

## **BIOLOGICAL TREATMENT FOR ORGANIC MATTER REMOVAL BY MOVING BED BIOLOGICAL REACTOR (MBBR)**

REF: CHC – FS – BIO-ANOX – C and REF: CHC – FS – BIO-ANOX – TC  
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Cylindrical and horizontal/vertical reactor manufactured in GFRP (Glass Fiber Reinforced Polyester) composed of manhole access, communication wall between compartment, inlet, outlet and communication pipes, air vent and lifting rings.

The technology used is a biological treatment where the biomass is fixing and growing on the mobile support with agitation and oxidation appropriate condition.

The mobile supports are plastic material with a high specific area (>500 m<sup>2</sup>/m<sup>3</sup>) with a density around 1g/cm<sup>3</sup>. This technology has the following advantages compared to the activated sludge process:

- High flexibility to deal with changes of the inlet effluent.
- Biological reactor capacity reduction for the same efficiency.
- Flexible reactor's dimension, tank capacity and filling up material according to the requested treatment efficiency and the actual and future charge.
- High flexibility to deal with contaminated maximal flow and inhibitor presence.
- Easier secondary settling because a recirculation for bacteria's maintenance isn't necessary, avoiding filament's bulking.
- Possibility to work with higher climbing.
- Easy control and operation conditions.

The reactor will be composed of different chambers and filling up material according to the effluent quality request, the inlet contaminated charges and the flow:

- Settling chamber: simple settling – digestion (Imhoff).
- Different aeration chamber: aerobic COD elimination and aerobic nitrification.
- Specific plastic filling up for the different aeration chambers.

The aeration system allows to maintain in suspension the support of the plastic material (agitation process) and provide the necessary oxygen (oxidation process). The system will be supplied by lateral canal compressor, with accessories: cylindrical cover, collector, filter, manometer, security valve and air purge.

The air distribution system will consist of a diffusers grid placed in the bottom of the biological reactor with a special configuration for a better aeration and agitation process.

The communication between the compartments will consist of an efficient system which avoids the filling up material fixation and exit.

The secondary settling chamber will consist of a conical settling tank manufactured in Glass Fiber Reinforced Polyester (GFRP), Salher brand, with central supply and Thompson canal.

The plant control will consist of a panel board to protect and control the different components.

In option the WWTP can be composed of an automatic and dissolved oxygen meter.

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**DATA CONSIDERED:**

- ENDOWMENT : 200 L/hab/day.
- Inlet charge: 60 g/hab/day DBO5, 90 g/hab/day SS.
- Biological peak coefficient: 2.5 Qmh.
- Recommended pretreatment: sieve: 10 mm.
- T°: 15°C.

## DIFFERENT STAGES FOR MULTISTAGE WWTP:

### FS

- Primary settling tank.

### ANOX

- Anoxic chamber for nitrogen removal (in option: phosphorus).

### BIO

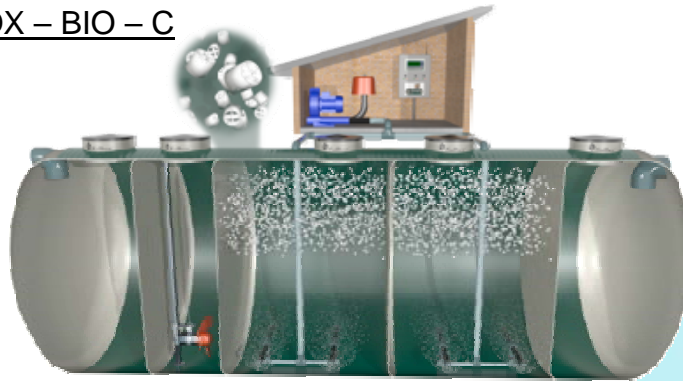
- Aeration chamber with high efficiency moving bed biological reactor.

### C - TC

- Secondary settling chamber with sludge extraction system (optional).



**Any configuration can be performed according to specific characteristics of the installation and upon customer request.**

REF: CHC – FS - ANOX – BIO – C

PE	75	100	250	500	750	1.000	1.500	2.000	2.500	3.000
<b>Total Capacity [m³]</b>	25,00	30,00	70,00	130,00	195,00	230,00	340,00	450,00	570,00	680,00
<b>Nº Module</b>	1	1	1	1	1	2	2	3	3	4
<b>Capacity per unit (m³)</b>	25,00	30,00	70,00	130,00	195,00	115,00	170,00	150,00	190,00	170,00
<b>Ø [m]</b>	2,25	2,25	3,00	3,50	4,00	4,00	4,00	4,00	4,00	4,00
<b>Length [m]</b>	6,70	8,00	10,50	14,20	16,27	9,50	14,30	12,70	15,87	14,30
<b>Ø Pipe [mm]</b>	125	160	160	160	200	200	200	200	200	200
<b>CE (mm)</b>	2.125	2.090	2.840	3.340	3.800	3.800	3.800	3.800	3.800	3.800
<b>CS (mm)</b>	2.075	2.040	2.790	3.290	3.750	3.750	3.750	3.750	3.750	3.750
<b>Agitator (kW)</b>	0,55	0,55	0,55	0,55	0,55	2x0,55	2x0,55	3x0,55	3x0,55	4x0,55
<b>Pump Rec. (kW)</b>	0,55	0,55	0,55	0,55	0,55	2x0,55	2x0,55	3x0,55	3x0,55	4x0,55
<b>Blower (kW)</b>	1,1	1,1	3,00	5,5	7,50	2x7,50	2x11,00	2x11,00	3x15,00	4x15,00
<b>CHC-FS-ANOX-BIO-C</b>										

REF: CHC – FS - ANOX – BIO – TC

PE	75	100	250	500	750	1.000	1.500	2.000	2.500	3.000
<b>Reactor total capacity [m³]</b>	20,00	25,00	57,50	110,00	160,00	190,00	290,00	380,00	480,00	570,00
<b>Nº Module</b>	1	1	1	1	1	1	2	2	3	3
<b>Reactor capacity per unit (m³)</b>	20,00	25,00	57,50	110,00	160,00	190,00	145,00	190,00	160,00	190,00
<b>Ø [m]</b>	2,00	2,25	3,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
<b>Length [m]</b>	6,70	6,70	8,35	9,50	13,50	15,87	12,30	15,87	13,50	15,87
<b>Ø Pipe [mm]</b>	125	125	160	160	200	200	200	200	200	200
<b>CE (mm)</b>	1.875	2.125	2.840	3.840	3.800	3.800	3.800	3.800	3.800	3.800
<b>CS (mm)</b>	1.825	2.075	2.790	3.890	3.750	3.750	3.750	3.750	3.750	3.750
<b>Agitator (kW)</b>	0,55	0,55	0,55	0,55	0,55	0,55	2x0,55	2x0,55	3x0,55	3x0,55
<b>Pump Rec. (kW)</b>	0,55	0,55	0,55	0,55	0,55	0,55	2x0,55	2x0,55	3x0,55	3x0,55
<b>Blower (kW)</b>	1,1	1,1	3,0	5,5	7,5	15,0	2x7,5	2x15,00	3x11,00	3x15,00
<b>Total settling capacity [m³]</b>	4,00	5,00	11,00	21,00	32,00	43,00	65,00	86,00	106,00	129,00
<b>Settling capacity per unit [m³]</b>	4,00	5,00	11,00	21,00	32,00	43,00	32,50	43,00	35,33	43,00
<b>Nº Settling tank</b>	1	1	1	1	1	1	2	2	3	3
<b>Ø Settling tank [m]</b>	1,70	1,70	2,25	3,00	3,50	4,00	3,50	4,00	3,50	4,00
<b>H Settling tank [m]</b>	2,75	3,19	4,03	4,70	5,36	5,75	5,40	5,75	5,70	5,75
<b>CHC-FS-ANOX-BIO-TC</b>										