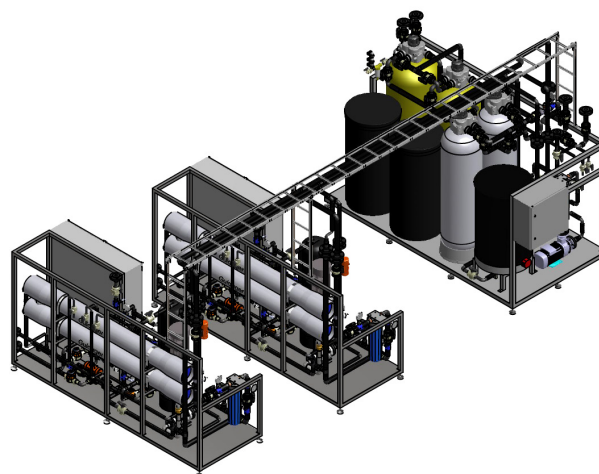


# Water Purification

A comprehensive solution





# Water purification

## Modular built solution

Guldager provides complete solutions to secure pure water. Based on several water sources like surface waters, ground water and sea water, we combine our knowhow of many technologies within water treatment, thus providing all steps from pre-treatment to post-treatment. Guldager's water purification solution is a very flexible solution and thereby highly adaptable to customer requirements. It can be skid mounted, containerized etc.

We recognize the need for pure water installations and the investment involved. Therefore we recommend our complete solution providing a commercial and technical solution, including: equipment supply, installation and system maintenance. Guldager's from source-to-consumer solution includes all steps.

### Pre-treatment

Guldager offers more solutions to pre-treatment such as softening, ultrafiltration, granular activated carbon, microfiltration or chemical injection to pre-condition the feedwater.

### Reverse Osmosis

The reverse osmosis unit uses the latest membrane technology to remove up to 97 % of dissolved inorganics and over 99 % of total organisms, colloids and particles. Reverse Osmosis also provides excellent removal of microbial species. Guldager's UniRo is available either in single or multi pass Reverse Osmosis.

### Continuous Electro Deionisation (CEDI)

The CEDI continuously provides high purity water whilst withstanding hundreds of hot water sanitisation cycles (85° C). By applying voltage across chambers of cation and anion resins, regeneration is continuous and chemical free. The design of resin filled concentrate cells eliminates the need for an additional concentrate recycle pump, reduces power consumption and avoids the disadvantages of brine infusion.

# Specifications

## Optional

There are many different configurations for water purification plants. Each solution is adapted to the specific regional conditions and needs.

### Pre-Treatment

- Base Exchange Softeners
- Granular Activated Carbon Media Bed (within softeners)
- Pre-filtration
- Hot water sanitisable softeners
- Hot Water sanitisable activated carbon Media bed (within softeners)
- Plastic or Sanitary Stainless Steel pipework
- Ultrafiltration
- Sand filters

### Process

- Single pass Reverse Osmosis, recovery up to 90 %
- Multi Pass Reverse Osmosis
- Membrane degasser
- Continuous Electrodeionisation
- Post-Treatment UV
- Ultra Filtration (for pH Eur Highly purified water)
- Post micro-filtration
- Storage Tank and ring main control
- Continuous or stop/start operation
- Automatic or manual CIP

### Monitoring

- TOC
- Chlorine
- Hardness pH
- Final water monitoring and control
- Chart recorder

### Communications link

- Ethernet
- Profibus
- Modem access
- Volt-free contacts

### Testing

- Fully-functional FAT
- Witnessed fully-functional FAT
- Witnessed control panel and fully-functional FAT

### NDT Requirement

- Boroscope with photographs
- 10 % of all stainless steel pipework
- 100 % of all stainless steel pipework



# Technical specifications

## Fresh & Sea water

Standard RO programme, FW							
UniRo, Reverse Osmosis	4000	5500	8000	10000	12000	17000	20000
Capacity							
Permeat, l/h	4000	5500	8000	10000	12000	17000	20000
Recovery max, %	80	80	80	80	80	80	80
Salt rejection, %	98	98	98	98	98	98	98
Water quality, µS/cm	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Dimensions							
Height, mm	1480	1480	1480	1480	2477	1515	1710
Width, mm	2600	2600	2610	3610	3640	3640	3610
Depth, mm	940	940	940	940	1300	1300	1300
Electricity							
Electricity connection, V / Hz	3 x 400 / 50	3 x 400 / 50	3 x 400 / 50	3 x 400 / 50	3 x 400 / 50	3 x 400 / 50	3 x 400 / 50
Power, kW	4	7,5	7,5	7,5	7,5	7,5	15
kW/m³ permeate	0,9	1	0,6	0,67	0,6	0,6	0,6
Connection							
Inlet / Outlet / Drain	2" / 1" / 1"	2" / 1" / 1"	2" / 1" / 1"	2" / 5/4" / 5/4"	2" / 5/4" / 5/4"	2" / 5/4" / 5/4"	2" / 1½" / 1½"

Standard RO programme, SW	Flow @ 20° C		Recovery	Dimensions		Membranes	Pump
Model	Feed	Permeate		WxDxH	Height	Quantity	Power
	m³/h	m³/h	%	m	kg	-	KW
UniRo 25	5	1	20	3x1.7x2.2	1600	2	18.5
UniRo 50	6	2	33	3x1.7x2.2	1700	4	22
UniRo 75	8	3	40	4x1.7x2.2	1800	6	22
UniRo 100	11	4	40	5x1.7x2.2	1900	8	2x15
UniRo 125	13	5	40	6x1.7x2.2	2000	10	2x22
UniRo 150	16	6	40	4x1.7x2.2	2100	12	2x22
UniRo 190	20	8	40	6.5x1.7x2.2	2200	15	22+2.2
UniRo 230	24	10	40	8x2x2.2	3100	18	30+2.2
UniRo 270	27	11	42	8.5x2x2.2	3400	21	2x18.5+3
UniRo 360	35	15	42	8.5x2x2.2	3700	28	2x22+3
UniRo 450	44	19	42	9x2x2.2	4025	35	2x30+4
UniRo 530	53	22	42	10x2x2.2	4325	42	55+5.5
UniRo 620	62	26	42	10x2.15x2.2	4525	49	55+5.5
UniRo 710	71	30	42	10x2.15x2.2	4530	56	75+7.5
UniRo 800	79	33	42	10x2.15x2.2	4535	63	75+7.5



# Your reliable partner

## 10 reasons to choose Guldager Water Treatment

The Guldager group holds more than 70 years of experience within the water treatment business. We consider ourselves as experts in Water and are committed to optimum performance and to our customers.

- Can be designed and manufactured according to almost any standard
- Fully compliant with all European standards and adaptable to offer
- Automated PLC control minimises operator involvement
- Unique CEDI design efficiently and reliably ensures product quality
- Fast-track project delivery through truly standardised product
- Water purification package with more than 30 standard options
- Comprehensive and standardised validation pack (FAT)
- Tested and proved concept
- Quality control through approved quality management system
- Diverse applications i.o. power plants, offshore, various industries

### World wide service and support

The Guldager solution includes many features to ease the operation and required maintenance of the system. In order to ensure and maintain the performance of your solution and avoid expensive downtime, we provide a full portfolio of services. Our worldwide service and after market support include spare parts availability, maintenance, repair and modernization. This approach enables us to guarantee the quality and value of your system.



### Guldager in short

Guldager A/S is a Danish, Business-to-Business company, specialized in providing wise water treatment. Guldager A/S was founded in 1946 by Mr Alfred Guldager, and based on his development of corrosion protection by electrolysis back in 1923.

Today, Guldager A/S is owned by his grandchildren Hans and Henrik Guldager.



# Guldager

## Denmark

Guldager A/S  
Hejrevang 1-5  
DK-3450 Allerød  
Denmark  
Tel. +45 48 13 44 00

## Switzerland

Guldager (Schweiz) AG  
Schneckelerstrasse 20  
4414 Füllinsdorf  
Switzerland  
Tel. +41 61 906 97 77

## Belgium

Guldager N.V.  
Halleweg 385  
1500 Halle  
Belgium  
Tel. +32 2 569 09 73

## Germany

Guldager A/S  
Paderborner Straße 7C  
10709 Berlin  
Germany (sales office)  
Tel. +49 30 89 09 13 52

[www.guldager.com](http://www.guldager.com)

