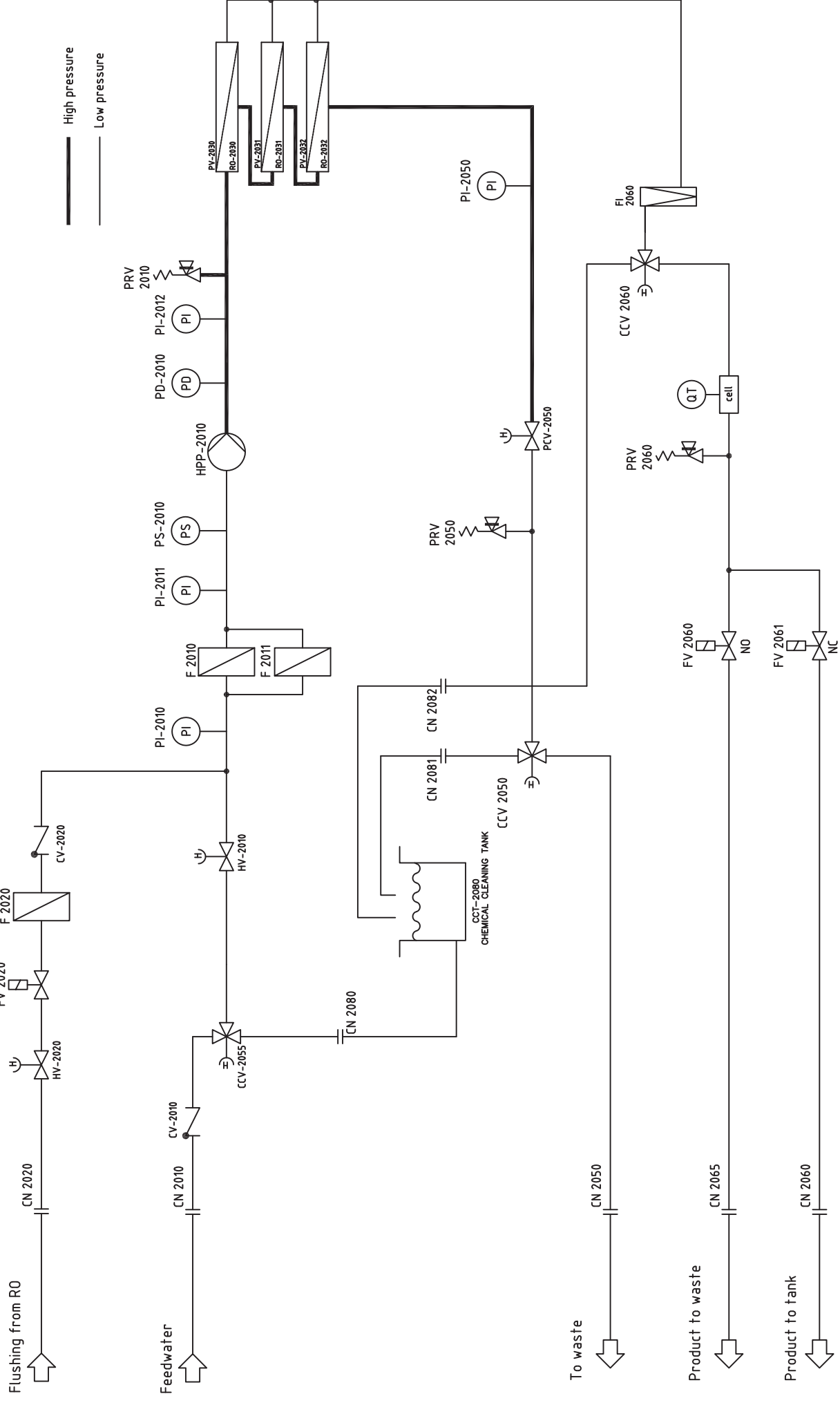


Rev.	Revision note	Date	Sign



High pressure  
 Low pressure

Drawn by	Date	Checked by	Date	Validated by	Date	Drawing type
OA	2009-09-11					P&ID
Project				Project no.		
Article description				Article no.		
Specification				Drawing no.		
				Rev.		
				531653		

PART LIST P&ID MT 50T SRH

ITEM NO.	TYPE	DESCRIPTION	DIM./VOLYME/CAPACITY	MATERIAL	SUPPLIER	PART NO. ENWA
CCT 2080	Cleaning tank	cylindrical tank	320 liters	polyethene	CIPAX	17239
QT	Conductivity meter	ecoTrans Lf01			Jumo	13579
Cell	Conductivity sensor	202922/20-0100-1003-60-104-20-5000-40/00	K=1,0 Pt 100	PVDF	Jumo	13560
CCV 2050	3-way valve	T-ball type 543	DN25 d32	ABS	GF	17013
CCV 2060	3-way valve	T-ball type 543	DN20 d25	ABS	GF	17108
CCV 2055	3-way valve	T-ball type 543	DN32 d40	ABS	GF	17014
CV 2010	Check valve	Ball check type 360	DN32 d40	ABS	GF	16404
CV 2020	Check valve	Angle seat type 303	DN15 d20	ABS	GF	16185
F 2010	Filter housing	Big blue 20"	1"	polypropylene	Fieder	10291
F 2011	Filter housing	Big blue 20"	1"	polypropylene	Fieder	10291
F 2010/11	Filter cartridge	BB 20 CP5		polypropylene	Fieder	10256
F 2020	Filter housing	Standard blue 10"	3/4"	polypropylene	Fieder	10284
F 2020	Filter cartridge	Act. Carbon CEP-10		coconut-carbon	Fieder	10305
FI 2060	Flow rate indicator	HHK 4AC	2,6m3	Grilamid	Kytölä	13547
HPP 2010	High pressure pump	CAT 3531	87 litre/min	Duplex/AISI 316	CAT Pump	17299
M 2010	Electrical motor	160M-B3	13.2kW/1764rpm/60Hz	Cast iron	Höyer Motors	17321
M 2010	Electrical motor	160L-B3	15kW/1470rpm/50Hz	Cast iron	Höyer Motors	17370
PD 2010	Pulsation damper	LAV 0,5	0,50 lit. 1/2"	AISI 316	CAT Pump	17333
HV 2010	Ball valve	type 546	DN32 d40	ABS	GF	17378
HV 2020	Ball valve	type 546	DN20 d25	ABS	GF	16275
PCV 2050	Pressure control valve	AL75-147	DN20	AISI 316	Axel Larsson	13404
PI 2010	Pressure gauge	RChg	0-6 bars, 1/4"	AISI 316	ARMATURENBAU	13514
PI 2011	Pressure gauge	RChg	0-6 bars, 1/4"	AISI 316	ARMATURENBAU	13514
PI 2012	Pressure gauge	RChg	0-100 bars 1/4"	AISI 316	ARMATURENBAU	13504
PI 2050	Pressure gauge	RChg	0-100 bars 1/4"	AISI 316	ARMATURENBAU	16779
PS 2010	Pressure switch	PS41-20-4MGS-C-HC-E	0,3-2 bars 1/4"	AISI 316	Stig Wahlström AB	13562



## OPERATIONAL SETTINGS AND PARAMETERS MT 50T SRH

### 1 OPERATIONAL CONDITIONS

	Min.	Max.
Feed water temperature	1°C (32°F)	45°C (113°F)
Feed water (after filter)	0.5 bar	4.0 bar
Flush water	2.0 bar	4.0 bar
Product water, back-pressure	-	2.5 bar
Working pressure	40 bar	70 bar
Salt content in feed water <sup>1</sup>	-	42,000 mg/l (4.2%, about 60,000 µS/cm).

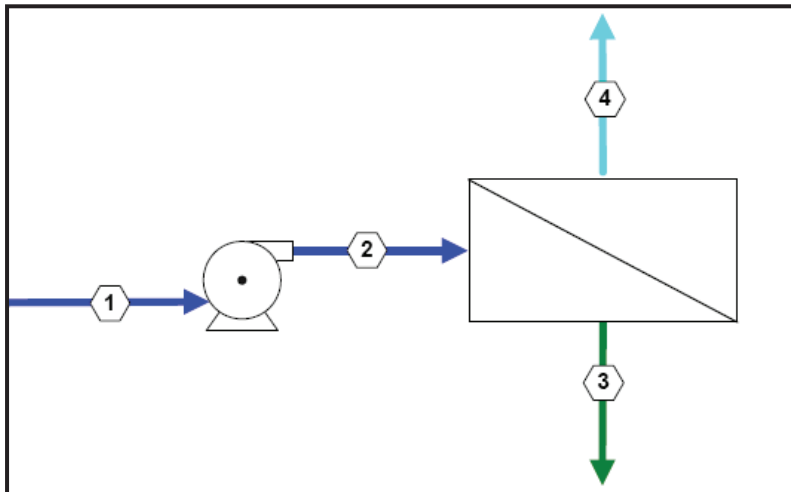
<sup>1</sup> If the salt content exceeds 35,000 mg/l, the salt content in the product can exceed 500 mg/l, (WHO's recommendation).

### 2 OPERATIONAL PARAMETERS

#### 2.1 FLOW AND PRESSURE

The Reverse osmosis unit is designed for:

Feed water temperature	25°C
Feed water TDS	35,000ppm
Product TDS	max 500ppm



		1	2	3	4
Flow	m <sup>3</sup> /h	5,2	5,2	3,1	2,1
Pressure	bar	0	54	53,7	0
TDS (ppm)		35703	35706	59393	175
P&ID				PI-2050	FI-2060

## 2.2 PRODUCT CAPACITY

The RO-unit has a specific design flow. When feed water conditions changes, pressure must be adjusted to maintain design flow.

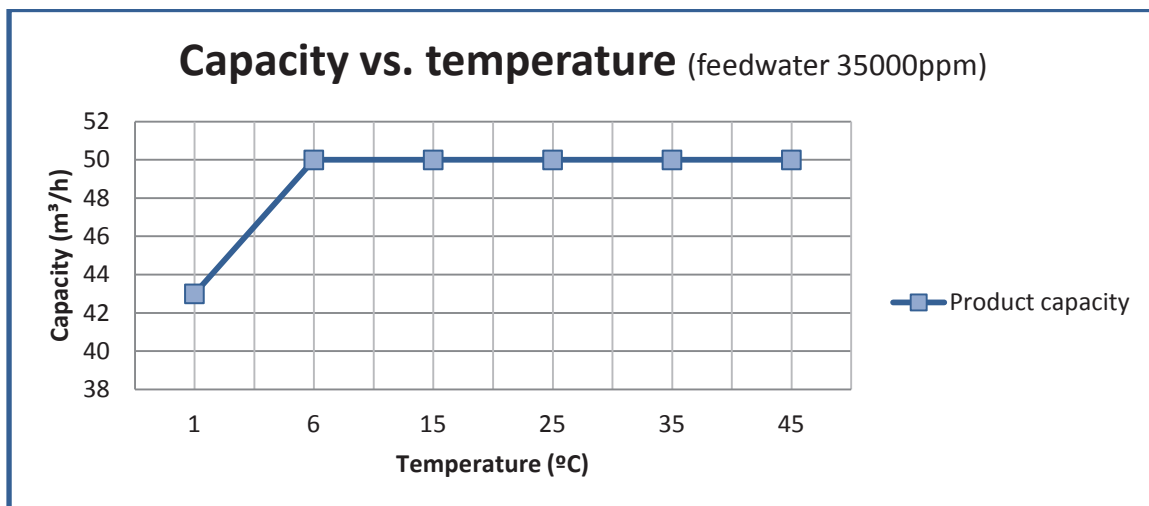
The capacity depends on:

1. Feed water temperature
  2. Feed water salt content
- If salt content increases or decreases → adjust pressure to obtain design flow
  - If temperature increases or decreases → adjust pressure to obtain design flow

**NOTE!** The maximum working pressure is 70bars. If surrounding conditions requires higher pressure than 70bars, the product flow must be adjusted instead.

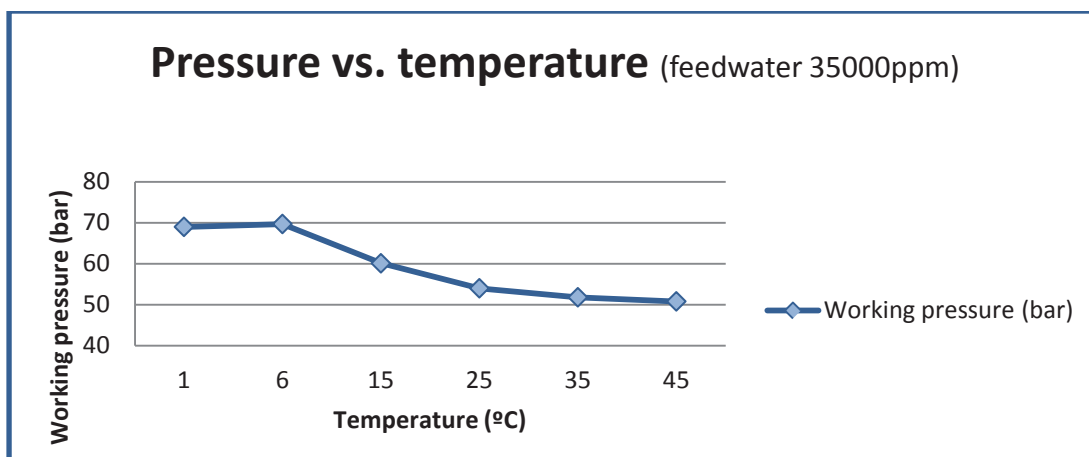
### 2.2.1 FEEDWATER TEMPERATURE

The product capacity is depending on the feedwater temperature according to graph 1.



graph 1. Capacity vs. temperature

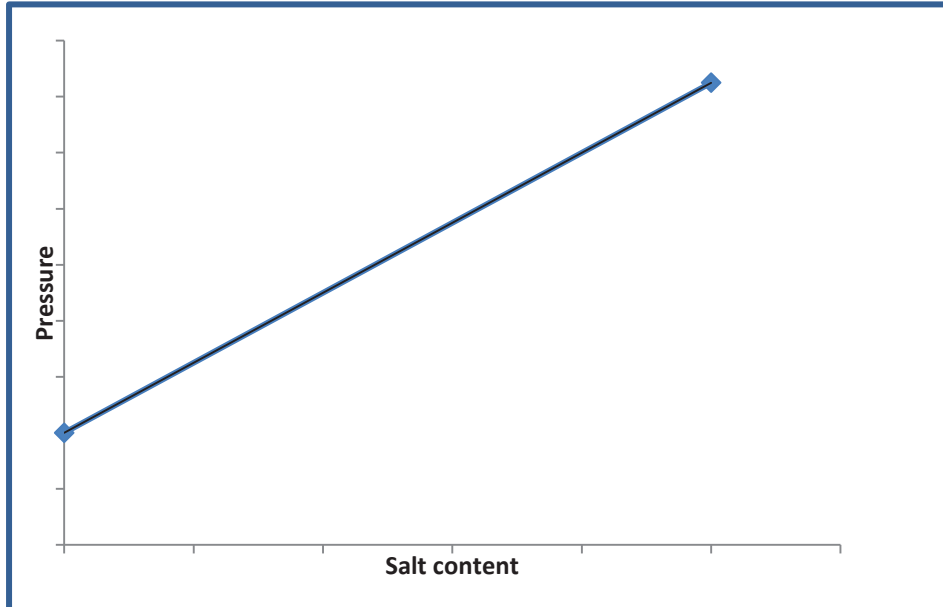
When feedwater temperature changes, pressure must be adjusted to obtain design flow according to graph 2.



graph 2. Pressure vs. temperature

### 2.2.2 FEEDWATER SALT CONTENT

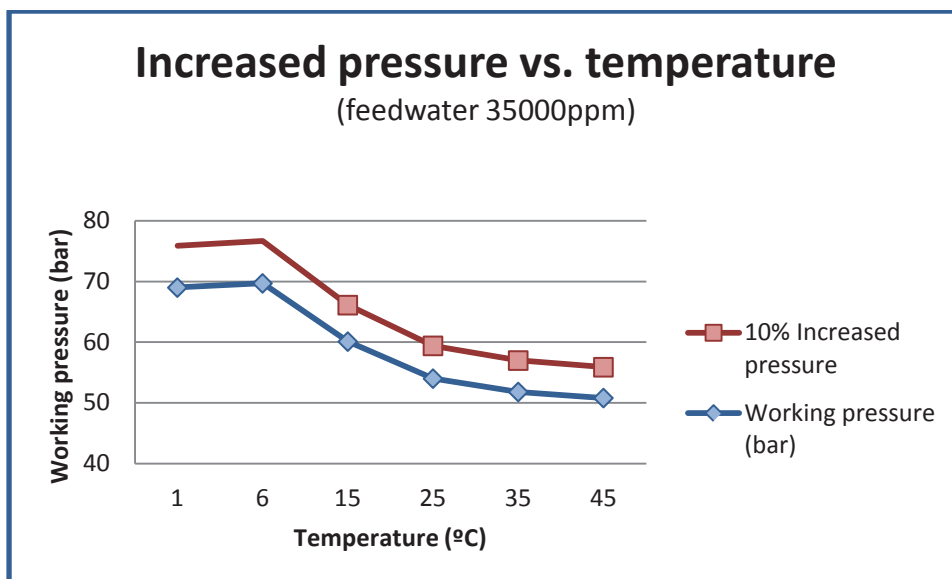
The following graph shows how the pressure is depending on the feed water salt content.



graph 3. Pressure vs. Salt content

**NOTE!** When the product flow decreases without changes in temperature or salt content in feed water, the membranes may require cleaning.

The red line in the graph shows the pressure when it's 10% over normal working pressure.



# EC DECLARATION OF CONFORMITY FOR MACHINERY

Original

Directive 2006/42/EC, Annex II 1A

**Manufacturer (and where appropriate his authorised representative):**

Company: Enwa Production AB  
Address: Importgatan 21, 422 46 Hisings Backa  
Representative:  
Address:

**Hereby declares that:**

Type of machinery: MT 50T SRH  
No. of machinery: 9000010447, 9000010448, 9000010449

**Complies with the requirements of Machinery Directive 2006/42/EC.**

**Complies also with applicable requirements of the following EC directives:**

2004/108/EC, EMC, 2006/95/EC, LVD, 97/23/EC, PED

**Where appropriate, notified body (EC type-examination/full quality assurance system)**

**The following harmonized standards have been applied:**

EN ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction, EN 60204-1:2006 Safety of machinery - Electrical equipment of machines - Part 1: General requirements, EN ISO 13857:2008 Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs, EN 349:1993+A1:2008 Safety of machinery - Minimum gaps to avoid crushing of parts of the human body, EN 50 081-1, EN 50 081-2 EN 50 082-1, EN 50 082-2

**The following other standards and specifications have been applied:**

**Authorized to compile the technical file:**

Name: Daniel Madsen  
Address: Importgatan 21, 422 46 Hisings Backa

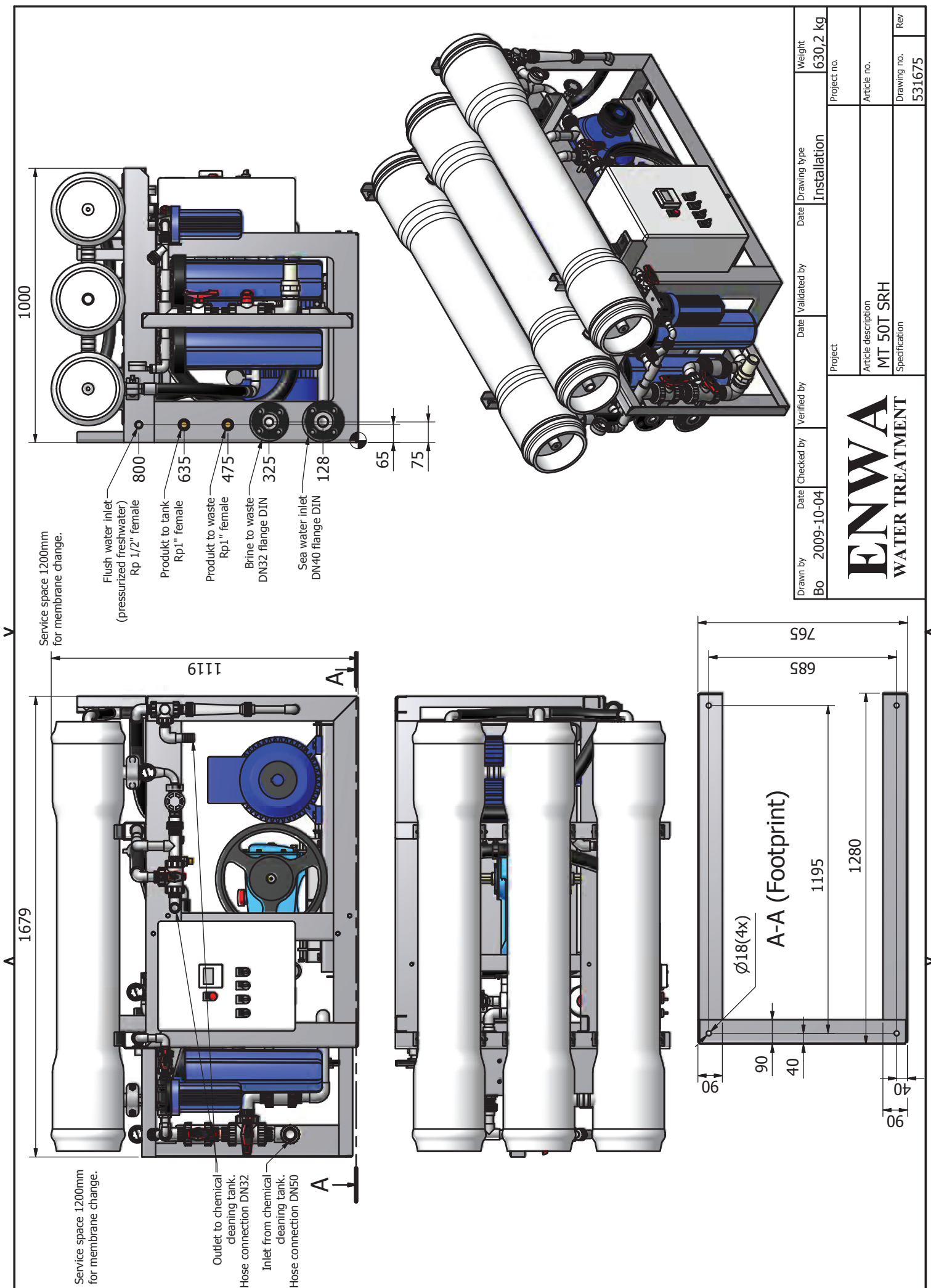
**Signature:**

Place and date: Hisings Backa 2013-12-02

Signature:



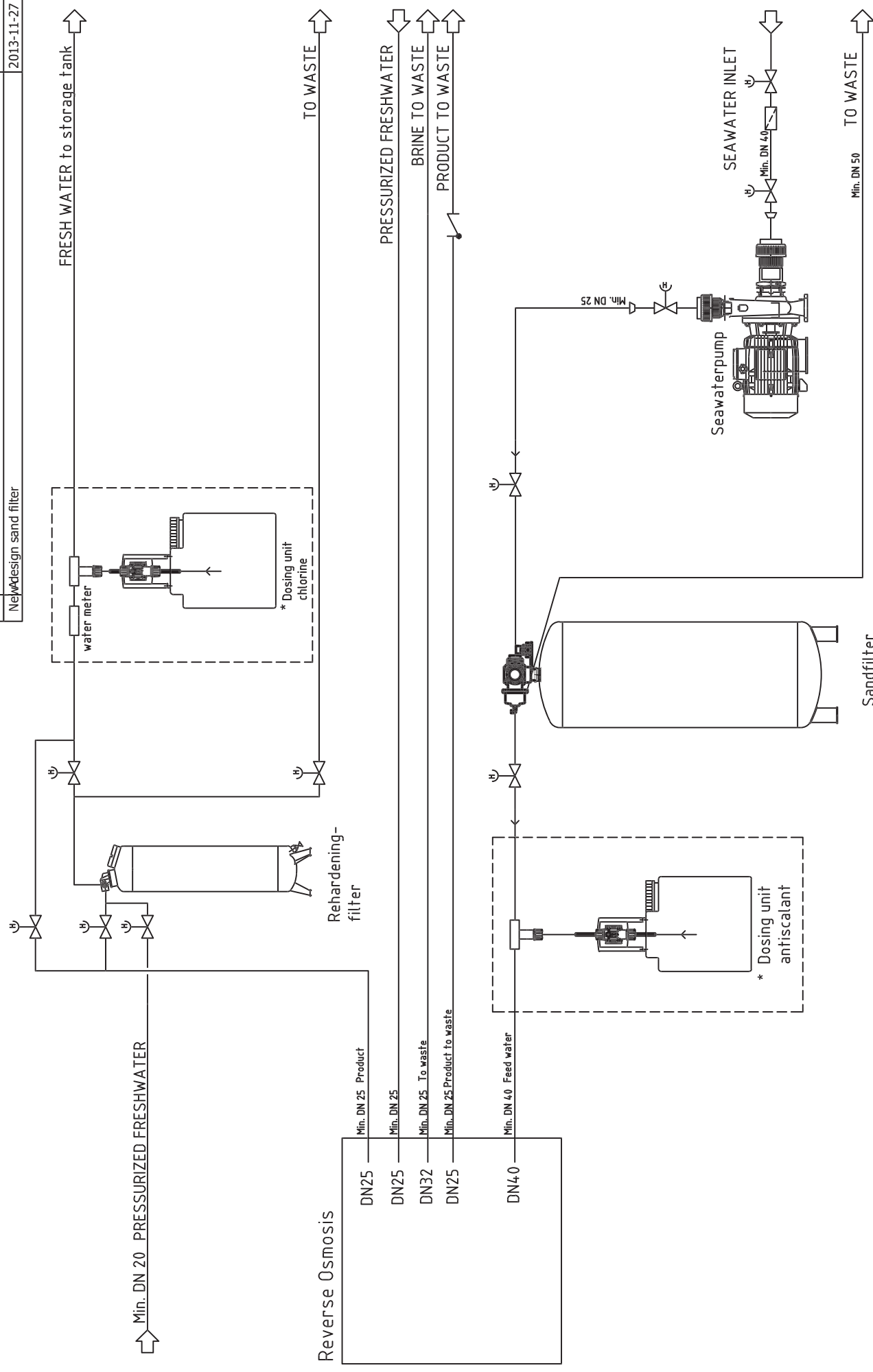
Name: Bengt Hillemyr  
Position: VD



Drawn by Bo	Date 2009-10-04	Checked by	Verified by	Date Validated by	Date Installation	Weight 630,2 kg
Project <b>ENWA</b> WATER TREATMENT				Project no.	Article no.	Rev
Article description MT 50T SRH				Drawing no. 531675		
Specification						



Rev.	Revision note	Date	Sign
	Newdesign sand filter	2013-11-27	Dmn



Drawn by	Checked by	Verified by	Validated by	Date	Drawing type
OA	2009-09-11				Installation drawing
Project					
Standard					
Article description					
MT 50T SRH, reverse osmosis system					
Specification					
Recommended installation					
Project no.				Drawing no.	
				531652	
Rev.				A	

\* OPTION

Considering distance  
pressure drops, sound  
level etc. when  
designing the piping.