
- 😞 ■ Og ikke mindst: manuel indtastning af ”forbindelses data” til data kilden, f.eks. Komponentdata-regnearket – f.eks. Varenummeret (ItemCode).



# Data flow. Datakilde eksempel med Excel

Automatisk lagring

PID\_Components\_Master.xlsx - Excel

Filer Hjem Indsæt Sidelayout Formler Data Genmense Vis Hjælp Søg

Calibri 11 A A' A''

Normal 2 Normal God Neutral

Udgiksholder Skrifttype Justering Tal

B5 x200004

Item Code	Type	Type Description	Manufacturer	Supplier	Supplier ref no	Model Number	Size	Spec	Valve Code	End Connections	PN	Internal Status	Comment
x200001	HV	Kugleventil	DVC	Brd. Kier	4711-01	KV025-H	20	ISO 1.4404	HV	Welded	10	Usable	
x200002	HV	Kugleventil	DVC	Brd. Kier	4711-02	KV032-H	32	ISO 1.4404	HV	Welded	10	Obsolete	
x200003	HV	Kugleventil	DVC	Brd. Kier	4711-03	KV040-H	40	ISO 1.4404	HV	Welded	10	Usable	
x200004	HV	Kugleventil	DVC	Brd. Kier	4711-04	KV050-H	50	ISO 1.4404	HV	Welded	10	Usable	
x200005	HV	Kugleventil	DVC	Brd. Kier	4711-05	KV063-H	63	ISO 1.4404	HV	Welded	10	Usable	
x200006	HV	Kugleventil	DVC	Brd. Kier	4711-06	KV075-H	75	ISO 1.4404	HV	Welded	10	Usable	
x200007	HV	Kugleventil	DVC	Brd. Kier	4711-07	KV090-H	90	ISO 1.4404	HV	Welded	10	Usable	
x200008	HV	Kugleventil	DVC	Brd. Kier	4711-08	KV110-H	110	ISO 1.4404	HV	Unspecified	10	Usable	
x200009	HV	Kugleventil	DVC	Brd. Kier	4711-09	KV160-H	160	ISO 1.4404	HV	Unspecified	10	Usable	
x200010	HV	Kugleventil	DVC	Brd. Kier	4711-10	KV200-H	200	ISO 1.4404	HV	Unspecified	10	Usable	
x200011	HV	Kugleventil	DVC	Brd. Kier	4711-11	KV250-H	250	ISO 1.4404	HV	Unspecified	10	Usable	
x200012	HV	Kugleventil	DVC	Brd. Kier	4711-12	KV315-H	315	ISO 1.4404	HV	Unspecified	10	Usable	
x200013	HV	Kugleventil	DVC	Brd. Kier	4711-13	KV400-H	400	ISO 1.4404	HV	Unspecified	10	Usable	
x200014	HV	Kugleventil	DVC	Brd. Kier	4711-14	KV500-H	500	ISO 1.4404	HV	Unspecified	10	Usable	
x200015	HV	Kugleventil	DVC	Brd. Kier	4711-15	KV630-H	630	ISO 1.4404	HV	Unspecified	10	Usable	
x200016	HV	Kugleventil	DVC	Brd. Kier	4711-16	KV710-H	710	ISO 1.4404	HV	Unspecified	10	Usable	
x200017	HV	Kugleventil	DVC	Brd. Kier	4711-17	KV800-H	800	ISO 1.4404	HV	Unspecified	10	Usable	
x200018	HV	Butterflyventil	Epos	DVC	54222-01	BFV020-H	20	ISO 1.4404	BV	Flanged	10	Usable	
x200019	HV	Butterflyventil	Epos	DVC	54222-02	BFV032-H	32	ISO 1.4404	BV	Flanged	10	Usable	
x200020	HV	Butterflyventil	Epos	DVC	54222-03	BFV040-H	40	ISO 1.4404	BV	Flanged	10	Usable	
x200021	HV	Butterflyventil	Epos	DVC	54222-04	BFV050-H	50	ISO 1.4404	BV	Flanged	10	Usable	
x200022	HV	Butterflyventil	Epos	DVC	54222-05	BFV063-H	63	ISO 1.4404	BV	Flanged	10	Usable	
x200023	HV	Butterflyventil	Epos	DVC	54222-06	BFV075-H	75	ISO 1.4404	BV	Flanged	10	Usable	
x200024	HV	Butterflyventil	Epos	DVC	54222-07	BFV090-H	90	ISO 1.4404	BV	Flanged	10	Usable	
x200025	HV	Butterflyventil	Epos	DVC	54222-08	BFV110-H	110	ISO 1.4404	BV	Flanged	10	Usable	
x200026	HV	Butterflyventil	Epos	DVC	54222-09	BFV160-H	160	ISO 1.4404	BV	Flanged	10	Usable	
x200027	HV	Butterflyventil	Epos	DVC	54222-10	BFV200-H	200	ISO 1.4404	BV	Flanged	10	Usable	
x200028	HV	Butterflyventil	Epos	DVC	54222-11	BFV250-H	250	ISO 1.4404	BV	Flanged	10	Usable	
x200029	HV	Butterflyventil	Epos	DVC	54222-12	BFV315-H	315	ISO 1.4404	BV	Flanged	10	Usable	
x200030	HV	Butterflyventil	Epos	DVC	54222-13	BFV400-H	400	ISO 1.4404	BV	Flanged	10	Usable	
x200031	HV	Butterflyventil	Epos	DVC	54222-14	BFV500-H	500	ISO 1.4404	BV	Flanged	10	Usable	
x200032	HV	Butterflyventil	Epos	DVC	54222-15	BFV630-H	630	ISO 1.4404	BV	Flanged	10	Usable	

4	HV	x200033	HV	Butterflyventil	Epos	DVC	54222-16	BFV710-H	710	ISO 1.4
5	HV	x200034	HV	Butterflyventil	Epos	DVC	54222-17	BFV800-H	800	ISO 1.4
6		x200035								
7		x200036								
8		x200037								
Hand Valves Control Valves Instruments Tanks Pumps Blowers Compressors Heat Exchangers Ops										

x201001

Item Code	Type	Type Description	Manufacturer	Supplier	Supplier ref no	Model Number	Size	Spec	Normal	PN	Failure	Sign	Air Pressu	Communication	Volta	IP Cla	Wiring	DI	DO	AI	AO	Safety	Internal Status
x201001	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-01	KV020-CV	20	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		Usable
x201002	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-02	KV025-CV	32	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		Obsolete
x201003	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-03	KV040-CV	40	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201004	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-04	KV050-CV	50	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201005	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-05	KV063-CV	63	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201006	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-06	KV075-CV	75	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201007	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-07	KV090-CV	90	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201008	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-08	KV110-CV	110	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201009	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-09	KV160-CV	160	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201010	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-10	KV200-CV	200	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201011	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-11	KV250-CV	250	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201012	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-12	KV315-CV	315	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201013	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-13	KV400-CV	400	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201014	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-14	KV500-CV	500	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201015	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-15	KV630-CV	630	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		
x201016	CV	Kugleventil m. Aktuator	DVC	Brd. Kier	4712-16	KV710-CV	710	ISO 1.4404	NC	10	FLC	0-10 V 6 bar	Analog	24 VDC	IP44	3 wire	0	0	0	0	2		

Item Code	Type	Type Description	Manufacturer	Supplier	Model Number	Supplier ref no	Capacity	Design Pressu	Connection1_Inlet	Connection2_Inlet	Weight	Material	Power	Amp	Voltage	Pha	Frequen	IP Cla
x204000	P	Cirkulations pumpe	Grundfos	Bdr. Dahl	Alpha2 2040N 150	97660453	Ukendt		10			6 ISO 1.4404	Ukendt		230 VAC	1x	50 Hz	IP44
x204001	P	Cirkulations pumpe	Grundfos	Bdr. Dahl	Alpha2 2060N 150	97660456	Ukendt		10			7 ISO 1.4404	Ukendt		230 VAC	1x	50 Hz	IP44
x204002	P	Forsyningspumpe	Grundfos	Bdr. Dahl	CRE3-8	97660459	Ukendt		10			10 ISO 1.4404	Ukendt		400 VAC	3x	50 Hz	IP44
x204003	P	Forsyningspumpe	Grundfos	Bdr. Dahl	CRE5-9	97660462	Ukendt		10			11 ISO 1.4404	Ukendt		400 VAC	3x	50 Hz	IP44
x204004	P	Forsyningspumpe	Grundfos	Bdr. Dahl	CRE10-5	97660465	Ukendt		10			12 ISO 1.4404	Ukendt		400 VAC	3x	50 Hz	IP54
x204005	P	Forsyningspumpe	Grundfos	Bdr. Dahl	CRE15-3	97660468	Ukendt		10			13 ISO 1.4404	Ukendt		400 VAC	3x	50 Hz	IP21
x204006	P	Forsyningspumpe	Grundfos	Bdr. Dahl	CRE15-4	97660471	Ukendt		10			14 ISO 1.4404	Ukendt		400 VAC	3x	50 Hz	IP65
x204007	P	Forsyningspumpe	Grundfos	Bdr. Dahl	CRE20-4	97660474	Ukendt		10			15 ISO 1.4404	Ukendt		400 VAC	3x	50 Hz	IP44
x204008	P	Forsyningspumpe	Grundfos	Bdr. Dahl	CRE32-4	97660477	Ukendt		10			16 ISO 1.4404	Ukendt		400 VAC	3x	50 Hz	IP54
x204009	P	Booster pump	Grundfos	Bdrd. Kier	CMB1-3	97530087	1 m3/h		6 1"	1"		Cast	0,377	2,4	230 VAC	1x	50 Hz	IP55
x204010	P	Booster pump	Grundfos	Bdrd. Kier	CMB3-6	97530150	3 m3/h		10 1"	1"		Cast	0,869	4,4	230 VAC	1x	50 Hz	IP55
x204011	P	Booster pump	Grundfos	Bdrd. Kier	CMB5-5	97687685	5 m3/h		10 1"	1 1/4"		Cast	1,16	5,4	230 VAC	1x	50 Hz	IP55



# Data flow, Datakilde eksempel med Access

PLANT - database- C:\temp\PLANT.accdb (Access 2007-2016-filformat) - Access

Per Damsgård

Filer Hjem Opret Eksterne data Databaseværktøjer Hjælp Tabel Felter Tabel Fortæl mig, hvad du vil foretage dig

Vis Sæt ind Kopier Klip Formatpense Udklipsholder

Sorter og filtrer

Filter Stigende Faldende Fjern sortering Til/fra-filtrer

Markering Avanceret

Ny Gem Opdater alle Slet Flere

Stavekontrol

Erstat Gå til Vælg

Calibri 11

F K U A B I

Tekstformatering

Alle Access-ob... <

Søg...

Tabeller

Plant

ID	AnlægKode	AnlægNavn	Hovedgruppe	HovedgruppeNavn	FunktionKode	FunktionNavn	FunktionLøbenr	FunktionTag	PIDnr	DriftformKode
514	AB01	Inloppssteg	CL01	Kanalanlægning	BFA	Flow-måling	001	=AB01.CL01-BFA001	N-32.8-001	FT
515	AB01	Inloppssteg	CL01	Kanalanlægning	BLA	Niveua-måling	001	=AB01.CL01-BLA001	N-32.8-001	LT
516	AB01	Inloppssteg	CL01	Kanalanlægning	QMA	Distributionsvalg	001	=AB01.CL01-QMA001	N-32.8-001	DOL
517	AB01	Inloppssteg	CL02	Kanalanlægning	BFA	Flow-måling	001	=AB01.CL02-BFA001	N-32.8-001	FT
518	AB01	Inloppssteg	CL02	Kanalanlægning	BLA	Niveua-måling	001	=AB01.CL02-BLA001	N-32.8-001	LT
519	AB01	Inloppssteg	CL02	Kanalanlægning	QMA	Distributionsvalg	001	=AB01.CL02-QMA001	N-32.8-001	DOL
520	AC01	Inloppssteg	CH01	Regnväders pst.	QMA	Distributionsvalg	001	=AC01.CH01-QMA001	N-32.8-001	DOL
521	AC01	Inloppssteg	CH01	Regnväders pst.	GPA	Pumpning	101	=AC01.CH01-GPA101	N-32.8-001	REG
522	AC01	Inloppssteg	CH01	Regnväders pst.	GPA	Pumpning	102	=AC01.CH01-GPA102	N-32.8-001	REG
523	AC01	Inloppssteg	CH01	Regnväders pst.	GPA	Pumpning	103	=AC01.CH01-GPA103	N-32.8-001	REG
524	AC01	Inloppssteg	CH01	Regnväders pst.	GPA	Pumpning	201	=AC01.CH01-GPA201	N-32.8-001	REG
525	AC01	Inloppssteg	CH01	Regnväders pst.	GPA	Pumpning	202	=AC01.CH01-GPA202	N-32.8-001	REG
526	AC01	Inloppssteg	CH01	Regnväders pst.	GPA	Pumpning	203	=AC01.CH01-GPA203	N-32.8-001	REG
527	AC01	Inloppssteg	CH01	Regnväders pst.	BLA	Niveua-måling	101	=AC01.CH01-BLA101	N-32.8-001	LT
528	AC01	Inloppssteg	CH01	Regnväders pst.	BLA	Niveua-måling	202	=AC01.CH01-BLA202	N-32.8-001	LT
529	AC01	Inloppssteg	CH01	Regnväders pst.	BFA	Flow-måling	101	=AC01.CH01-BFA101	N-32.8-001	FT
530	AC01	Inloppssteg	CH01	Regnväders pst.	BFA	Flow-måling	201	=AC01.CH01-BFA201	N-32.8-001	FT
531	AD01	Inloppssteg	UB01	Ventilbyggnad	QMA	Distributionsvalg	101	=AD01.UB01-QMA101	N-32.8-001	DOL
532	AD01	Inloppssteg	UB01	Ventilbyggnad	QMA	Distributionsvalg	201	=AD01.UB01-QMA201	N-32.8-001	DOL
533	AD01	Inloppssteg	UB01	Ventilbyggnad	QMA	Distributionsvalg	001	=AD01.UB01-QMA001	N-32.8-001	DOL
534	DA01	Försedimenteringssteg	CH01	Regnväders pst.	QMA	Distributionsvalg	001	=DA01.CH01-QMA001	N-32.8-010	DOL
535	DA01	Försedimenteringssteg	CH01	Regnväders pst.	QPB	Kip	101	=DA01.CH01-QPB101	N-32.8-010	REG
536	DA01	Försedimenteringssteg	CH01	Regnväders pst.	QPB	Kip	102	=DA01.CH01-QPB102	N-32.8-010	REG
537	DA01	Försedimenteringssteg	CH01	Regnväders pst.	QPB	Kip	103	=DA01.CH01-QPB103	N-32.8-010	REG
538	DA01	Försedimenteringssteg	CH01	Regnväders pst.	QPB	Kip	104	=DA01.CH01-QPB104	N-32.8-010	REG
539	DA01	Försedimenteringssteg	CH01	Regnväders pst.	QPB	Kip	105	=DA01.CH01-QPB105	N-32.8-010	REG
540	DA01	Försedimenteringssteg	CH01	Regnväders pst.	BLA	Niveua-måling	101	=DA01.CH01-BLA101	N-32.8-010	LT
541	DA01	Försedimenteringssteg	CH01	Regnväders pst.	QPB	Kip	201	=DA01.CH01-QPB201	N-32.8-010	REG
542	DA01	Försedimenteringssteg	CH01	Regnväders pst.	QPB	Kip	202	=DA01.CH01-QPB202	N-32.8-010	REG
543	DA01	Försedimenteringssteg	CH01	Regnväders pst.	QPB	Kip	203	=DA01.CH01-QPB203	N-32.8-010	REG

# Data flow, Datakilde eksempel med SQL

SQLQuery1.sql - DK...MFG (NTI).pdh (66)

```
SELECT TOP (1000) [TYPE_ID]
, [NAME]
, [Description]
, [ItemCode]
, [ItemText]
, [ComponentType]
, [ComponentCode]
, [Manufacturer]
, [ModelNumber]
```

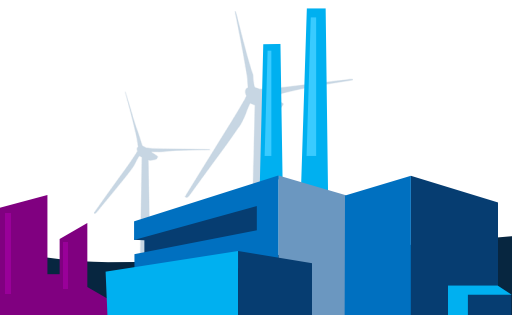
100 %

Results Messages

	TYPE_ID	NAME	Description	ItemCode	ItemText	Component Type	ComponentCode	Manufacturer	ModelNumber	Supplier	StatusInternal	Alt_Language1
1	135	AVK Kontraktlapventil PN10-16-DN80.pdf	AVK Kontraktlapventil PN10-16-DN80	AVK-KKV-FL-DN80				AVK	431065014	AVK	Godkendt	CHECK VALVE
2	135	1311-DN15RB.pdf	3-DELT PREMIUM KUGLEHANE - RED. BORE	HA1311-15RB		BAV		DVC	1311-DN15RB	Brd. Dahl	Godkendt	Ballvalve - RB
3	152	PT100-7400-A1A2.pdf	Pt1000 temperaturføler	PT100-7400A1A2		TE		PR Electronics	7400	PR Electronics	Godkendt	Pt1000 temperature s
4	135	1311-DN20FB.pdf	3-DELT PREMIUM KUGLEHANE - FULL BORE	HA1311-20		BAV		DVC	1311-DN20FB	Brd. Dahl	Godkendt	Ballvalve - FB
5	135	1311-DN100FB.pdf	3-DELT PREMIUM KUGLEHANE - FULL BORE	HA1311-100		BAV		DVC	1311-DN100FB	Brd. Dahl	Godkendt	Ballvalve - FB
6	135	1311-DN50RB.pdf	3-DELT PREMIUM KUGLEHANE - RED. BORE	HA1311-50RB		BAV		DVC	1311-DN50RB	Brd. Dahl	Godkendt	Ballvalve - RB
7	155	CR_3211_AFAEHQGE.pdf	Centrifugal Pumpe CR 32-10	CR 32-1-1 A-F-A-E-HQGE		P	P	Grundfos	96122006	Grundfos	Godkendt	Centrifugal pump
8	135	1311-DN15FB.pdf	3-DELT PREMIUM KUGLEHANE - FULL BORE	HA1311-15		BAV		DVC	1311-DN15FB	Brd. Dahl	Godkendt	Ballvalve - FB
9	135	BUV-KG7-DN65.pdf	Butterfly ventil serie KG7	KG7-DN65		BUV		Fagerberg	KG7-W_H_DN65	Kier	Godkendt	Absperklappen-Serie
10	135	AVK Kontraktlapventil PN10-16-DN100.pdf	AVK Kontraktlapventil PN10-16-DN100	AVK-KKV-FL-DN100				AVK	431065016	AVK	Godkendt	CHECK VALVE
11	152	2tråds programmerbar RTD-transmitter.pdf	Temperaturtransmitter.1	TT-PR5332A		TT		PR Electronics Kompagny	PR5332A	PR Electronics	Godkendt	Temperature transmitt
12	135	1311-DN25RB.pdf	3-DELT PREMIUM KUGLEHANE - RED. BORE	HA1311-25RB		BAV		DVC	1311-DN25RB	Brd. Dahl	Godkendt	Ballvalve - RB
13	135	1311-DN80RB.pdf	3-DELT PREMIUM KUGLEHANE - RED. BORE	HA1311-80RB		BAV		DVC	1311-DN80RB	Brd. Dahl	Godkendt	Ballvalve - RB
14	135	1311-DN40RB.pdf	3-DELT PREMIUM KUGLEHANE - RED. BORE	HA1311-40RB		BAV		DVC	1311-DN40RB	Brd. Dahl	Godkendt	Ballvalve - RB
15	133	Reguleringskuglehane - Type 1311 - DN15.pdf	Reguleringskuglehane m. pneumatisk aktuator	REGKV1311-PNA-DN15		CV		DVC		Bdr. Kier	Godkendt	Regulating Kuglehane
16	152	2tråds HART 7 temperaturtransmitter.pdf	Temperaturtransmitter	TT-5437		TT		PR Electronics PER	5437-22	PR Electronics..	Godkendt	Temperature transmitt
17	152	PT100-7400-A1B2.pdf	Pt1000 temperaturføler	PT100-7400A1B2		TE		PR Electronics	7400	PR Electronics	Godkendt	Pt1000 temperature s
18	155	96500966_CR_104_AFJAEHQGE.pdf	Centrifugal Pumpe CR 10-40	GF_CR10-4A-FJ-A-E-HQGE		P		Grundfos	CR 10-4 A-FJ-A-E-HQGE	Grundfos	Godkendt	Centrifugal pump
19	135	1311-DN50FB.pdf	3-DELT PREMIUM KUGLEHANE - FULL BORE	HA1311-50		BAV		NTI	1311-DN50FB	Brd. Dahl	Godkendt	Ballvalve - FB
20	135	1311-DN32FB.pdf	3-DELT PREMIUM KUGLEHANE - FULL BORE	HA1311-32		BAV		DVC	1311-DN32FB	Brd. Dahl	Godkendt	Ballvalve - FB
21	135	AVK Kontraktlapventil PN10-16-DN50.pdf	AVK Kontraktlapventil PN10-16-DN50	AVK-KKV-FL-DN50				AVK	431065012	AVK	Godkendt	CHECK VALVE
22	135	AVK Kontraktlapventil PN10-16-DN65.pdf	AVK Kontraktlapventil PN10-16-DN65	AVK-KKV-FL-DN65				AVK	431065013	AVK	Godkendt	CHECK VALVE
23	135	1311-DN65FB.pdf	3-DELT PREMIUM KUGLEHANE - FULL BORE	HA1311-65		BAV		DVC	1311-DN65FB	Brd. Dahl	Godkendt	Ballvalve - FB
24	152	99616710_CUE_3X380500V_IP20_15KW.....	Grundfos CUE Frekvens omformer	99616710		FCO	FCO	Grundfos	CUE	Grundfos	Godkendt	Grundfos CUE Freque
25	135	1311-DN32RB.pdf	3-DELT PREMIUM KUGLEHANE - RED. BORE	HA1311-32RB		BAV		DVC	1311-DN32RB	Brd. Dahl	Godkendt	Ballvalve - RB

# Add-On's for bedre data-flow / håndtering

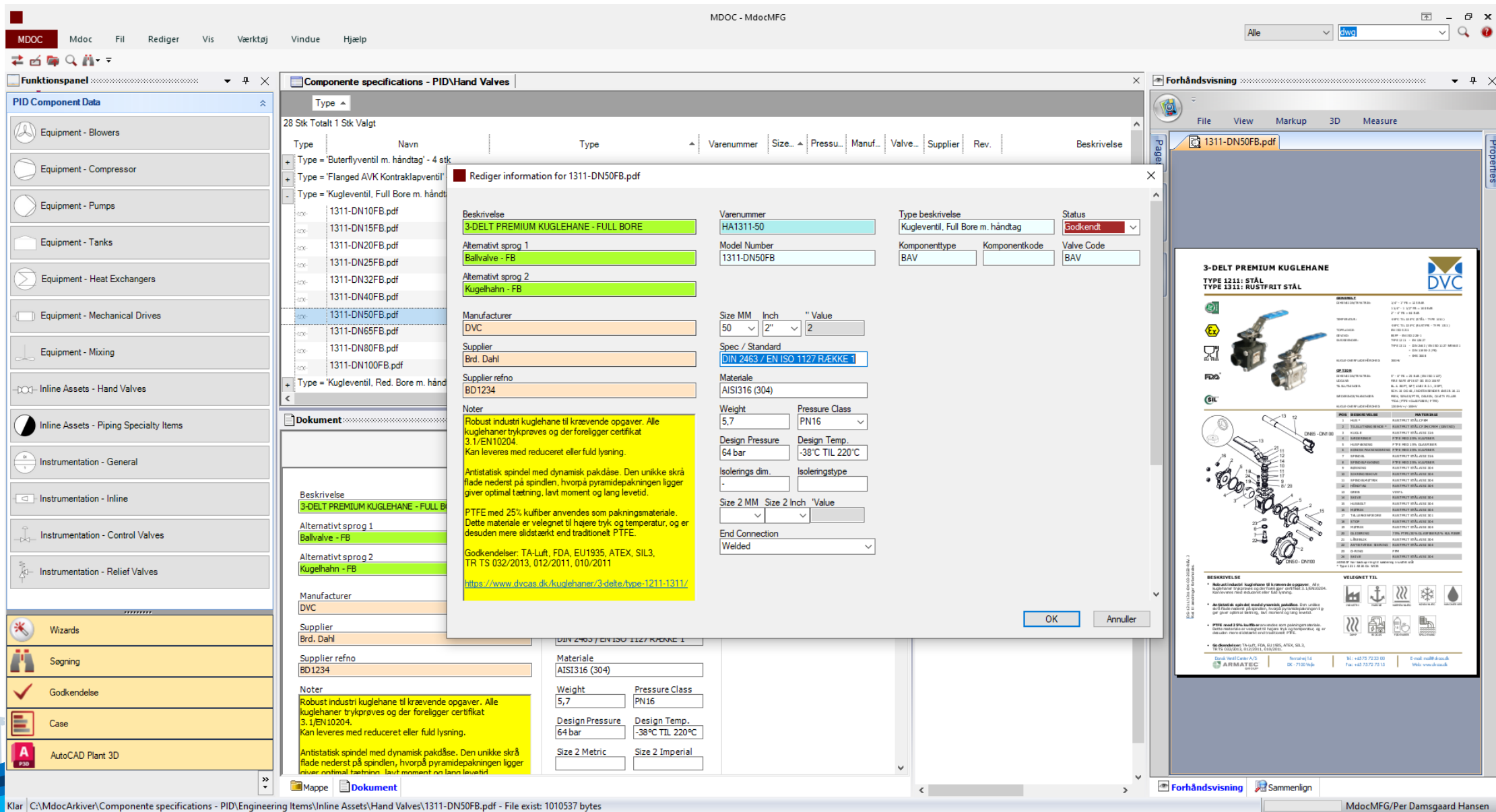
- NTI TOOLS Plant
- MDOC
- NTI TOOLS for Inventor
- NTI TOOLS for Vault.
- NTI TOOLS JobProcessor



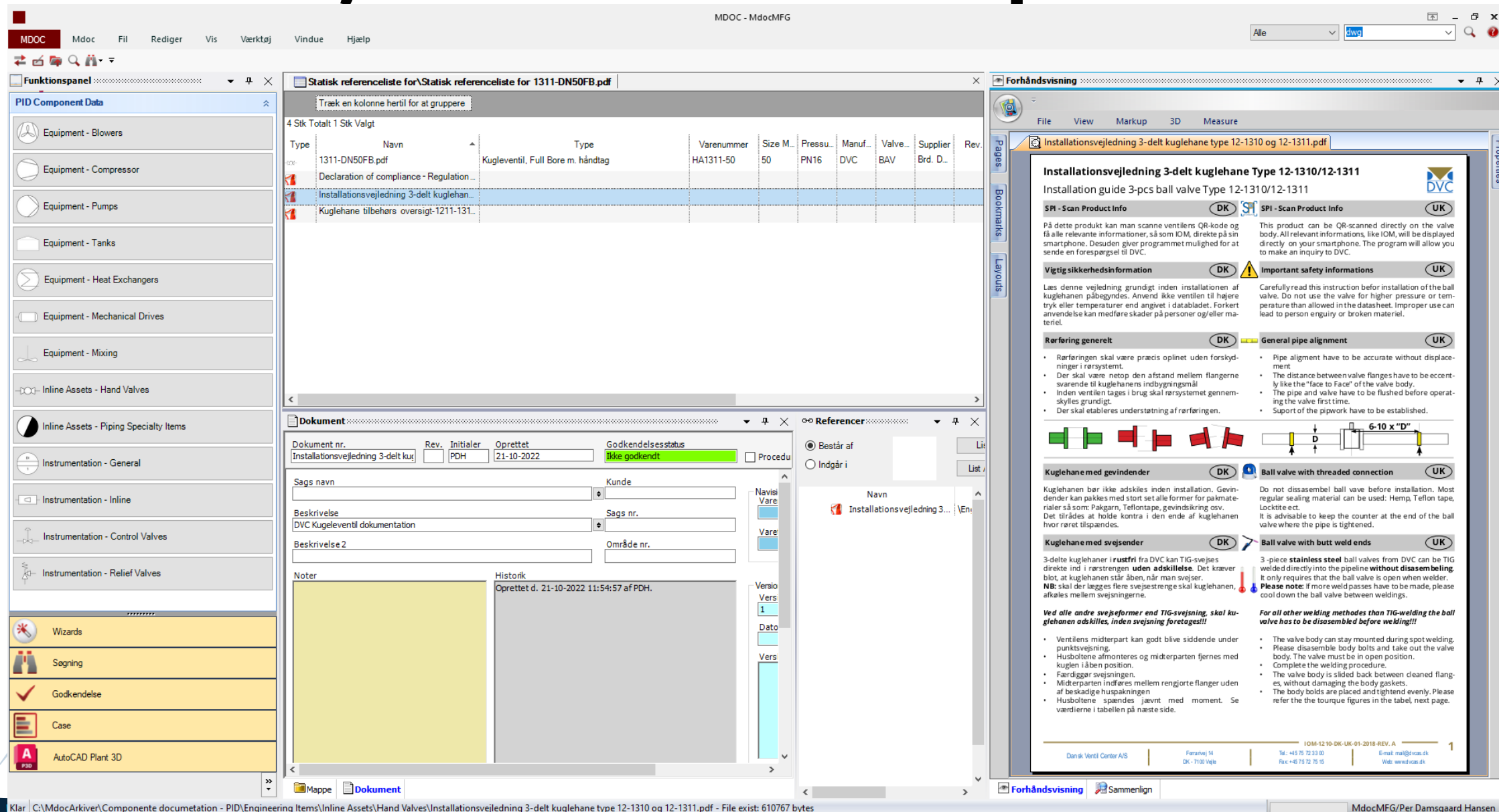




# Data flow, Datakilde eksempel med Mdoc



# Data flow, Datakilde eksempel med Mdoc



**Statistik referenceliste for 1311-DN50FB.pdf**

Type	Navn	Type	Varenummer	Size M.	Pressu.	Manuf.	Valve...	Supplier	Rev.
4 Stk Totalt 1 Stk Valgt									
1311-DN50FB.pdf	Kugleventil, Full Bore m. håndtag		HA1311-50	50	PN16	DVC	BAV	Brd. D...	
Declaration of compliance - Regulation...									
Installationsvejledning 3-delt kuglehan...									
Kuglehan tilbehørs oversigt-1211-131...									

**Dokument**

Dokument nr. [ ] Rev. [ ] Initialer [ ] Oprettet [21-10-2022] Godkendelsesstatus [Ikke godkendt] Procedu [ ]

Sags navn [ ] Kunde [ ] Navn [ ]

Beskrivelse [DVC Kugleventil dokumentation] Sags nr. [ ] Vare [ ]

Beskrivelse 2 [ ] Område nr. [ ]

Noter [ ] Historik [Oprettet d. 21-10-2022 11:54:57 af PDH.]

Vers [1] Dato [ ] Vers [ ]

**Forhåndsvisning**

File View Markup 3D Measure

Installationsvejledning 3-delt kuglehan Type 12-1310 og 12-1311.pdf

**Installationsvejledning 3-delt kuglehan Type 12-1310/12-1311**

Installation guide 3-pcs ball valve Type 12-1310/12-1311

**SPI - Scan Product Info** (DK) **SPI - Scan Product Info** (UK)

På dette produkt kan man scanne ventilers QR-kode og få alle relevante informationer, såsom IOM, direkte på sin smartphone. Desuden giver programmet mulighed for at sende en forespørgsel til DVC.

This product can be QR-scanned directly on the valve body. All relevant informations, like IOM, will be displayed directly on your smartphone. The program will allow you to make an inquiry to DVC.

**Vigtig sikkerhedsinformation** (DK) **Important safety informations** (UK)

Læs denne vejledning grundigt inden installationen af kuglehanen påbegyndes. Anvend ikke ventilen til højere tryk eller temperaturer end angivet i databladet. Forkert anvendelse kan medføre skader på personer og/eller materiel.

Carefully read this instruction before installation of the ball valve. Do not use the valve for higher pressure or temperature than allowed in the datasheet. Improper use can lead to person engulry or broken material.

**Rørføring generelt** (DK) **General pipe alignment** (UK)

- Rørføringen skal være præcis oplinet uden forskydninger i rørsystemet.
- Der skal være netop den afstand mellem flangerne svarende til kuglehanens indbygningsmål.
- Inden ventilen tages i brug skal rørsystemet gennemskylles grundigt.
- Der skal etableres understøtning af rørføringen.

- Pipe alignment have to be accurate without displacement
- The distance between valve flanges have to be exactly like the "face to face" of the valve body.
- The pipe and valve have to be flushed before operating the valve first time.
- Support of the pipework have to be established.

**Kuglehan med gevindender** (DK) **Ball valve with threaded connection** (UK)

Kuglehanen bør ikke adskilles inden installation. Gevindender kan pakkes med stort set alle former for pakmateriale såsom: Pakgarn, Teflontape, gevindsikring osv. Det tilrådes at holde kontra i den ende af kuglehanen hvor røret tilspændes.

Do not disassemble ball valve before installation. Most regular sealing material can be used: Hemp, Teflon tape, Locktite ect. It is advisable to keep the counter at the end of the ball valve where the pipe is tightened.

**Kuglehan med svejsender** (DK) **Ball valve with butt weld ends** (UK)

3-delte kuglehaner i rustfri fra DVC kan TIG-svejses direkte ind i rørstrengen **uden adskillelse**. Det kræver blot, at kuglehanen står åben, når man svejser. **NB:** skal der lægges flere svejsestrænge skal kuglehanen afkøles mellem svejsningerne.

3-piece stainless steel ball valves from DVC can be TIG welded directly into the pipeline **without disassembling**. It only requires that the ball valve is open when welder. **Please note:** If more weld passes have to be made, please cool down the ball valve between weldings.

**Ved alle andre svejseformer end TIG-svejsning, skal kuglehanen adskilles, inden svejsning foretages!!!**

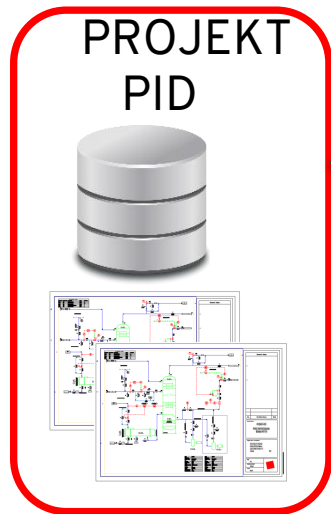
**For all other welding methodes than TIG-welding the ball valve has to be disassembled before welding!!!**

- Ventilens midterpart kan godt blive siddende under punktsvejsning.
- Husboldene afmonteres og midterparten fjernes med kuglen i åben position.
- Færdiggør svejsningen.
- Midterparten indføres mellem rengjorte flanger uden af beskadige huspakningen.
- Husboldene spændes jævnt med moment. Se værdierne i tabellen på næste side.

- The valve body can stay mounted during spot welding.
- Please disassemble body bolts and take out the valve body. The valve must be in open position.
- Complete the welding procedure.
- The valve body is slid back between cleaned flanges, without damaging the body gaskets.
- The body bolts are placed and tightened evenly. Please refer the the torque figures in the tabel, next page.

Dansk Ventil Center A/S | Farvej 14 | Tel.: +45 75 72 33 00 | E-mail: mail@dvcas.dk | 1  
DK - 7100 Vejle | Fax: +45 75 72 75 15 | Web: www.dvc.dk

# Data flow, Datakilde eksempel med MDOC (SQL) og NTI TOOLS PLANT



MDOC Mdoc Fil Rediger Vis Værktøj Vindue Hjælp

Funktionspanel

PID Component Data

- Equipment - Blowers
- Equipment - Compressor
- Equipment - Pumps
- Equipment - Tanks
- Equipment - Heat Exchangers
- Equipment - Mechanical Drives
- Equipment - Mixing
- Inline Assets - Hand Valves
- Inline Assets - Piping Specialty Items
- Instrumentation - General
- Instrumentation - Inline
- Instrumentation - Control Valves
- Instrumentation - Relief Valves

Componente specifications - PID\Hand Valves

Type

28 Stk Totalt 1 Stk Valgt

Type	Navn	Type	Varenummer	Size	Pressu	Manuf	Valve	Supplie
Type = 'Butterflyventil m. håndtag' - 4 stk								
Type = 'Flanged AVK Kontraklapventil'								
Type = 'Kugleventil, Full Bore m. håndtag'								
1311-DN10FB.pdf								
1311-DN15FB.pdf								
1311-DN20FB.pdf								
1311-DN25FB.pdf								
1311-DN32FB.pdf								
1311-DN40FB.pdf								
1311-DN50FB.pdf								
1311-DN65FB.pdf								
1311-DN80FB.pdf								
1311-DN100FB.pdf								
Type = 'Kugleventil, Red. Bore m. håndtag'								

Rediger information for 1311-DN50FB.pdf

Beskrivelse  
3-DELTA PREMIUM KUGLEHANE - FULL BORE

Alternativt sprog 1  
Ballvalve - FB

Alternativt sprog 2  
Kugelhahn - FB

Manufacturer  
DVC

Supplier  
Brd. Dahl

Supplier refno  
BD1234

Noter  
Robust industri kuglehaner til krævende opgaver. Alle kuglehaner trykprøves og der foreligger certifikat 3.1/EN10204.  
Kan leveres med reduceret eller fuld lysning.  
Antistatisk spindel med dynamisk pakdase. Den unikke skrå flade nederst på spindlen, hvorpå pyramidepakningen ligger giver optimal tætning, lavt moment og lang levetid.  
PTFE med 25% kulfiber anvendes som pakningsmateriale. Dette materiale er velegnet til højere tryk og temperatur, og er desuden mere slidstærkt end traditionelt PTFE.  
Godkendelser: TA-Luft, FDA, EU1935, ATEX, SIL3, TR TS 032/2013, 012/2011, 010/2011  
<https://www.dvcas.dk/kuglehaner/3-delta-type-1211-1311/>

Varenummer  
HA1311-50

Model Number  
1311-DN50FB

Type beskrivelse  
Kugleventil, Full Bore

Komponenttype  
BAV

Size MM Inch " Value  
50 2" 2

Spec / Standard  
DIN 2463 / EN ISO 1127 RÆKKE 1

Materiale  
AISI316 (304)

Weight  
5,7

Pressure Class  
PN16

Design Pressure  
64 bar

Design Temp.  
-38°C TIL 220°C

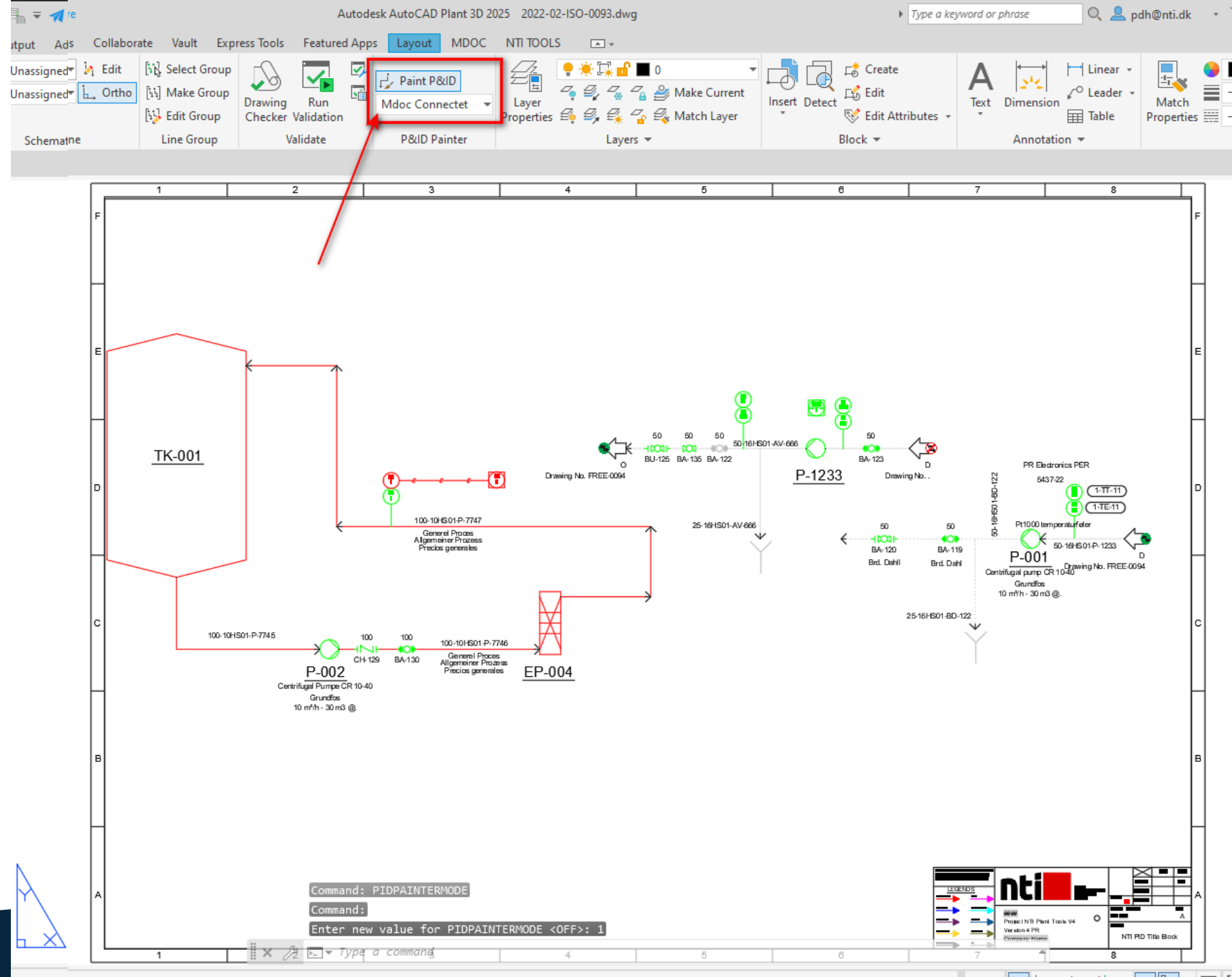
Isolerings dim.  
-

Isoleringsstype  
-

Size 2 MM Size 2 Inch "Value  
-

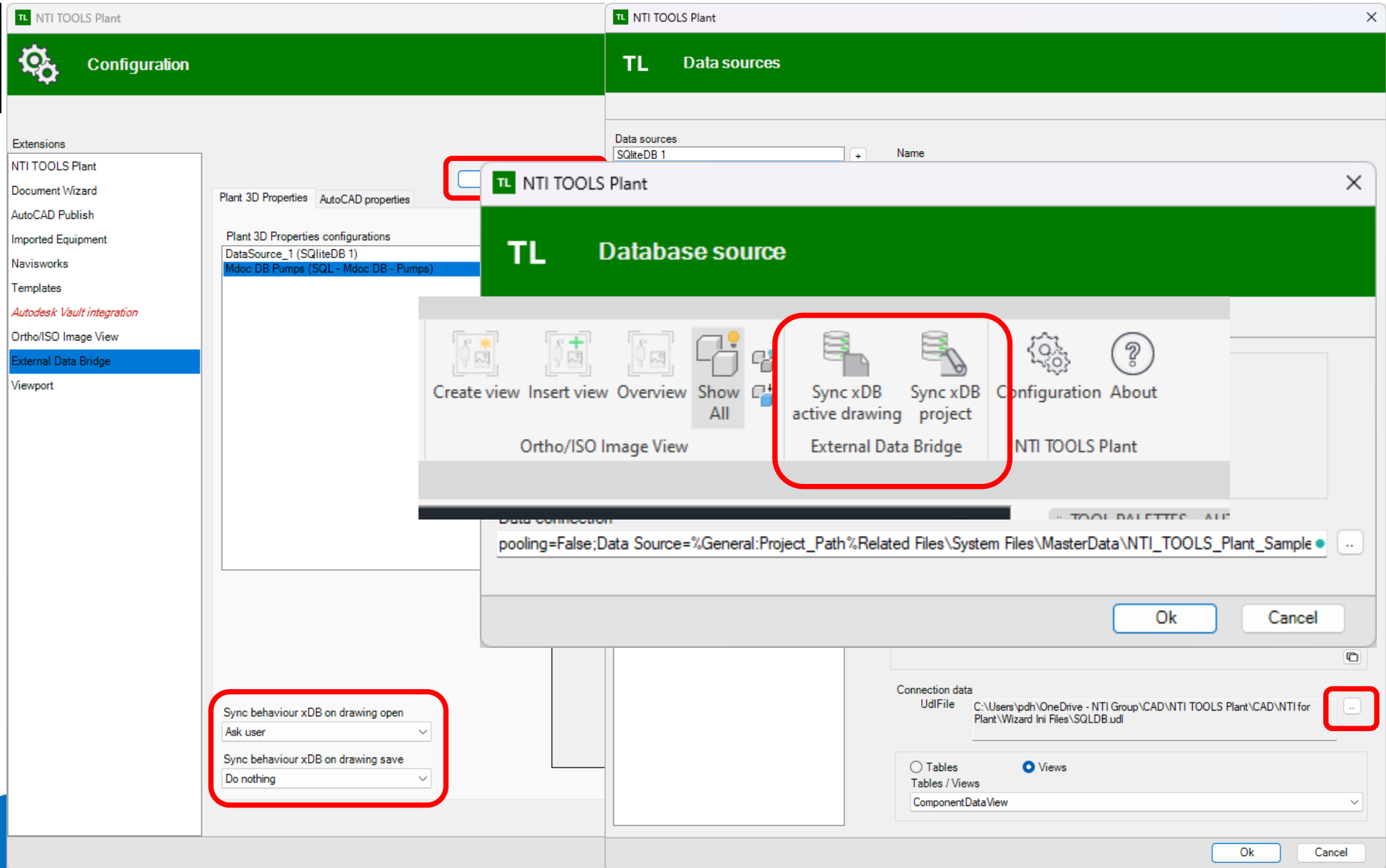
End Connection  
Welded

# Visual Status



# NTI TOOLS Plant 2025.1 – External Data Bridge

BETA





## Det Grafiske Udtryk

2023-03-03

C213 Tegningsstandarder

Del 5 - VVS og venti

C213 Tegningsstandarder

Del 5 - V

Tabel for Tabel for præsentationsform - Varme

## Det Grafiske Udtryk

C213 Tegning

Fork

Fork

	DH
BK	DR
BV	
BC	
GWC	

Tabel for præsentationsform - Køling

Tabel for præ

Forkorte

Forkortelse

## Køling

KF Køling, frem

Pipe Lines

Lines

nti

TOOL PALETTES - P&amp;ID ISO

&lt;&lt; Indhold

Indhold

&lt;&lt; Indhold

25 21 10

13

14

22

cke

lse

23

Model (2D/3D)

&lt;&lt; Indhold

Stilistisk (1D)

Model (2D/3D)

Farve (RGB)

Tykkelse

Linjetype

Farve (RGB)

Tykkelse

(A)

(B)

(C)

(D)

(E)

KF	Køling, frem	000-255-255	5	BIPS_DASH_DASH_DOUBLE-DOT	000-255-255	5
----	--------------	-------------	---	---------------------------	-------------	---

SQLite Expert Personal 5.5 (x64)

File View Database Object SQL Transaction Tools Help

Database: NTI\_TOOLS\_Plant\_Sample\_SqliteDB Table: PID\_Sline\_Layer\_Definitions File: C:\...\pdh\OneDrive - NTI Group\CAD\NTI\_TOOLS Plant\Sample Files\Project NTI Plant Tools V3\Related Files\System Files\MasterData\NTI\_TOOLS\_Plant\_Sample\_SqliteDB.db SQLite library: sqlite3.dll 3.43.0 [FTS3 FTS4 FTS5 RTREE]

Database Data DDL Design SQL

NTI\_TOOLS\_Plant\_Sam

Equipment\_Layer\_I

PID\_Sline\_Layer\_De

Structure\_Layer\_De

NTI\_TOOLS\_Plant\_Sam

PID\_Sline\_Layer\_De

Structure\_Layer\_De

Database Data DDL Design SQL

row Service Description LayerName Color LineType LineTypeScale LineWeight Disp\_1 Disp\_2

1	AV	ATMOSPHERIC VENT	Layer:Service_AV-[PipeLines:LineGroupNumber]	Color:5	LineType:Continuous	LineTypeScale:0.5	LineWeight:LineWeight001	ATMOSPHERISCHE ENTLÜFTUNG	VENTILACIÓN ATMOSFÉRICA
2	BA	BREATHING AIR	Layer:Service_BA-[PipeLines:LineGroupNumber]	Color:40	LineType:HIDDEN2	LineTypeScale:10	LineWeight:LineWeight070	ATEMLUFT	RESPIRANDO AIRE
3	BD	BLOWDOWN	Layer:Service_BD-[PipeLines:LineGroupNumber]	Color:77,228,27	LineType:HIDDEN	LineTypeScale:0.3	LineWeight:LineWeight070	ABSCHLÄMMEN	PULVERIZACIÓN
4	BFW	BOILED FEED WATER	Layer:Service_BFW-[PipeLines:LineGroupNumber]	Color:8	LineType:PHANTOM2	LineTypeScale:1	LineWeight:LineWeight070	KESSELSPEISEWASSER	AGUA DE ALIMENTACIÓN HERVIDA
5	BRR	BRINE RETURN	Layer:Service_BRR-[PipeLines:LineGroupNumber]	Color:2	LineType:CENTER2	LineTypeScale:1	LineWeight:Default	SOLERÜCKLAUF	RETORNO DE SALMUERA
6	BRS	BRINE SUPPLY	Layer:Service_BRS-[PipeLines:LineGroupNumber]	Color:3	LineType:ISOPneumatic	LineTypeScale:1	LineWeight:Default	SOLEVERSORGUNG	SUMINISTRO DE SALMUERA
7	P	General Proces	Layer:Service_P	Color:PANTONI	LineType:Continuous	LineTypeScale:1	LineWeight:Default	Allgemeiner Prozess	Precios generales
8	CC	CONTAMINABLE CONDENSATE	Layer:Service_CC-[PipeLines:LineGroupNumber]	Color:50	LineType:HIDDEN2	LineTypeScale:1	LineWeight:Default	KONTAMINIERBARES KONDENSAT	CONDENSADO CONTAMINABLE
9	CF	COLD FLARE	Layer:Service_CF-[PipeLines:LineGroupNumber]	Color:80	LineType:DIVIDE	LineTypeScale:1	LineWeight:Default	KONTAMINIERBARES KONDENSAT	CONDENSADO CONTAMINABLE
10	CV	COLD VENT	Layer:Service_CV-[PipeLines:LineGroupNumber]	Color:	LineType:DIVIDE	LineTypeScale:1	LineWeight:Default	KALTBELÜFTUNG	VENTILACIÓN FRÍA
11	CWR	COOLING WATER RETURN	Layer:Service_CWR-[PipeLines:LineGroupNumber]	Color:4	LineType:DIVIDE	LineTypeScale:1	LineWeight:Default	KÜHLWASSERRÜCKLAUF	RETORNO DE AGUA DE REFRIGERACIÓN
12	CWS	COOLING WATER SUPPLY	Layer:Service_CWS-[PipeLines:LineGroupNumber]	Color:5	LineType:DIVIDE	LineTypeScale:1	LineWeight:Default	KÜHLWASSERVERSORGUNG	SUMINISTRO DE AGUA DE REFRIGERACIÓN
13	DR	DRAIN	Layer:Service_DR-[PipeLines:LineGroupNumber]	Color:100	(null)	LineTypeScale:0.5	LineWeight:Default	ABFLUSS	DRENAR

&lt;Filter is Empty&gt;

Customize...

Ready

Record 1 of 13

255 5

255 5

189 5

189 5

189 5

255 5

189 5

129 5

189 5

189 5

189 5

189 5

189 5

189 5

189 5

189 5

189 5

189 5

# NTI TOOLS Plant 2025.1 – External Data Bridge



NTI TOOLS Plant

Configuration

Extensions

- NTI TOOLS Plant
- Document Wizard
- AutoCAD Publish
- Imported Equipment
- Navisworks
- Templates
- Autodesk Vault integration
- Ortho/ISO Image View
- External Data Bridge**
- Viewport

Plant 3D Properties AutoCAD properties

Data sources

Plant 3D Properties configurations

- DataSource\_1 (SQLiteDB 1)
- Mdoc DB Pumps (SQL - Mdoc DB - Pumps)

Data sources condition mappings

Plant 3D Property	Condition	External property
LineGroupService	Equals ( ...	Service

Plant 3D properties mappings

Plant 3D Property	External property
Description	Description
Alt_Sprog1	Disp_1
Alt_Sprog2	Disp_2

Sync behaviour xDB on drawing open

Ask user

Sync behaviour xDB on drawing save

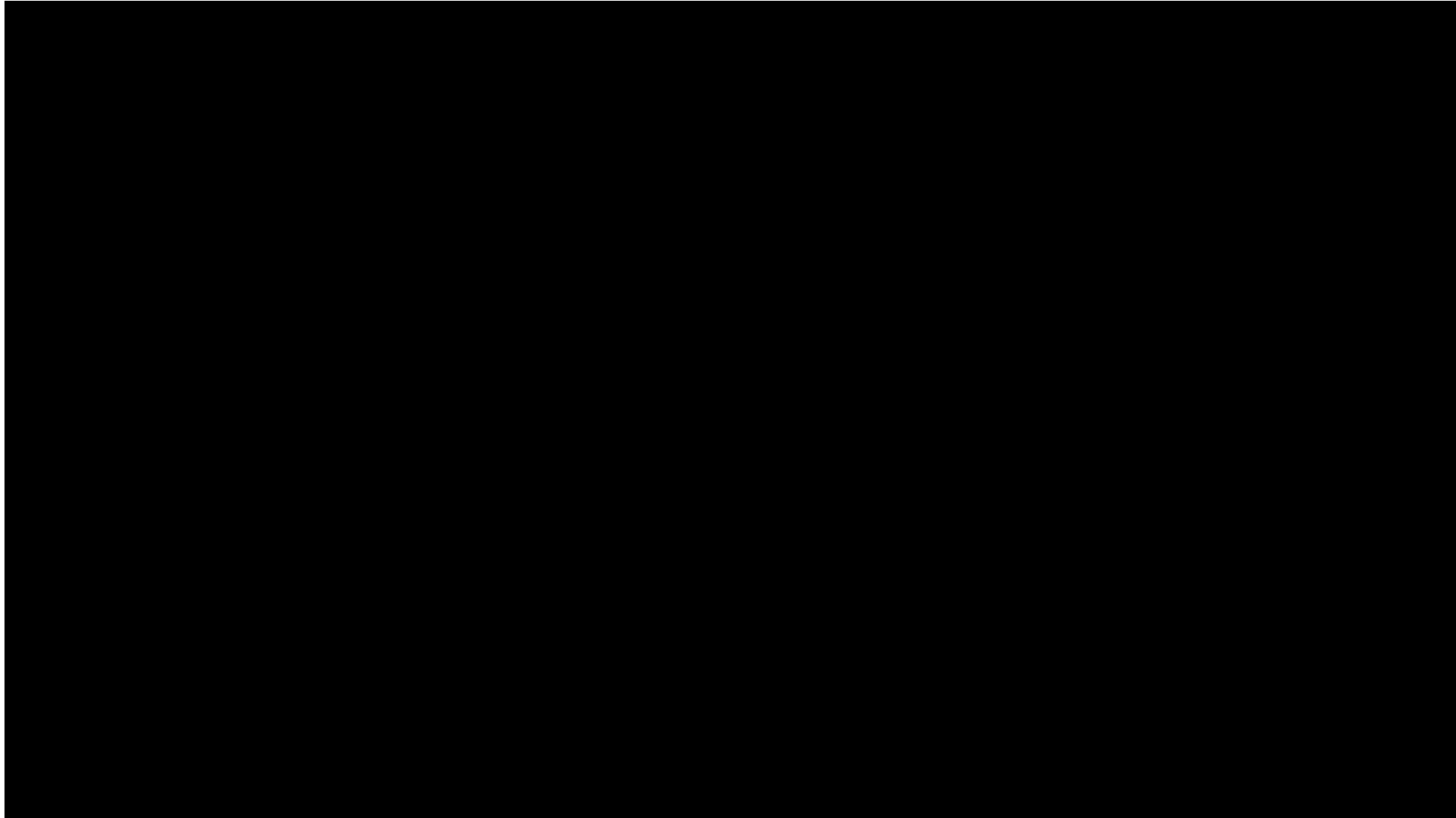
Do nothing

Show info field values

Ok Cancel



# xDB – AutoCAD Properties



# Arkitektur i NTI Plant Konceptet med Inventor og Vault

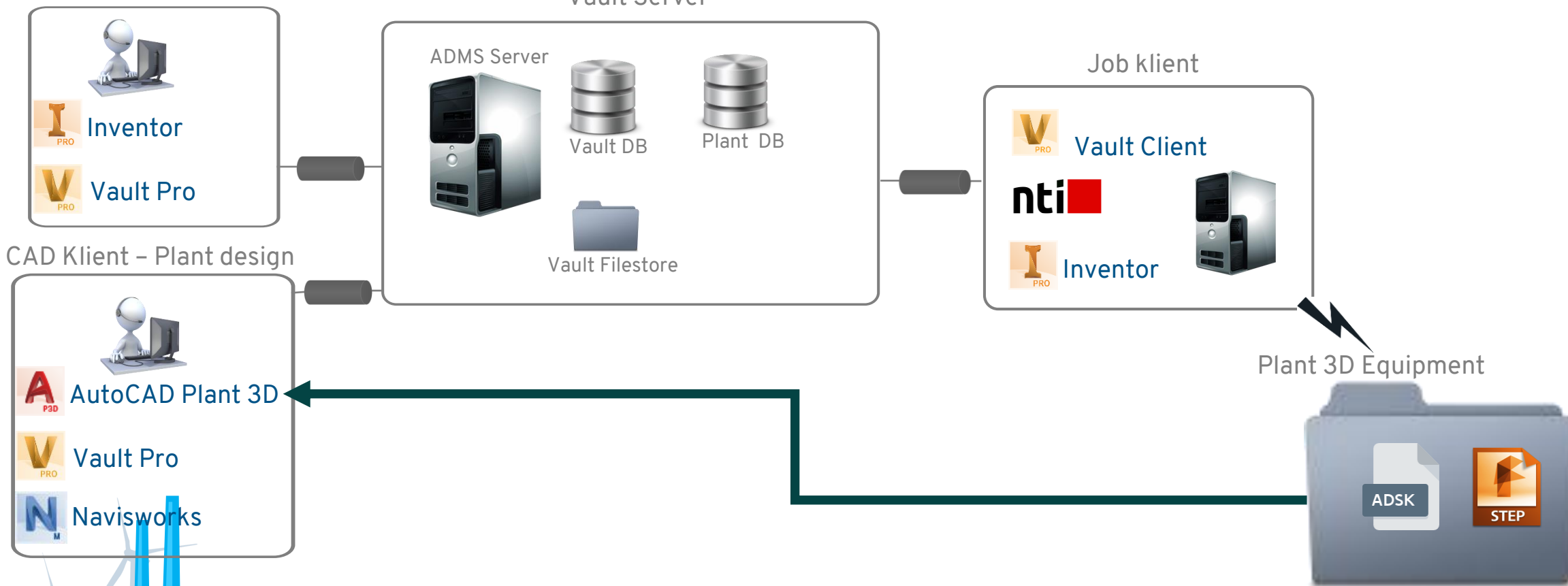
CAD Klient - Konstruktion

Vault Server

Job klient

CAD Klient - Plant design

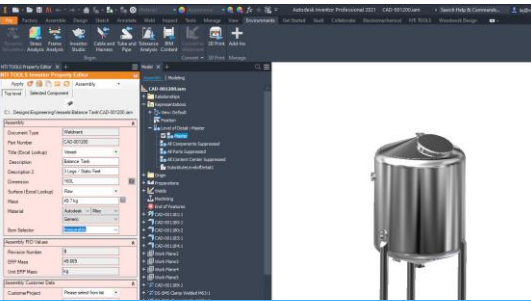
Plant 3D Equipment



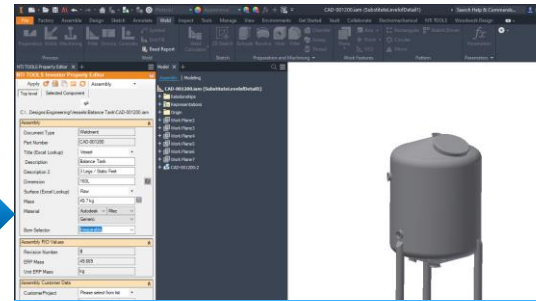
# Release Process - Engineering -> Plant/Layout



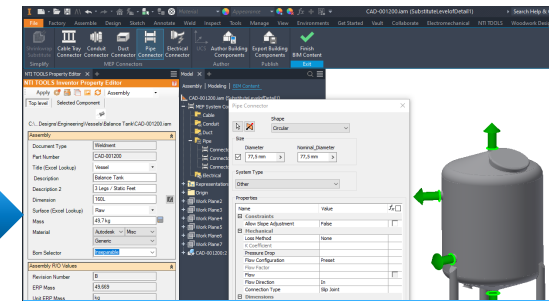
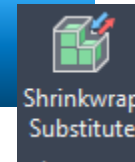
File Handling  
Development  
Construction



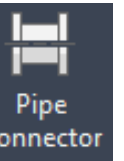
Ordinary Inventor  
construction



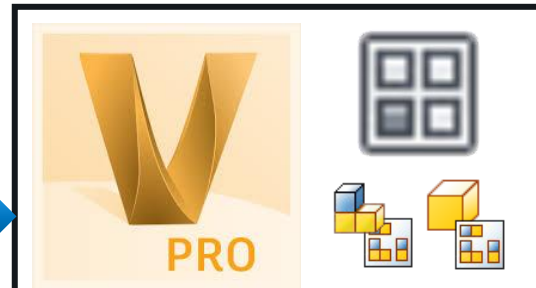
Simplify



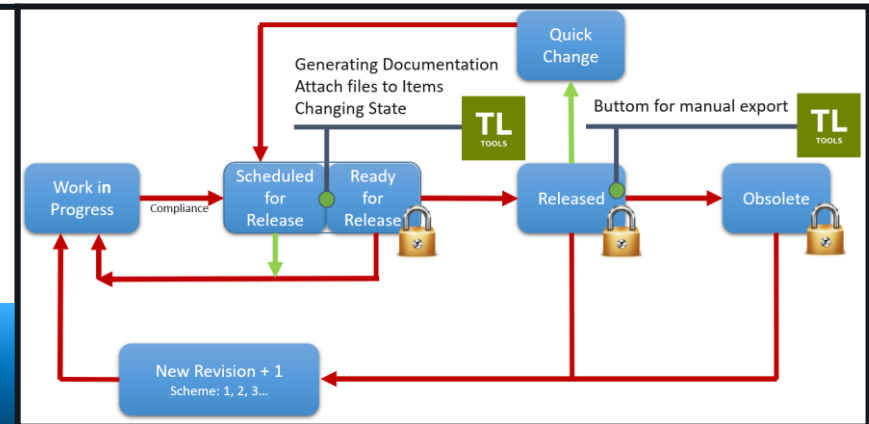
BIM Content  
(Define Connectors & Properties)



Vault Files Handling  
(Check In / Out)



Vault Item Handling  
(Assign / Attach -> Change State)



Item Handling  
Ready for production

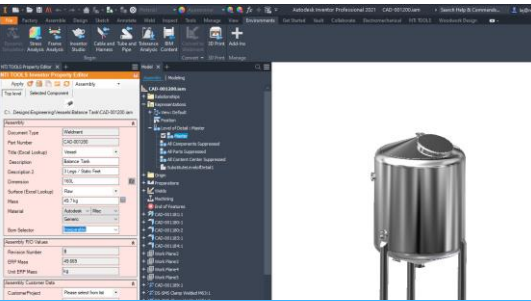




# Release Process - Engineering -> Plant/Layout



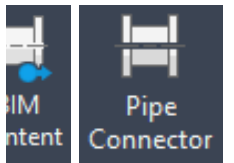
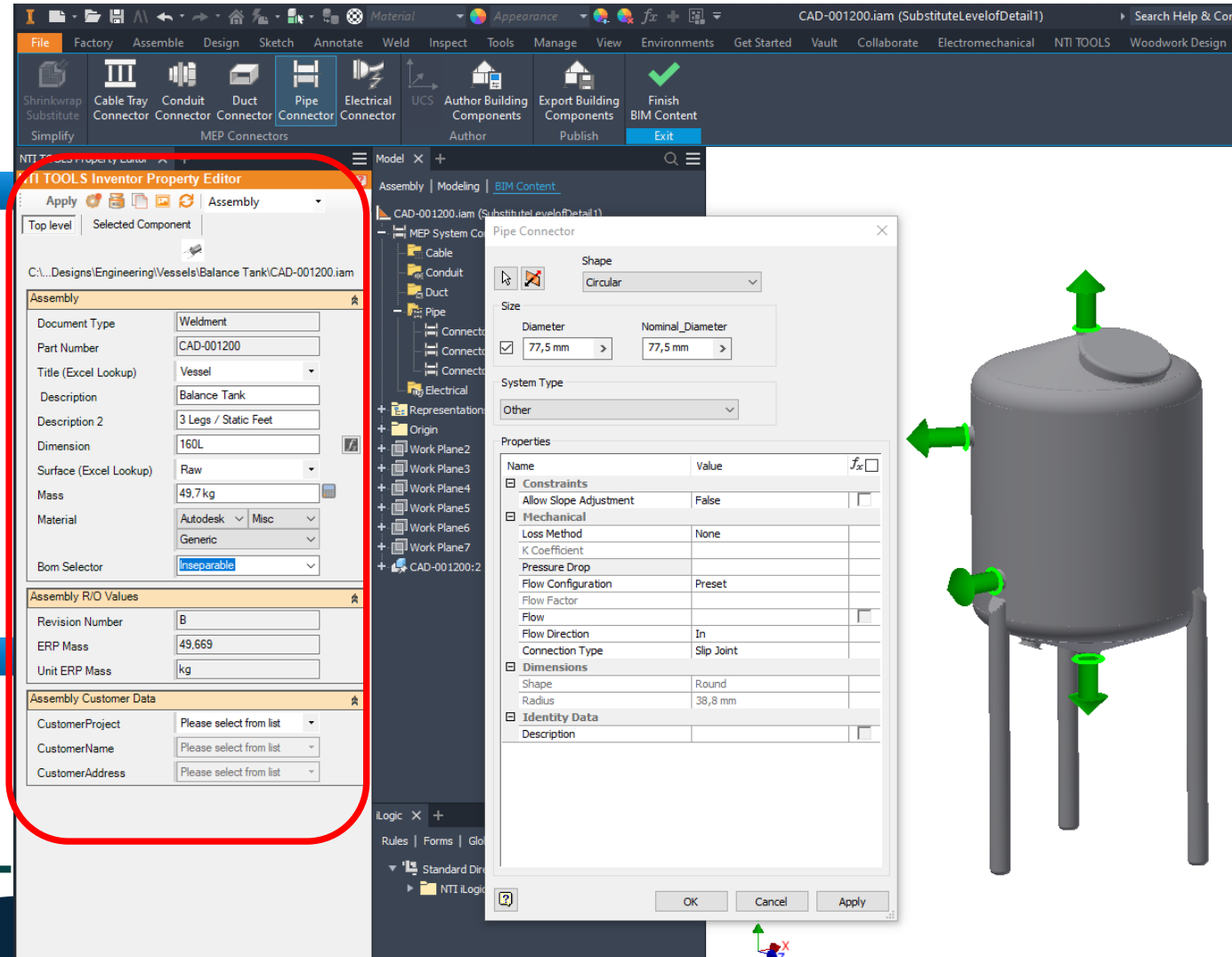
File Handling  
Development  
Construction



Ordinary Inventor  
construction



Vault Files Handling  
(Check In / Out)



Item Handling  
Ready for production



Modify Equipment

Tank - Tank

Equipment Properties

Nozzles

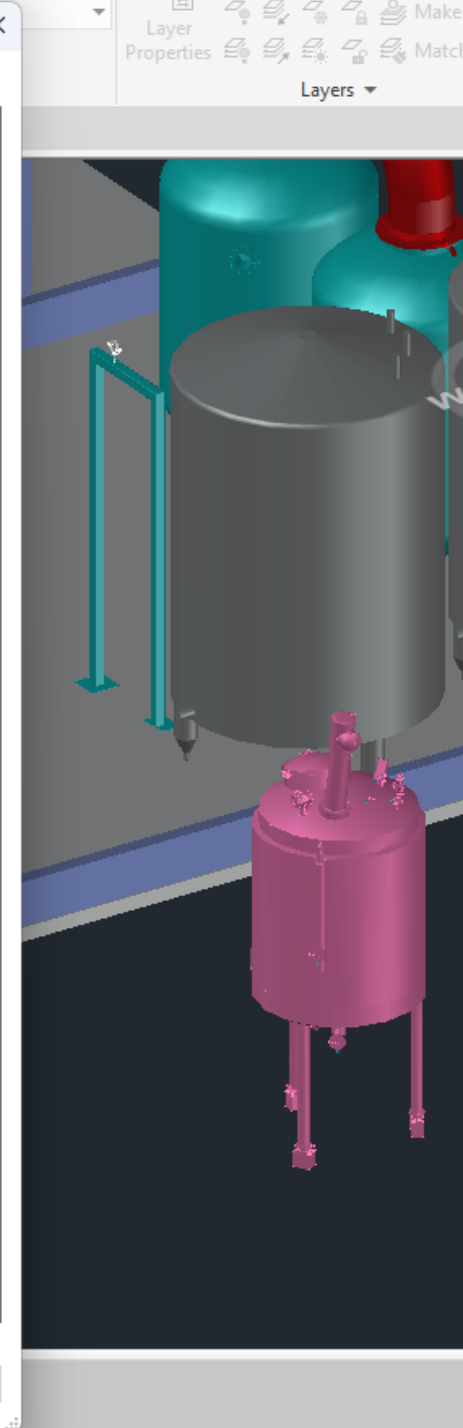
Tag	N-1
Size	50
Pressure Class	
Description	

Data

Long Description (Family)	2500 L. Procestank
Compatible Standard	
Manufacturer	SKIDTEK Engineering
Material	AISI 316
Material Code	SS
Long Description (Size)	2500 L. Procestank
Short Description	Procestank
Item Code	VE-150-2500-01
Design Std	DS 5050-01
Design Pressure Factor	
Weight	1005
Weight Unit	KG
Content Iso Symbol Definition	
Status	New
Produkt beskrivelse DK	
URL Dansk	
VVS	
Tag	TK-002
Number	002
Type	TK
Area	
Inventor_Identity_Data_Description	2500 L. Procestank Procestank Inventor Type 3 Morten Bøe
Inventor_Identity_Data_Manufacturer	SKIDTEK Engineering Rev 2005-10-11
Inventor_Identity_Data_Model	VE-150-2500-01 VE-150 Vessel 2500L SS AISI 316 1005 DS 5050-01
Source and Constructor	Inventor Type 3 - Morten Bøe
Source Rev info	Rev 2005-10-11
Part Subtype	General

Templates

OK Cancel Apply Help



NTI TOOLS Plant									
Imported Equipment									
	DWG drawing Name	Block Name	Source File	Count	Registered	Status	Update	Delete link	Find
	L3-Bygning	Buffer Room	C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\STP files\Buffer Room.stp	2	20-10-2022 ...	Ok			Find
	L3-Bygning	Buffer Room\$1\$ATF	C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\STP files\Buffer Room_Equipment.stp	2	20-10-2022 ...	Ok			Find
	L3-Udstyr	037-00011-14	C:\Users\pdh\OneDrive - NTI Group\Dokumenter\Kunder\Dupont\Modtaget Filer\31-08-2020\037-00011-14.stp	2	18-08-2021 ...	Ok			Find
	L3-Udstyr	PM_ASM_AGG	C:\Users\pdh\OneDrive - NTI Group\Dokumenter\Kunder\Dupont\Modtaget Filer\24-08-2020\CBMD_032200_+_132S_+_S303.stp	1	15-09-2021 ...	Ok			Find
	L3-Udstyr	Vejetank	C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\Inventor\Vejetank.ipt	2	20-09-2021 ...	Ok			Find
	*U	REF133	C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\ADSK Filer\Vessel.adsk	1	05-02-2024 ...	Ok			Find
	*U	REF134	C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\ADSK Filer\Vessel.adsk	1	02-05-2024 ...	Ok			Find
	*U	REF135	C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\ADSK Filer\A-Platform_Simplify_1.adsk	1	02-05-2024 ...	Ok			Find
	*U	REF136	C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\ADSK Filer\VE-150 Vessel 2500L_Simplify_5 with metadata.adsk	1	09-09-2024 ...	Ok			Find
	*U	REF137	C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\ADSK Filer\VE-150 Vessel 2500L_Simplify_5 with metadata.adsk	1	09-09-2024 ...	Ok			Find
	*U	REF138	C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\ADSK Filer\VE-151 Vessel R 2500L_Simplify_5.adsk	1	09-09-2024 ...	Ok			Find
			C:\Users\pdh\OneDrive - NTI Group\CAD\NTI TOOLS Plant\Sample Files\Equipment\ADSK Filer\VE-150 Vessel 2500L_Simplify_5 with metadata.adsk	1	08-10-2024 ...	Ok	Update	Delete	Find
Close									



# NTI TOOLS for AutoCAD Plant 3D



TL NTI TOOLS Plant

Imported Equipment

Bend 90°,BV (10HS01)

Bend 90°,BV (10HS01)

An imported file has changed.  
[Show Import manager.](#)

Block Name	Source File	Count	Registered	Status	Update	Delete	Find
PM_ASM_AGG	E:\Dokumente\Kunder\Dupont\Modtaget Filer\24-08-2020\CBMD_032...	3	03-02-2021 11:55	Ok	Update	Delete	Find
037-00011-14	E:\Dokumente\Kunder\Dupont\Modtaget Filer\31-08-2020\037-00011-1...	3	03-02-2021 11:56	Ok	Update	Delete	Find
OilTank	C:\Temp\NTI Plant Tools Models\OilTank_Complete.stp	1	03-02-2021 12:05	Source has changed	Update	Delete	Find
*U228	E:\3D-PlantDemo\2021 P3D Demo\Related Files\Inventor data\OilTank-...	1	03-02-2021 12:06	Ok	Update	Delete	Find

Close



I denne PDF kopi af power pointen  
kan videoer ikke ses.  
Kontakt evt. Per Damsgaard v. NTI  
for at få tilsendt et Power Point  
slide show inkl. videoer.

