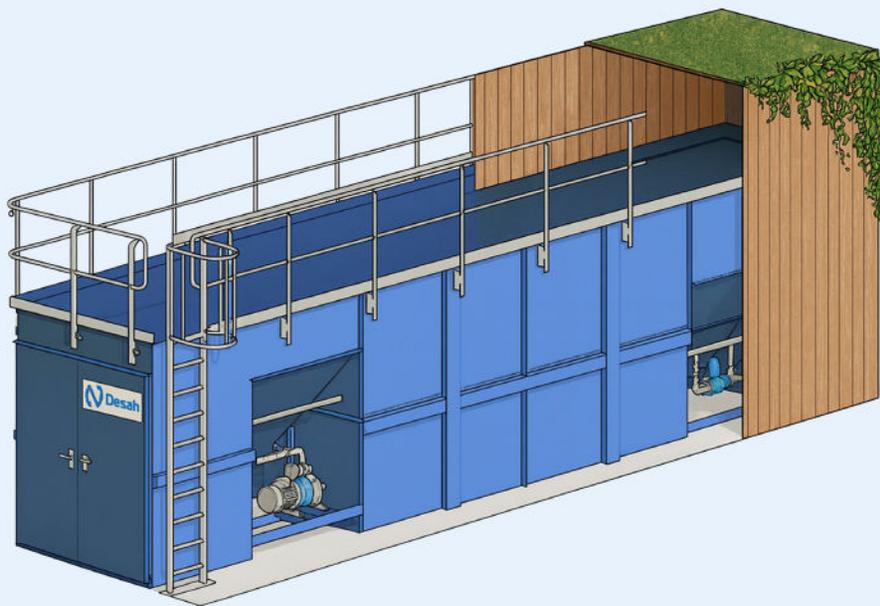


Desah

Compact containerised wastewater treatment solution

Total Cost of Ownership (TCO)



A biological active sludge system to treat a wide range of wastewater types and flows for small scale applications.

Total Cost of Ownership

One key advantage of Desah's containerised A-B (Adsorption-Bio-oxidation) solution over other compact wastewater treatment technologies (MBR, MBBR and SBR¹), is its Total Cost of Ownership (TCO). In this document, we compare the TCOs of several compact wastewater treatment technologies based on the treatment of 100m³ of standard domestic wastewater per day.

Depreciation annual cost (€)

Firstly, the equipment's purchase cost (€) lifespan (years) and depreciation cost (€) are analysed:

Table 1 - Purchase cost (€), lifespan (years) and annual depreciation (€)

Parameter	SBR	MBR	MBBR	A-B
Purchase (€)	290,000	390,000	195,000	280,000
Lifespan electro-mechanics (years)	15	10	12.5	20
% of total costs	50	60	45	30
Lifespan others (years)		5-8 (membranes)	10 (carriers)	
% of total costs		15	10	
Lifespan tanks/ civil works (years)	40	40	40	40
% of total costs	50	25	45	70
Depreciation / year (€)	13,292	33,150	11,164	9,100

Energy annual cost (€)

Secondly, the annual energy costs (€) are compared. These are based on the comparison of the energy consumption of aeration and automation because these are items present in all systems. A total comparison of energy consumption is depending on a lot of factors which makes total energy consumption difficult to compare.

Table 2 - Energy consumption (kWh) and annual energy costs (€)

Parameter	SBR	MBR	MBBR	A-B
Aeration (kWh/m ³)	0,50	0,90	0,60	0,40
Automation (kWh)	0,25	0,25	0,25	0,25
Energy costs/year (€)	5,475	8,395	6,205	4,745

The abovementioned energy costs are based on 0,20 €/kWh.

¹ See adjacent page with short explanation of the different compact wastewater treatment solutions being analysed in this document.

Maintenance annual costs (€)

Thirdly, the maintenance and operational costs (€) of each solution is calculated:

Table 3 - Annual maintenance and operational costs (year)

Parameter	SBR	MBR	MBBR	A-B
Maintenance (hours/year)	96	180	132	72
Maintenance costs/year (€)	2,880	5,400	3,960	2,160
Operation (hours/year)	433	468	611	137
Operation costs/year (€)	12,990	14,040	18,330	4,110
Total maintenance and operation costs/year (€)	15,870	19,440	22,290	6,270

The abovementioned maintenance and operation costs are calculated based on an hourly rate of € 30 which may vary depending on the country or situation.

Total annual cost (€)

In summary, total annual costs include depreciation, energy, and maintenance & operational costs.

Table 4 - Total cost (year)

Parameter	SBR	MBR	MBBR	A-B
Total/year (€)	34,637	60,985	39,659	20,115

Conclusion

As shown by this document, Desah's A-B solution is the compact wastewater treatment technology with the best TCO. This is mainly due to the fact that it is a fully automated system, it doesn't require chemical dosing, there are no complex mechanics and thus no skilled operator is necessary

Short explanation compact wastewater treatment solutions

SBR (Sequencing Batch Reactor)

A type of activated sludge process treating wastewater in batches, allowing aeration, sedimentation and decanting to occur in a single tank.

MBR (Membrane Bioreactor)

A wastewater treatment process integrating a biological treatment process with membrane filtration.

MBBR (Moving Bed Biofilm Reactor)

A biological treatment process using plastic carriers where microorganisms grow on.

A-B (Adsorption – Bio-oxidation)

A biological active sludge process of 2 steps of aeration and settling with an anaerobic selector for biological phosphorus removal and denitrification.



Desah

Decentralised Wastewater Solutions

Desah is part of Noardling

PO Box 199, 8600 AD Sneek, The Netherlands

T. +31 (0)515 48 68 88

E. info@noardling.com

W. www.noardling.com

A. Pieter Zeemanstraat 6, Sneek

Our Water Cycle

From water intake systems to water cooling, from water management to wastewater treatment, hydropower, pumping installations, and award-winning innovations in the field of decentralised wastewater treatment, discover the water cycle here by scanning the QR-code.



Noardling

Futureproof Water Technology

The Noardling company is engaged in Futureproof Water Technology. With more than 250 years of experience in moving and treating of water.

Noardling brands:



Desah

Decentralised Wastewater
Solutions



Hubert

Water Screening
Solutions



Landustrie

Water Treatment
Solutions