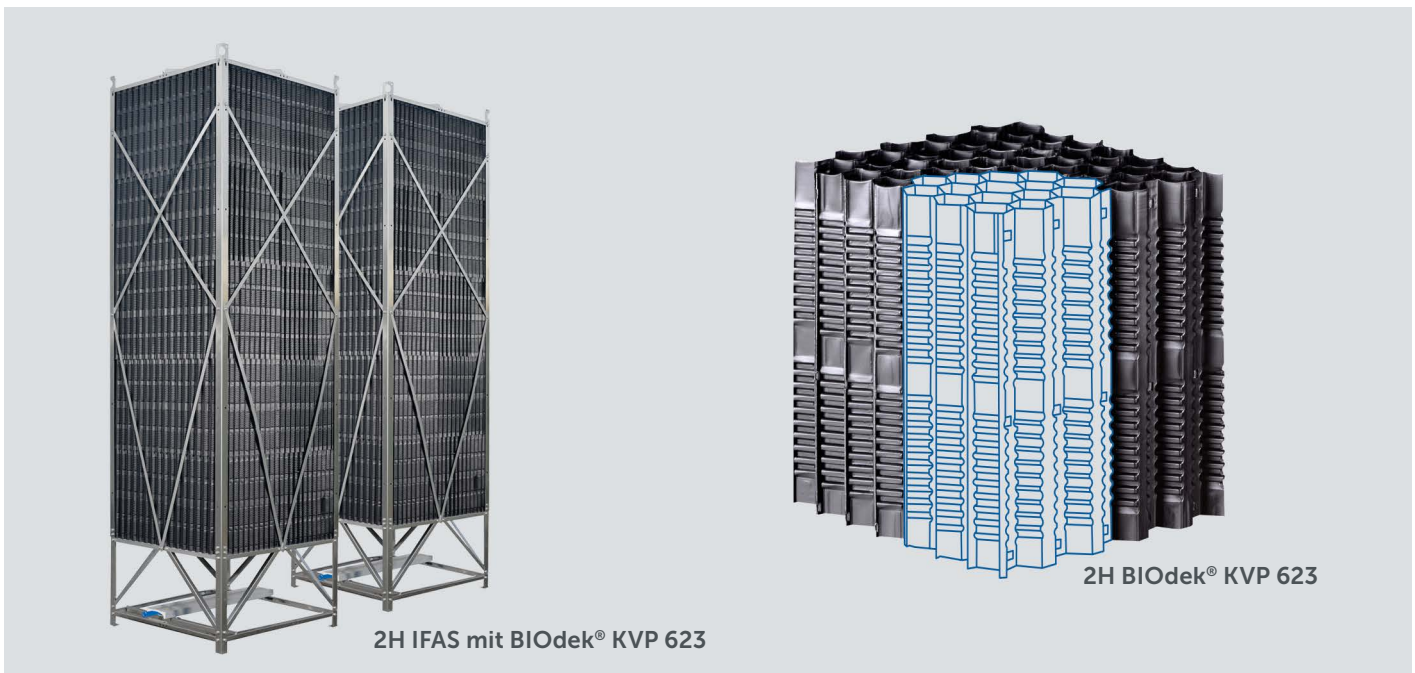


2H BIOdek®-IFAS SYSTEM AND COMPONENTS

Solution to Upgrade and Extend Activated Sludge Plants



IFAS (Integrated Fixed Film Activated Sludge) combines the advantages of fixed film technology i. e. submerged fixed beds (SAF) and conventional activated sludge (CAS). By adding high surface media to an activated sludge basin additional biomass will grow on the media increasing the operative sludge age. Thus, IFAS offers a possible performance increase up to 40% without new aeration tanks.

The 2H IFAS system can be supplied as plug and play modules including the high surface media, aerators or agitators and installation cage. The aerators are individually selected for carbon- and nitrogen removal requirements. In the case of denitrification, the systems includes an agitator to move water through the media.

In our manufacturing process we use premium materials for high quality requirements. For more than 40 years we have been consistently developing and improving fills for trickling filters and contact aeration. This puts us today in the position of a leading supplier of biofilm technology. You may profit from our experience gained in equipping hundreds of biofilm plants. We will be glad to support you in the optimal design of our IFAS modules for your individual case.

Advantages of our 2H IFAS System

- Increase of sludge-age and active biomass without extra tanks
- Fixed film is not affected by bulky or pinpoint sludge
- Better sludge settling characteristics
- Simple retrofitting under operation
- Decades of experience with structured fills for wastewater treatment
- Plug and play modular design for step by step upgrades
- High surface area for biofilm growth
- Environmental friendly, impact and ageing resistant PP
- KVP/KVC media types can be installed with continuous vertical channels

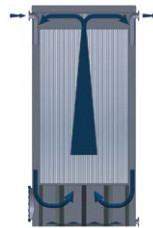
High performance results in high biomass growth!
2H BIOdek® with vertical channels reliably releases excess sludge into the water column with minimal clogging risk. The straight channels ideally support the water circulation which is induced through optimal aeration under the 2H IFAS modules.

Process information for media choice			
	Application	Surface Area	Material
KVP 623	Carbon removal and denitrification	125 m ² /m ³	PP/PVC
KVP 618	Second stage nitrification	150 m ² /m ³	PP/PVC
FAP 612	Tertiary nitrification	200 m ² /m ³	PP/PVC

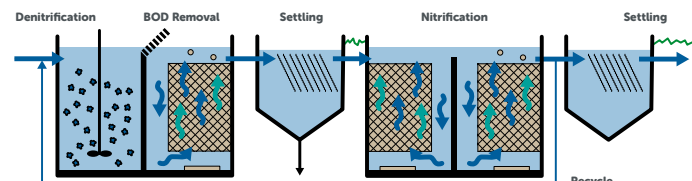
Complete modules and units for IFAS						
Product	Possible dimensions (m)		Height variations		Delivery	Possible suspended solids (MLSS and Biofilm)* kg/m ³
	L	W	H	Ht**		
2H BIOdek®-IFAS	1.1	1.1	1.2	2.2	kit or modules; aeration or agitation optional	6 - 7
	2.2	2.2	1.8	2.8		
	3.3	3.3	2.4	3.4		
	X·1.1	X·1.1	3	4		
	Multiple combinations of length and width		Height variations regardless of length and width			



Complete modules and units for SAF								
Product	Type	Possible dimensions (m)				Delivery	2H BIOdek® Volume m ³	Possible suspended solids (MLSS and Biofilm)* kg/m ³
		L	W	H	Ht**			
2H BIOdek®-FBR	20-30	Ø 2.0		3.1	4.2	plug and play tank unit	8.5	55
	25-30	Ø 2.5					12.1	79
	30-30	Ø 3.0					22.0	143



IFAS and SAF for larger projects								
Product	Type	Possible dimensions (m)				Delivery	2H BIOdek® Volume m ³	Possible attached and suspended solids (MLSS and Biofilm)* kg/m ³
		L	W	H	Ht			
2H BIOdek®-SAF	2	>1	2	variable	variable	components for an entire installation	variable	6 - 7
	3	>1	3					
	4	>1	4					



*MLSS: Mixed Liqueur Suspended Solids; assuming a sum of 6.5 kg solids per m³ media.
 **Tank depth including min. freeboard of 0.2 m.

Accessories: Complete systems for carbon removal or nitrification can include aerators; for denitrification the system can include an integrated agitator. Optionally we can supply dosing equipment and sensors to complete our treatment units.
Design: Our engineers will support you to find the optimal 2H BIOdek®-IFAS system and configuration.
Support: Included in modular system or our team will suggest an optimal solution for larger projects.

This information has been put together with greatest care. However, any performance data given in this leaflet is subject to compliance with certain surrounding conditions and hence may vary from case to case. Further, we reserve the right to make changes at any time without notice. We strongly recommend (i) reconfirmation with us whether this information is still fully valid, before using it for final designs and (ii) to verify performance data taking into account the actual surrounding conditions. We do not take any responsibility for any consequences due to non-compliance with these recommendations.

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ENEXIO Water Technologies, Germany, is ISO 9001:2008 certified.