

# Instrumented Safety Systems



**mokveld**





# Engineered Valve Systems for Control and Safety Applications

## Examples



Associazione Italiana  
Strumentisti



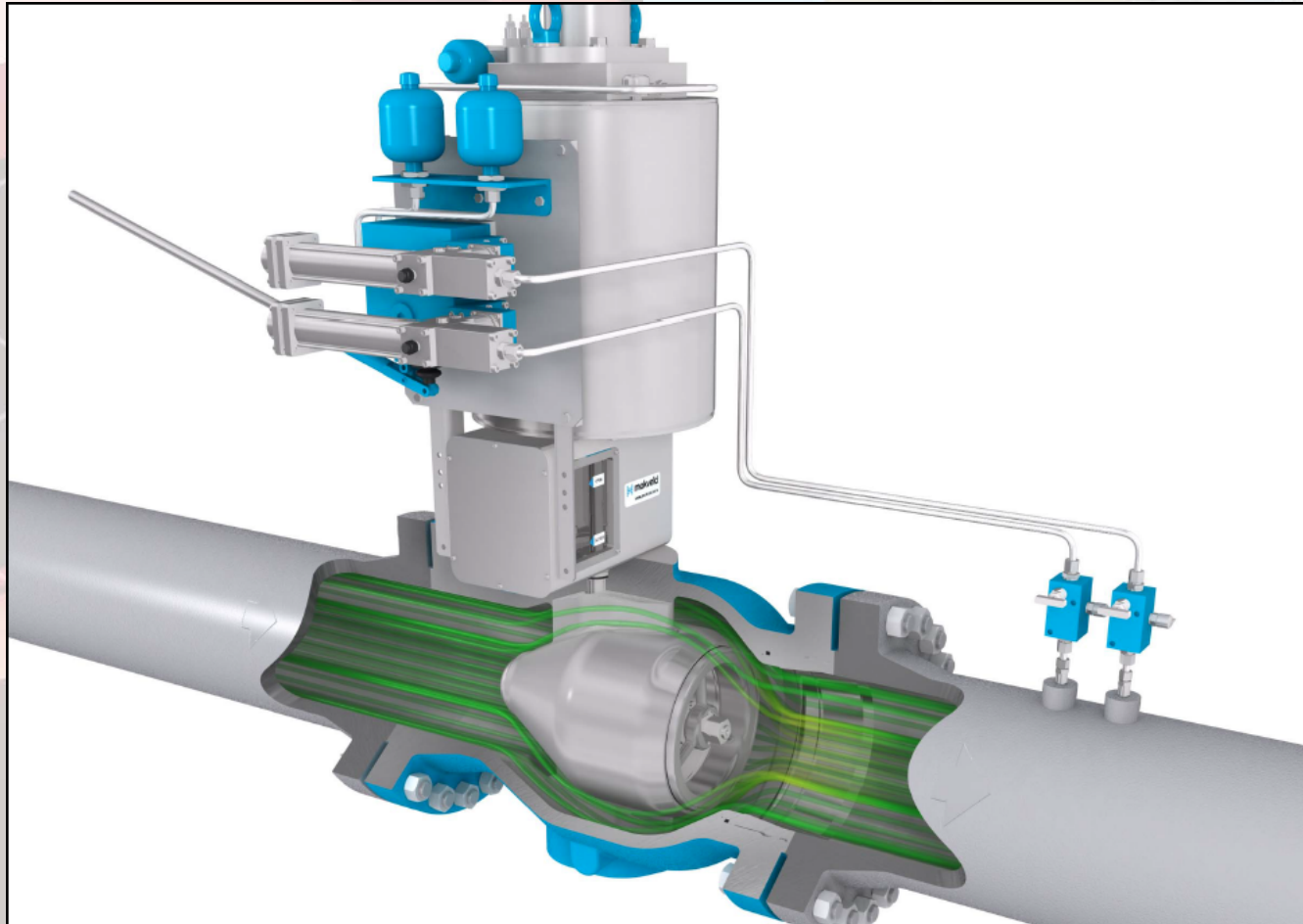
Italy  
Section

DINO OLIVIERI  
Mokveld Agent

AIS – ISA Giornata di studio HIPPS

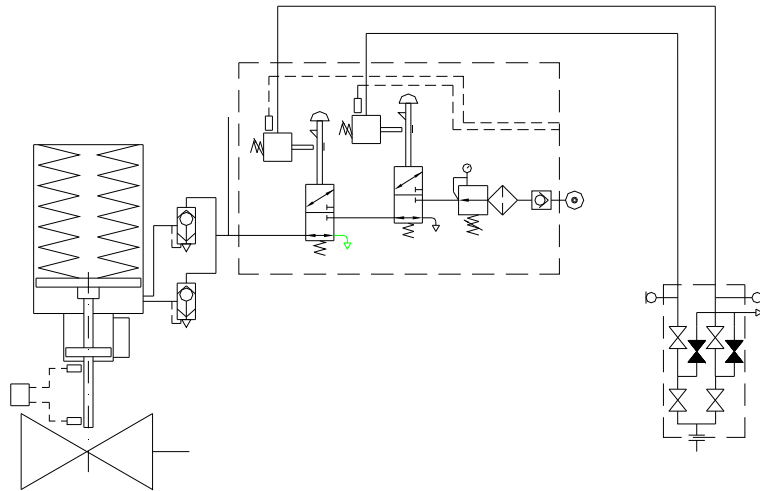


# Mokveld Mechanical HIPPS

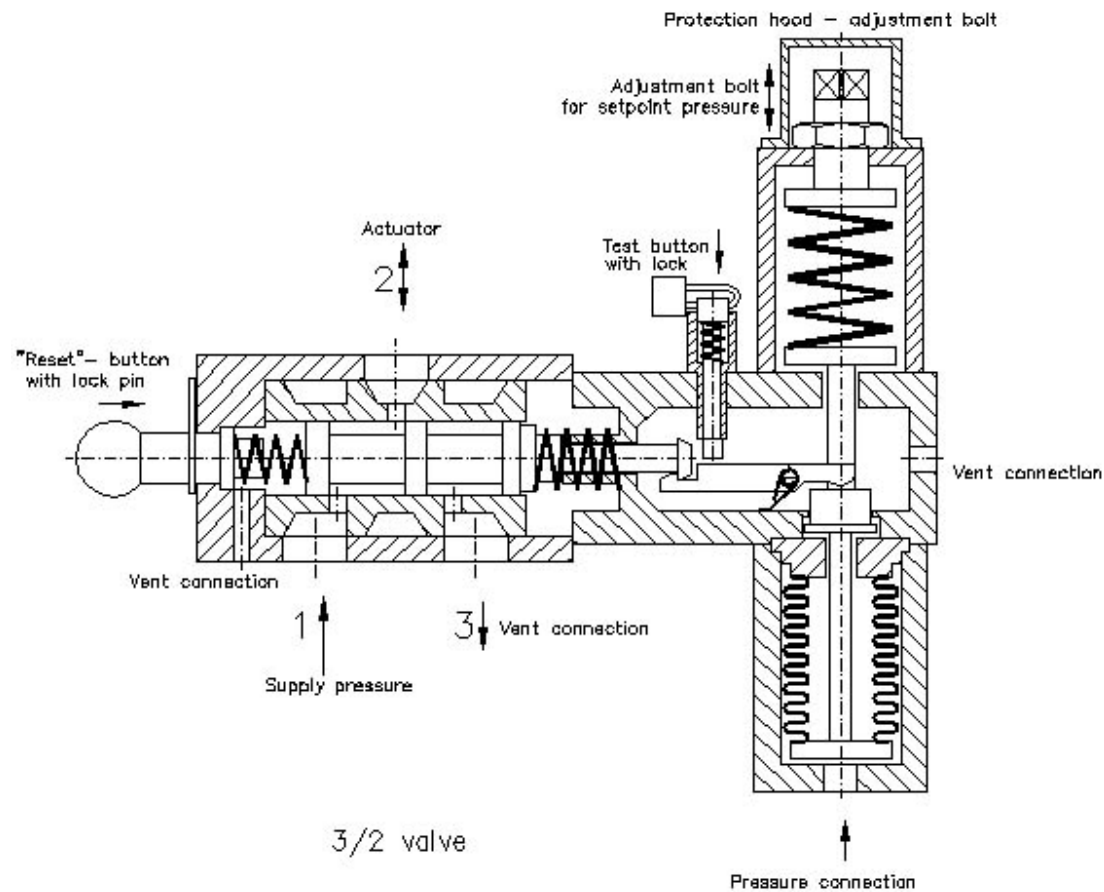


## Mokveld mechanical HIPPS

- Complete integrated safety shut-down system
- Easy identified and simple system
- Reduced cost
- Stand-alone system operated with line gas without permanent gas consumption



# Mokveld mechanical initiator with 1% accuracy



- Since 1974 DVGW / DIN 3381 certified minus 30 to plus 60 deg C
- 1% Accuracy on setpoint
- Hydraulic version:  
7,72 E-4 / year
- Proven in use according IEC61511
- Complete system of Final element and mechanical initiators TUV certified:  
Unclean duty, 1 year prooftest,  
Pneumatic 90% confidence  
PFD = 8,6 E-4

## Mechanical versus electrical HIPPS

Aspect	Electrical	Mechanical
Distance sensing point	anywhere	up to approx. 8 m.
Availability (1)	defined	undefined
Availability (2)	1oo1, 1oo2 and 2oo3	1oo1 and 1oo2
Cabling	each PT, solenoid and limit switch	for each limit switch
Sequence of event recorder	yes	by means of DCS with limit switches
Accuracy of set point	0,25%	1,0%
Pressure reading on DCS	yes	no
Notification of switching	yes	by means of limit switch on pressure switch
Calibration / maintenance of sensor without closure	yes	no

## Mechanical versus electrical HIPPS

### • Mechanical HIPPS

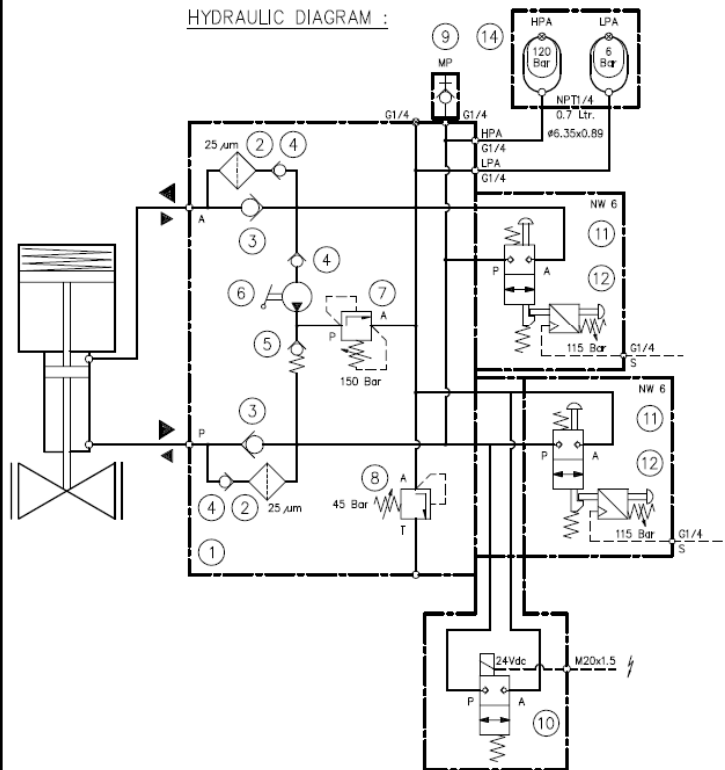
- + Plug and play
- + Stand alone
- + Low price for single system
- + Simple
- + Safe and certified
- + Mechanical components
- ± Status information
- Sensing line position
- Pressure switch configuration
- No diagnostics

### Electrical HIPPS

- + Remote sensors
- + One sensing unit for parallel streams
- + Sensing unit 2oo3 configuration
- + Sensor connection to pipeline
- + Status information
- + Diagnostics
- + Partial system test
- Complex system with many components

# Mokveld Mechanical HIPPS

HYDRAULIC DIAGRAM :



## REMARKS

System filling pressure  
with valves (11) open : 12 Bar.

For pressure settings see  
HYDRAULIC DIAGRAM

All pressure settings at : +20°C.

System is fully operable within the  
temperature range of : -30°C  
upto : +50°C.

## HYDRAULIC CONNECTIONS :

SYMBOL	DESIGNATION	CONNECTION SIZE	PIPE SIZE
HPA	HIGH PR. ACCUMULATOR	1/4"BSPP	ø6.35 x 0.89
LPA	LOW PR. ACCUMULATOR	1/4"BSPP	ø6.35 x 0.89
S	SENSING LINE	1/4"BSPP	ø6.35 x 0.89

Pos.	Qty.	Description	Type / Ordering number	Manufacture
1	1	Manifold	SAV-F6/VS 2B1-1044.B	Inrada
2	2	Pressure filter element	R.1229.25	UCC
3	2	Non-return valve NG10	RV 10120-01-0.5	Hydac
4	3	Non-return valve NG 6	RB 1	Hawe
5	1	Non-return valve NG 6	Leak-proof 2P4-0520	Inrada
6	1	Hand pump	Type 2 2D2-0934	Inrada
7	1	Pressure relief valve	DB4E-01-200V	Hydac
8	1	Thermo relief valve	20-70 Bar 2D4-0715	Inrada
9	1	Minimes coupl.	NG 4 2706-01-47.56	SS-316 Hytech.
10	2	2 2W. Solvalve NO NG 6	403.006.218	SS-316 Breit
11	2	2/2W. Valve NC NG 6	403.006.171	SS-316 Breit
12	2	Pressure switch	P198	SS-321 Mokveld
13	2	Fill & test unit	VTU- /1	SEPARATE DELIVERY Inrada
14	1	Accumulator set	2 x 0.7 Ltr. 2T3-1180	Inrada

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B	_____	
A	_____	
O	150103 DPI AJA R&D	
rev.	date by c'kd eng description	

©Mokveld valves bv, Gouda,  
The Netherlands. 20

SAV-F6/VS-2-1-EM  
HYDRAULIC ASSEMBLY



Mokveld valves

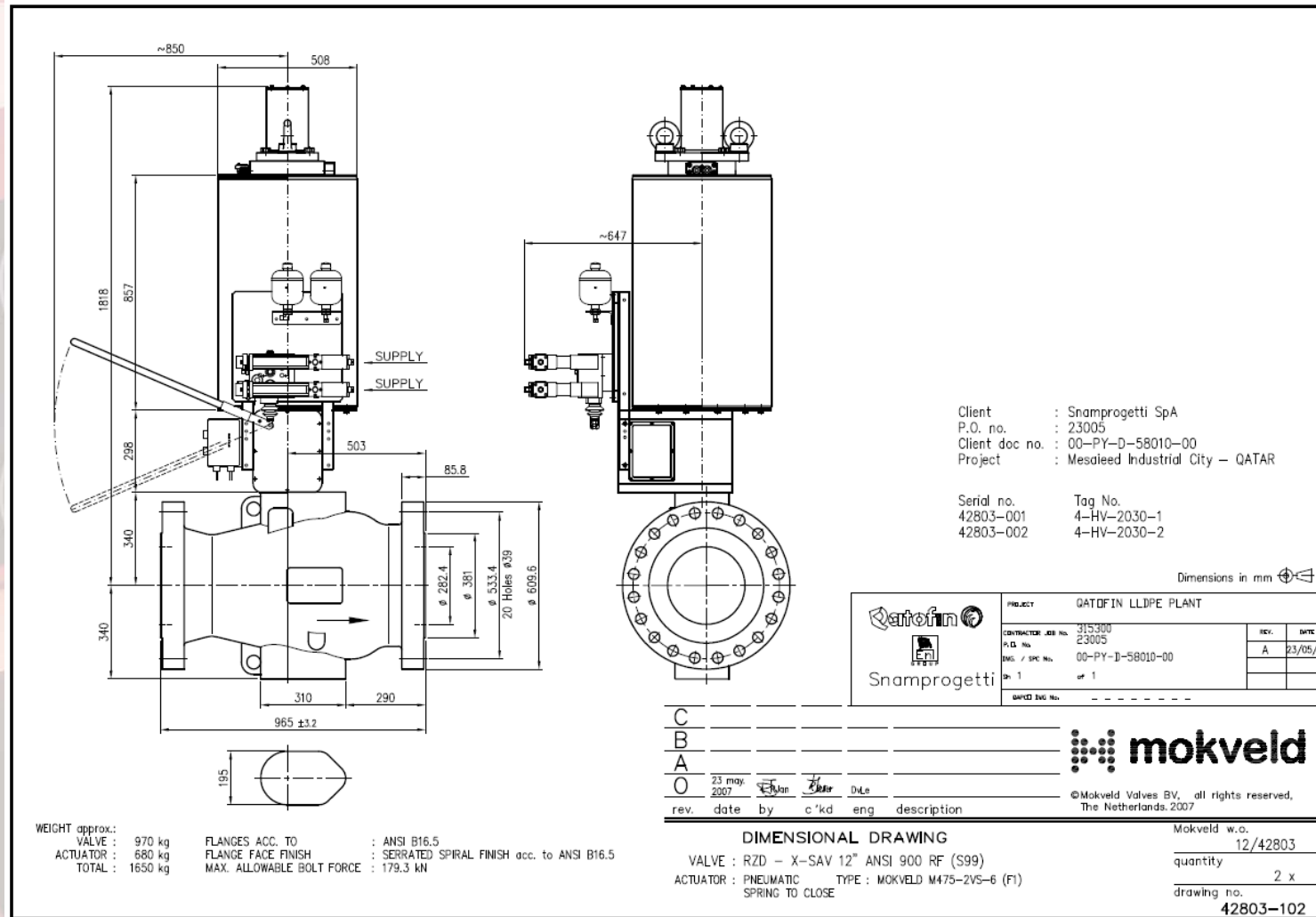
Mokveld w.o.

quantity

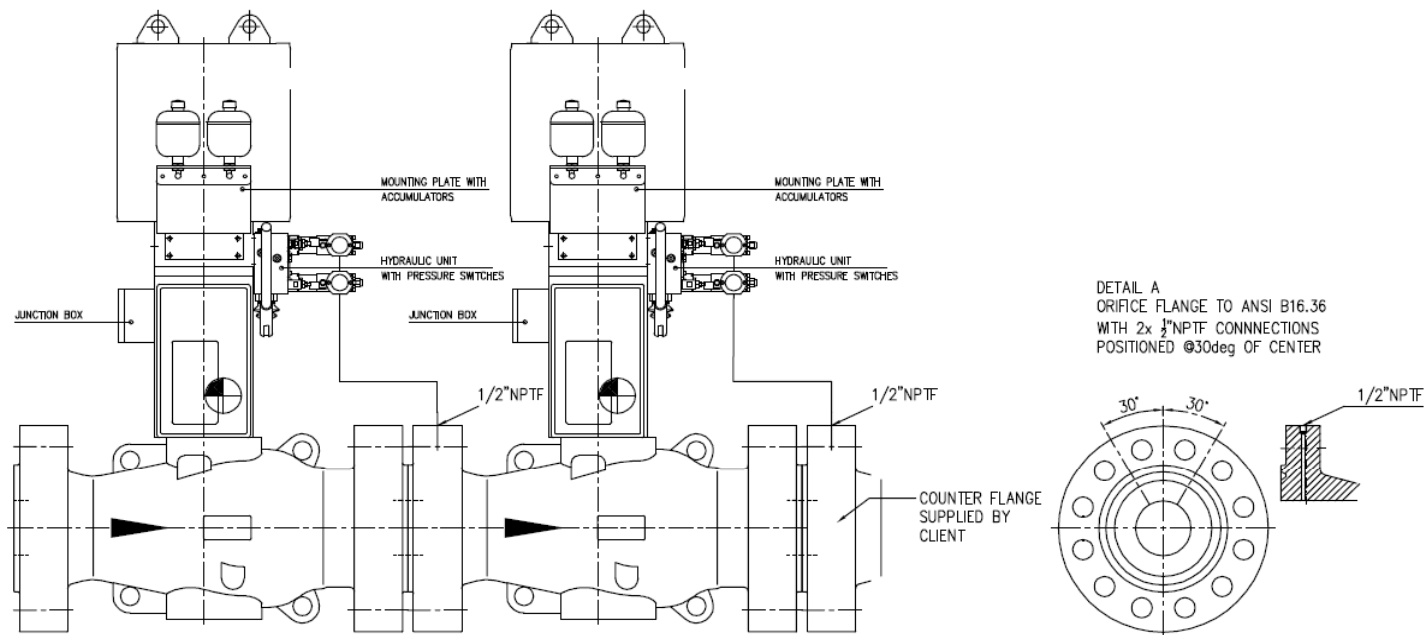
drawing no.




# Mokveld Mechanical HIPPS



# Mokveld Mechanical HIPPS



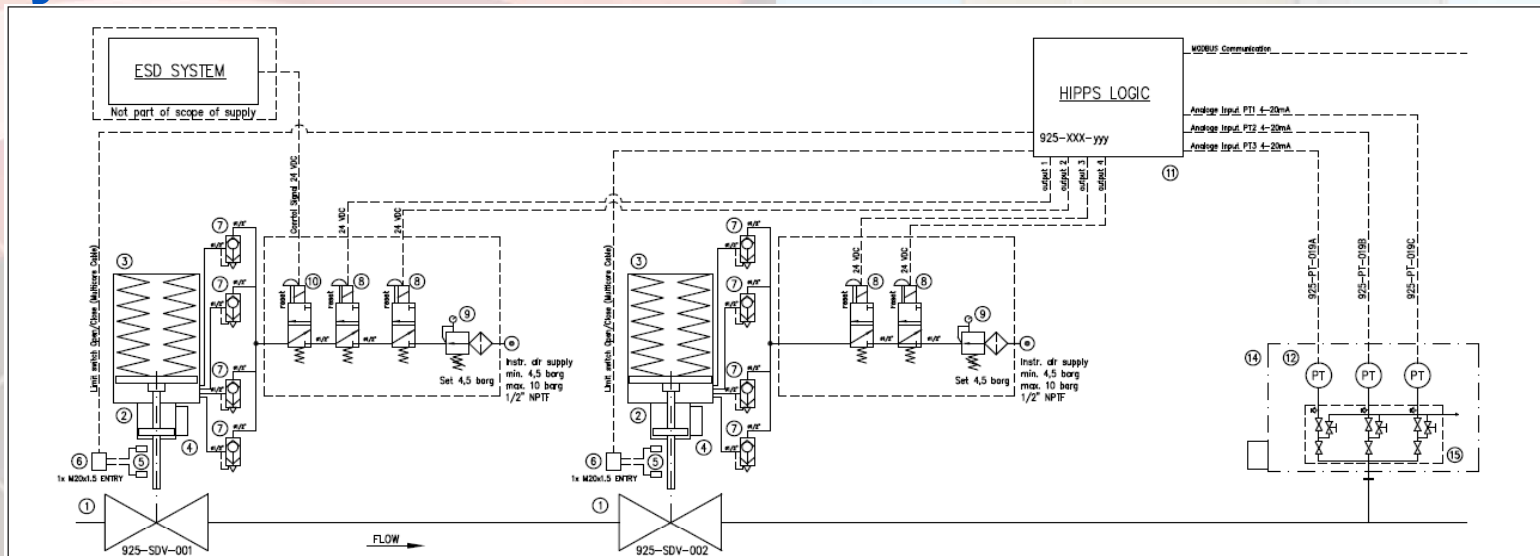
C	_____	This drawing is the property of Mokveld valves Gouda Holland. It may not be copied, nor reproduced, or be shown to third persons without written authorization of Mokveld valves. (Parts of) this drawing might contain Patented items. © Mokveld valves by Gouda, The Netherlands.19			
B	_____				
A	_____				
O	_____				
rev.	date	by	c 'kd	eng	description

  
 Mokveld w.o.  
 quantity \_\_\_\_\_  
 drawing no. \_\_\_\_\_  
 Mokveld valves

# Mokveld Mechanical HIPPS



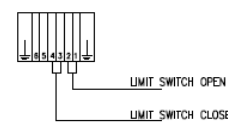
# Hybrid HIPPS/ESD



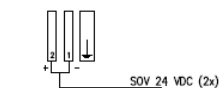
1. NORMALLY THE VALVE IS FULLY OPEN.
2. CLOSING TIME IS APPROX. 2 SECONDS.
3. OPENING TIME IS APPROX. 50 SECONDS.
4. ELECTRICAL AND INSTRUMENT CABLES ARE NOT IN MOKVELD SCOPE OF SUPPLY.
5. VALVE WILL CLOSE UPON LOSS OF 24VDC SIGNAL AND/OR AIR SUPPLY FAILURE.
6. ESD SYSTEM IS NOT IN MOKVELD SCOPE OF SUPPLY.
7. POS 8, 9 AND 10 ARE PLACED IN A LOCKABLE CABINET

POS	DENOMINATION	QTY	MANUFACTURER	TYPE No.	REMARK
17	COUPLINGS	LOT	SWAGELOK	DOUBLE FERRULE	316SS, Imperial size
16	TUBING	LOT	.	.	316SS, Imperial size
15	INTERLOCKING MANIFOLD	1	ASTAVA	.	c/w Proximity switches
14	INTERLOCKING HOUSING	1	ASTAVA	.	316SS
13	.	.	.	.	.
12	TEMPERATURE TRANSMITTER	3	YOKOGAWA	EJX530A	316SS / Eex d IIC T6
11	LOGIC SOLVER	1	YOKOGAWA	SLS PROSAFE	Solid State Logics
10	SOLENOID VALVE	1	ASCO	NFET B327 A122 24VDC	316SS / Eex d IIC T6
9	FILTER/REGULATOR	2	BIFOLD	SH08-FR-SR-AD-10-X3-X8-L9	316SS
8	SOLENOID VALVE	4	ASCO	NF B327 A132 24VDC	316SS / Eex d IIC T6 / MR
7	QUICK EXHAUST VALVE	8	MIDLAND	8QEVSNI22	316SS / 1"
6	JUNCTION BOX	2	STAHL	8125/1041-2	316SS / Eex e IIC T6
5	LIMIT SWITCHES	4	CO SWITCH	73-13569-A2	316SS / Eex d IIC T6
4	HYDRAULIC UNIT	2	MOKVELD	F2/V5-NW15	Damping
3	PNEUMATIC ACTUATOR	2	MOKVELD	M620-3VS-6	Spring to Close
2	HYDRAULIC CYLINDER	2	MOKVELD	STD.	.
1	SHUT-OFF VALVE	2	MOKVELD	RZD-X-SAV	24" Class 900
POS	DENOMINATION	QTY	MANUFACTURER	TYPE No.	REMARK

WIRING DETAILS POS.6



WIRING DETAILS POS.10

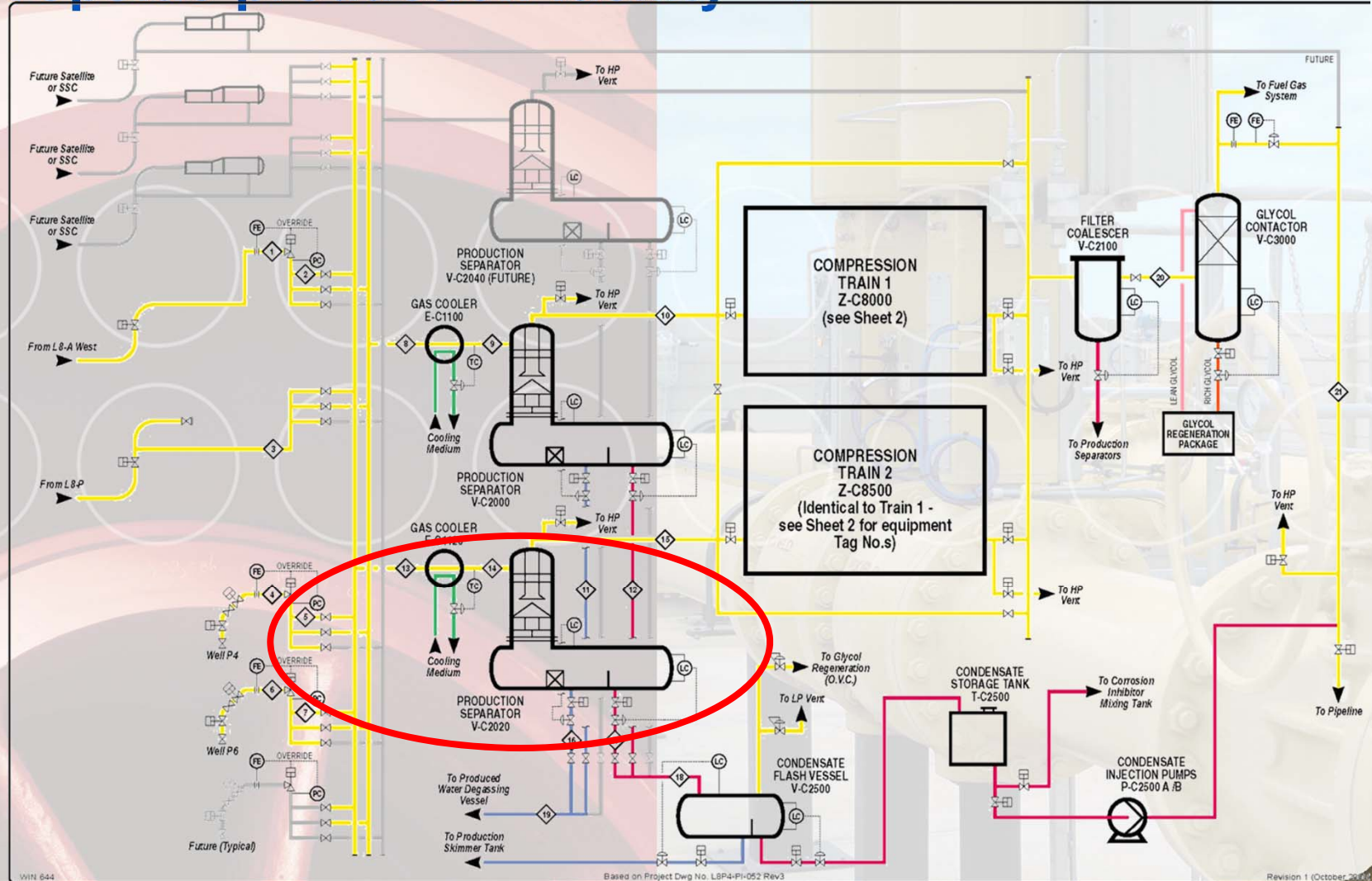


Client : Salpem S.A.  
P.O. no. : B39396  
Project : HIPPS System for OLT - FSRU Livorno  
Location : Offshore Livorno (ITALY)

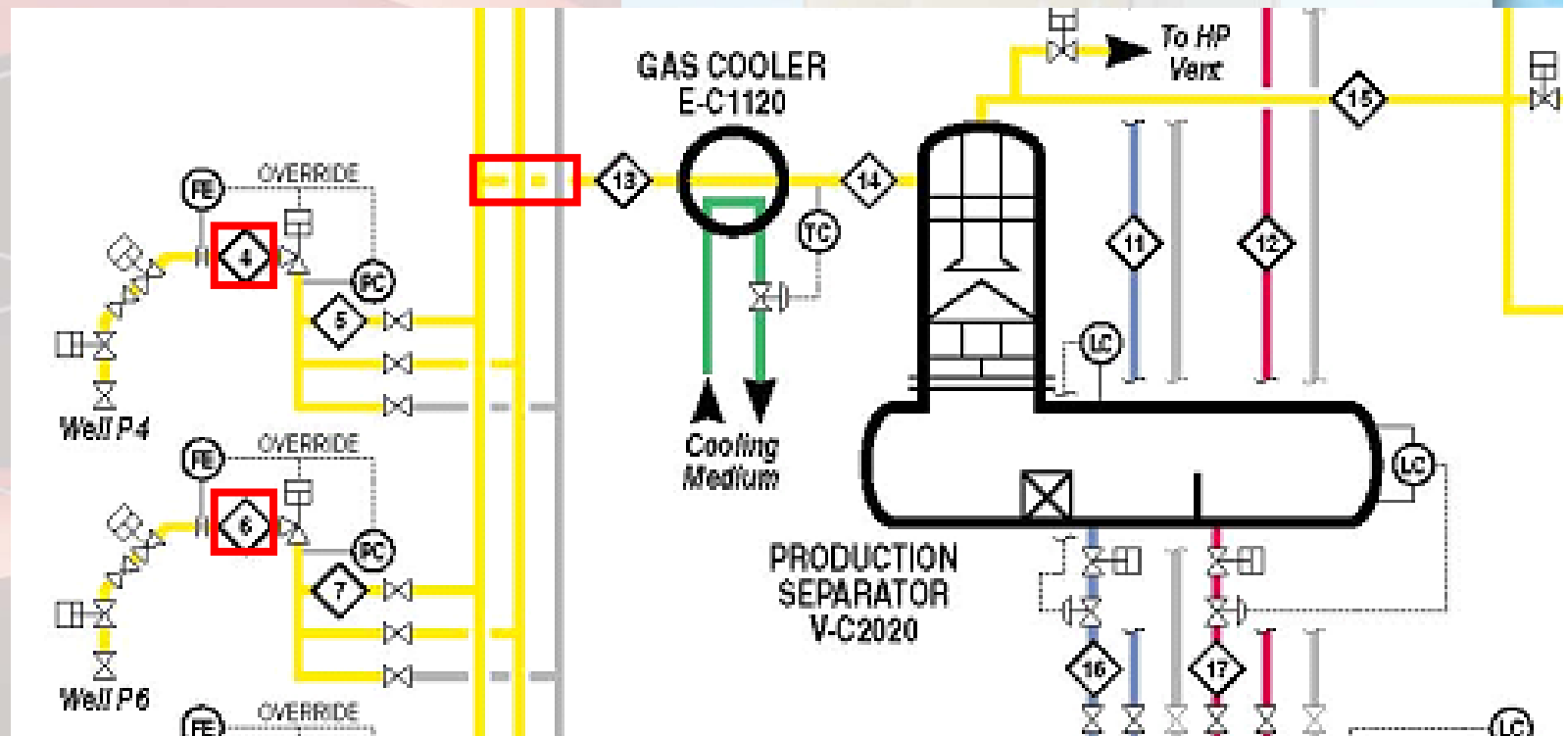
FOR QUOTATION PURPOSE ONLY

rev.	date	by	c'kd	eng	description	Mokveld w.o.
0	22 Sep'08	M.Leu				
SCHEMATIC INSTRUMENTATION DRAWING						quantity
VALVE : RZD-X-SAV 24" Class 900 RTJ (S99)						1x
ACTUATOR : PNEUMATIC TYPE : MOKVELD M620-3VS-6						drawing no.
SPRING TO CLOSE						PB24981-2080011915

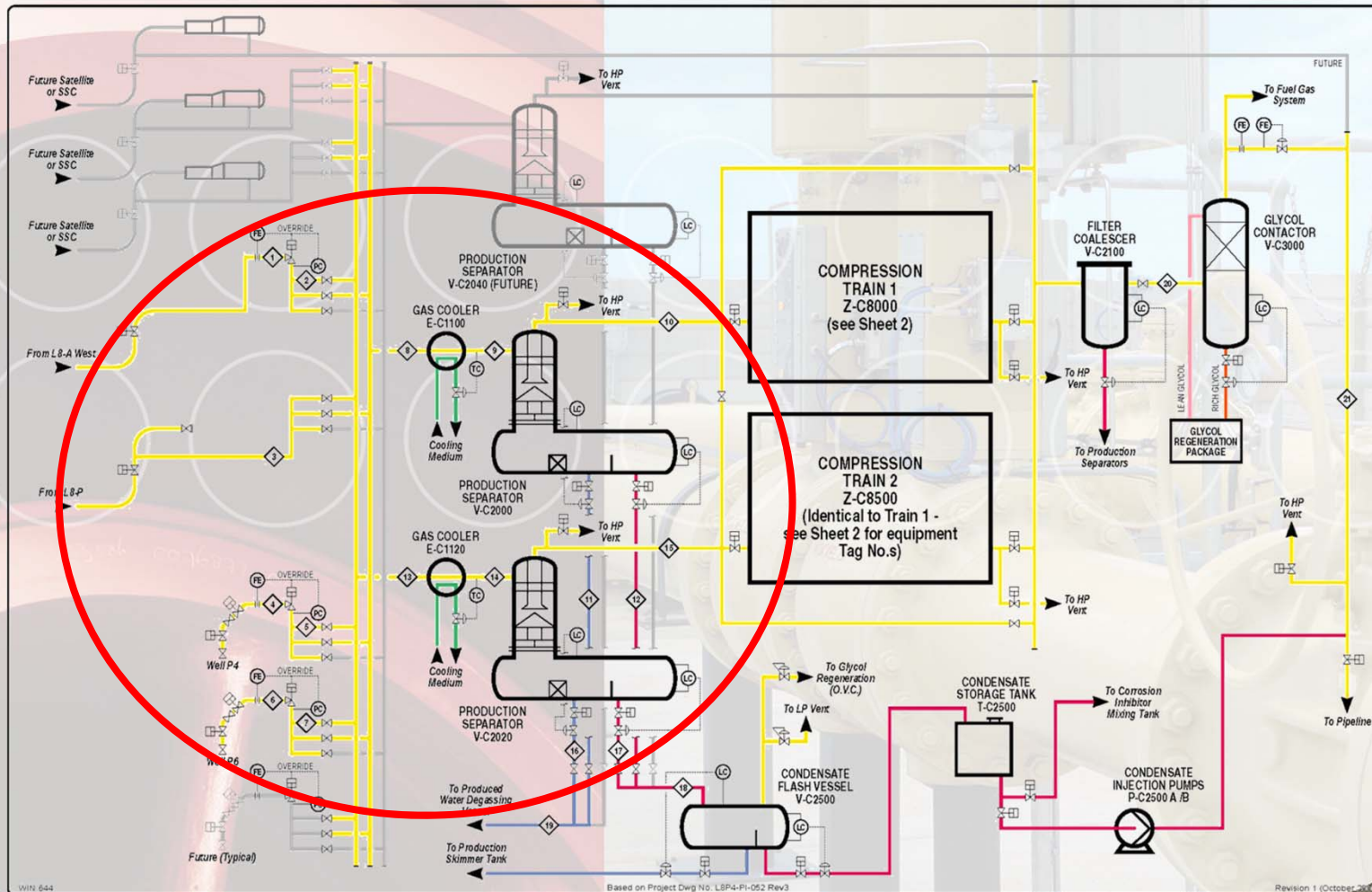
# Topside production facility - 1



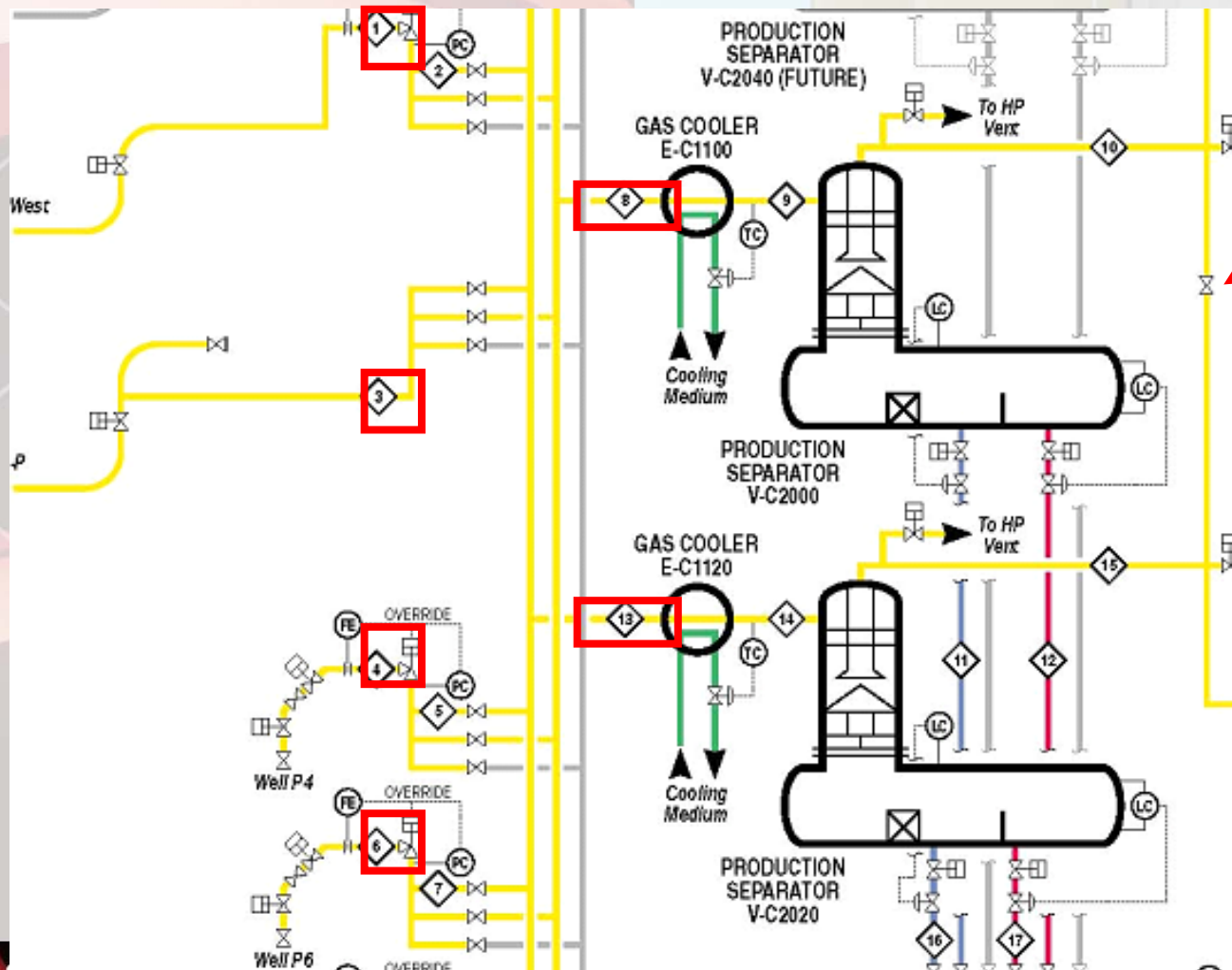
## Topside production facility - 2



# Topside production facility - 3



# Topside production facility - 4





## Example in Europe



Location : NAM Netherlands mobile production unit  
Specs : 1002 Mechanical HIPPS protecting ANSI 900 pipeline against pressure from ANSI 2500 wellhead

## Example in Europe



Location : Dong Denmark Nybro  
Specs : 1oo2 Electronic HIPPS protecting ANSI 600 onshore installation against pressure from ANSI 900 pipeline

## Example in Europe



Location : Statoil Germany Zeepipe landfall  
Specs : 1oo2 Mechanical HIPPS protecting ANSI 600 onshore installation against pressure from ANSI 900 pipeline



We thank you for your attention



**mokveld**

ORI srl

