SIGMADAF

sigmadafclarifiers.com

CONTENTS

SIGMA GROUP

Sigmadaf is a family-owned company that belongs to the Sigma Group, which started its activities over 50 years ago, offering machining solutions for metal parts to third parties. Over the last 25 years, Sigma Group has focused exclusively on water treatment, currently being one of the leading manufacturers of flotation equipment internationally and a benchmark in the implementation of turnkey solutions for wastewater treatment.

Over the years, Sigmadaf has evolved from manufacturing filters and simple flotation equipment to supplying the most technologically advanced DAF systems on the market. Our equipment guarantees maximum efficiency and durability, in addition to offering a high degree of versatility for a wide range of industrial activities. As a result of this evolution, Sigma Group currently consists of three companies.

AGUA SiGMA

Turn-key solutions for industrial wastewater treatment, including engineering, manufacturing, comissioning and mainteinance of WWTP.

SIGMADAF

Manufacturing of a complete range of dissolved air flotation (DAF) systems and membrane bioreactors (MBR) for wastewater treatment.

SiGMA BIODIGESTECH

Comprehensive solutions for the treatment and valorization of digestate generated in biodigestion plants on livestock farms.

AT THE FOREFRONT OF **DAF** & **MBR** EVOLUTION

At Sigmadaf, we manufacture dissolved air flotation systems and membrane bioreactors for the treatment of industrial wastewater.

The unmatched performance of our equipment is the result of more than 20 years of investment in research and development, through constant testing and simulations.

All our equipment is designed and manufactured down to the last detail at our facilities, allowing us to have absolute control over the final quality of our products. This way, we can offer the highest guarantees of efficiency, reliability, and durability for all our equipment.

DISSOLVED AIR FLOTATION SYSTEMS

A DAF system is particularly effective at removing contaminants that are lighter than water and can adhere to air bubbles. This includes fats, oils, and suspended solids. It is also useful for removing flocs of fine particles that clump together during prior chemical treatments.

MEMBRANE BIOREACTORS

MBR systems are effective for treating wastewater with high organic loads, providing a high-quality effluent that can be reused for various purposes. Due to their capacity to produce clarified water, MBRs are ideal for applications where recycled water is required for industrial processes, irrigation, or even aquifer recharge.

A RELIABLE **PARTNER**

At Sigmadaf, we promote sustainable use of water resources, ensuring water availability for people and institutions. To this end, we provide advanced solutions for the treatment and reuse of industrial wastewater.

Our technologies and services are designed to optimize water clarification and recycling processes, thereby guaranteeing environmental sustainability and operational efficiency.

Our commitment is to support industries in complying with environmental regulations and in reducing their water footprint through high-efficiency solutions that contribute to a more sustainable future.

+20 years of experience

+800 projects

+40 countries

5 continents

+300 tons of COD removed every day

+2.000.000 m³ of wastewater managed daily

+350.000 m³ of daily biogas production

DATA UPDATED IN DECEMBER OF 2023

OUR
FACILITIES

All the equipment supplied by Sigmadaf is designed and manufactured entirely at our facilities.

We have three production workshops that together cover more than 5000 m^2 of productive surface.

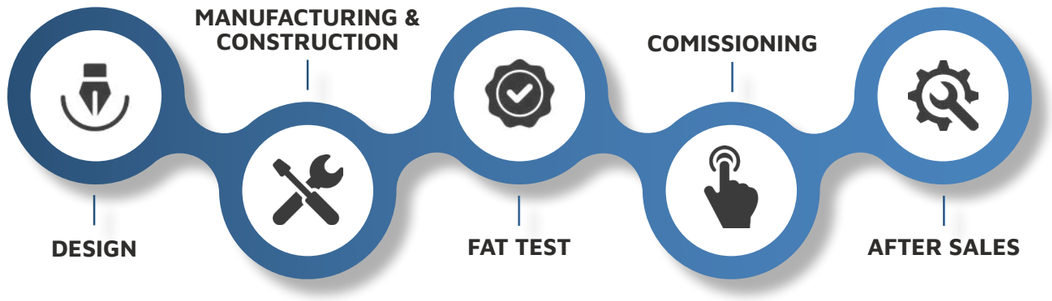
Thanks to our absolute control over our design and production processes, we can guarantee the maximum durability and effectiveness of our DAF systems and our membrane bioreactors.

TECH & **INNOVATION**

SMARTDAF: TRANSFORMING WATER WITH BIG DATA AND AI

SmartDAF is an advanced system that leverages big data and AI technology to automate the operation of our DAF units.

The integration of these technologies allows for increased operational efficiency, optimization of resources, and minimal human intervention, making it highly effective for industries looking to enhance their wastewater management processes.



Each stage of the production of our equipment is aimed at optimizing the traceability, quality, and sustainability of the final product.

During the manufacturing phase, each component of the machine is identified with a unique code to monitor the status of each piece and simplify subsequent assembly. Regarding the metal parts of our equipment (chassis, structure, reinforcements, etc.), this code is laser- engraved so that, at the time of assembly, errors are completely eliminated from the process.

Before being delivered to the client, each piece of equipment undergoes various quality and performance tests to ensure it is in perfect condition.

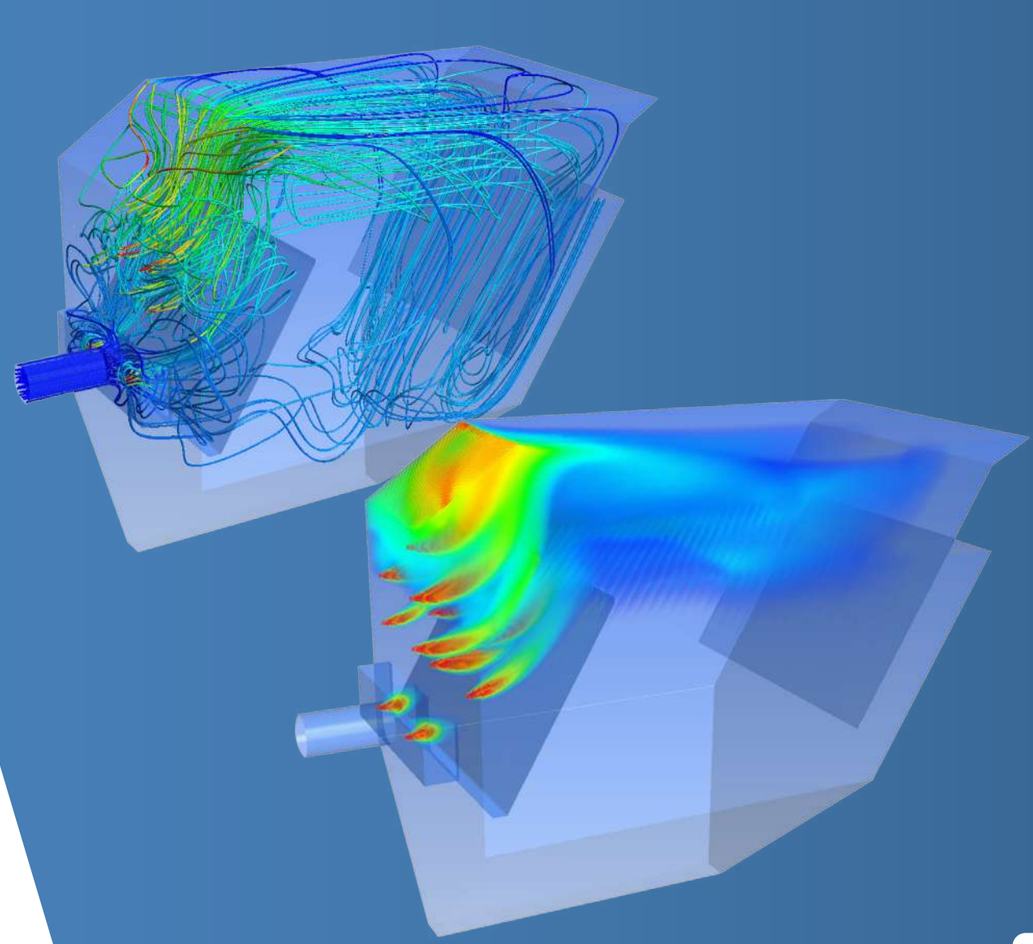
COMPUTING FLUID **DYNAMICS**

CFD simulations are a crucial tool for improving the design and operation of DAF systems by modeling the behavior of fluids within the DAF system.

CFD simulations allow for the visualization and analysis of the distribution and size of air bubbles, as well as the trajectory and speed of suspended solids. This helps in adjusting critical factors such as the air injection rate and the configuration of flows.

CFD simulations also help in optimizing the geometric design of the tank and air distribution systems. By identifying areas where flows are suboptimal or where sediment accumulation can occur, the design of the DAF can be adjusted to ensure more uniform air coverage and more effective removal of contaminants. This reduces the need for manual interventions and frequent maintenance, lowering operational costs.

Finally, the use of CFD enables virtual testing of different configurations and operational conditions before physical implementation. This reduces the risks associated with changes in production scale and ensures that the system can adapt to variations in pollutant loads and changes in environmental regulations.



AFTER **SALES**

At Sigmadaf, we understand that the journey doesn’t end at purchase.

Our comprehensive after-sales support is designed to ensure your wastewater treatment plant continues to operate efficiently and effectively.

SPARE PARTS SUPPLY

We provide a full range of spare parts for all our technologies, including Dissolved Air Flotation (DAF), Membrane Bio-Reactor (MBR), Moving Bed Biofilm Reactor (MBBR), and compact plants.

ON-SITE TECHNICAL ASSISTANCE

Our expert technicians conduct periodic visits to ensure your systems are running smoothly. Services include:

- ✓ Comprehensive process checks
- ✓ On-site resolution of operational questions
- ✓ Sampling and analytics for performance tracking
- ✓ Detailed reports with evaluations and actionable recommendations

REMOTE TECHNICAL ASSISTANCE

Immediate support is at your fingertips with our RTA app, connecting you directly to our specialists for prompt resolution of urgent issues.

PROCESS IMPROVEMENT CONSULTANCY

In collaboration with our R&D Department, we offer:

- ✓ On-site evaluations to understand and optimize your treatment processes
- ✓ Identification of critical improvement areas
- ✓ Detailed analytical reports, providing you with clear, data-driven improvement suggestions

SIGMADAF TRAINING PROGRAMS

Enhance your team’s expertise through our specialized training sessions, available both at our facilities and online with advanced 3D simulations of SIGMADAF equipment.

SIGMADAF'S DISSOLVED AIR FLOTATION SYSTEM

Dissolved air flotation (DAF) is the most efficient technology for removing suspended solids, oils, fats, and biochemical oxygen demand present in wastewater and other industrial process streams.

Our DAF units can manage from 5 m^3/hour to over 1000 m^3/hour.

1 DAF-**FPAC**

Ideal for working with small to medium flows (5 - 160 m^3/h) and with very high loads of contaminants. These are low-profile units with a large free surface area for accumulating floated sludge.

2 DAF-**FPBC**

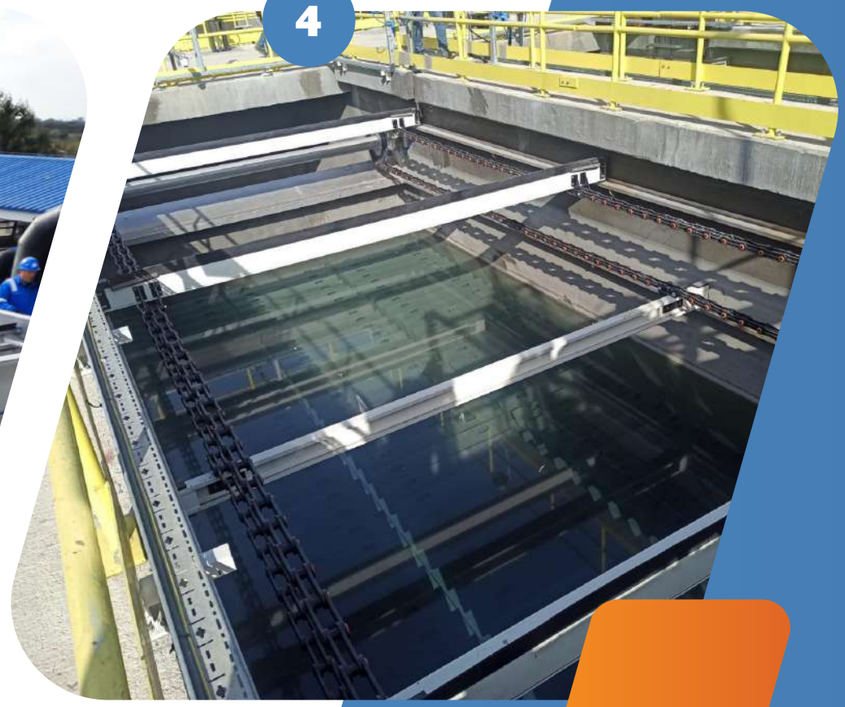
Ideal for working with large flows (up to 175 m^3/h) with low to medium contaminant loads. These are very high-profile units that incorporate internal lamellar circuits to minimize the water pass speed in a reduced total volume.

3 DAF-**FPHF**

High-performance equipment that can handle very high flows (200 - 1000 m^3/h) and a large amount of contaminants.

4 **MEGADAF**

This model is built in a concrete tank, designed to manage large volumes of water and wastewater (more than 1000 m^3/h) with low to high loads of contaminants.



COMPACT, PLUG&PLAY
DAF SYSTEMS

At Sigmadaf Clarifiers, we set ourselves apart by designing and manufacturing state-of-the-art, fully assembled compact Dissolved Air Flotation (DAF) systems. Our DAF systems are engineered to simplify your operations from day one, offering a distinct advantage over conventional alternatives.

Seamless Integration, Immediate Operation

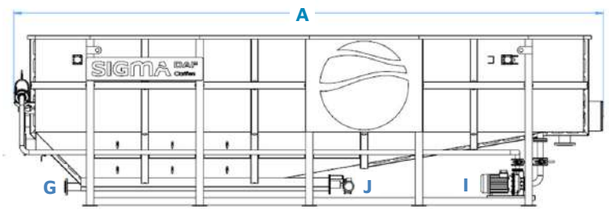
Our compact DAF systems arrive at your site fully assembled and ready for immediate operation, eliminating the need for assembly, configuration, or setup.

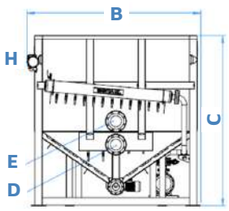
Benefits of Choosing our Compact DAF Systems:

- ✓ Immediate operational capability: From the moment it arrives, the DAF system is ready to go. Just connect the power, adjust the dosing and start treating wastewater.
- ✓ Reduced installation time and costs: No on-site assembly or specialized setup required, drastically reducing the resources typically needed to get started.
- ✓ Reliability and performance: All our DAF systems are pre-tested and configured by our experts, ensuring optimal performance from the first use.

DAF-**FPAC**

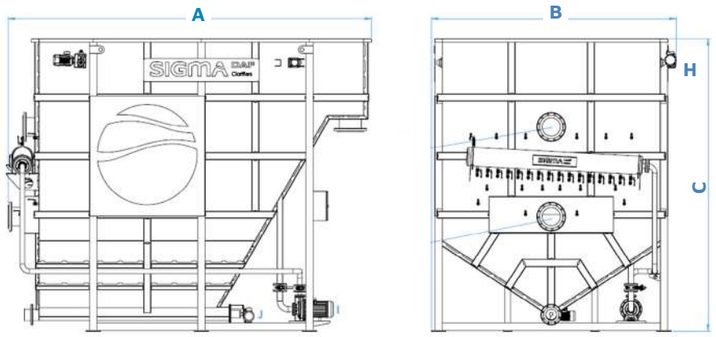
TYPE	HYDRAULIC CAPACITY	FLOTATION FREE AREA	LENGTH A	WIDTH B	HEIGHT C	SKIMER - POWER H	RECIRCULATION PUMP I	RECIRCULATION PUMP - POWER I	SCREW - POWER J	EMPTY WEIGHT	FULL WEIGHT
	(m^3/hr)	(m^2)	(mm)	(mm)	(mm)	Kw	(m^3/hr)	Kw	Kw	Kg	Kg
FPAC 03	3	1,2	2300	1625	1400	0,37	0,75	5,5	NA	450	1250
FPAC 05	5	1,5	2300	1900	1400	0,37	1,25	5,5	NA	510	1500
FPAC 10	10	2,4	3150	2000	1500	0,37	2,50	5,5	NA	1200	3200
FPAC 15	15	4,2	4000	2200	1500	0,37	3,75	5,5	NA	1500	4500
FPAC 20	20	6,6	5000	2400	2300	0,37	5,00	7,5	0,37	2100	10100
FPAC 25	25	8,0	5500	2400	2300	0,37	6,25	7,5	0,37	2200	11200
FPAC 30	30	10,0	6500	2400	2300	0,37	7,50	7,5	0,37	2400	13400
FPAC 40	40	11,0	7000	2400	2300	0,55	10,00	7,5	0,37	2500	14500
FPAC 50	50	13,0	8000	2400	2300	0,55	12,50	11,0	0,37	2700	16700
FPAC 60	60	15,0	9000	2400	2300	0,55	15,00	11,0	0,37	2900	18400
FPAC 70	70	17,0	10000	2400	2300	0,55	17,50	11,0	0,37	3400	21500
FPAC 80	80	19,0	11000	2400	2300	0,55	20,00	11,0	0,37	4000	24100
FPAC 90	90	21,0	12000	2400	2300	0,55	22,50	11,0	0,37	4300	26600
FPAC 100	100	24,0	9500	3400	2300	0,55	25,00	15,0	0,37	4600	29300
FPAC 120	120	28,0	11000	3400	2300	0,55	30,00	15,0	0,37	4750	34250
FPAC 140	140	32,5	12500	3400	2300	0,55	35,00	15,0	0,37	5200	39200
FPAC 160	160	36,0	14000	3400	2300	0,55	40,00	15,0	0,37	5600	44250
FPAC 200	200	46,0	17000	3400	2300	0,55	50,00	15,0	0,37	6200	53200





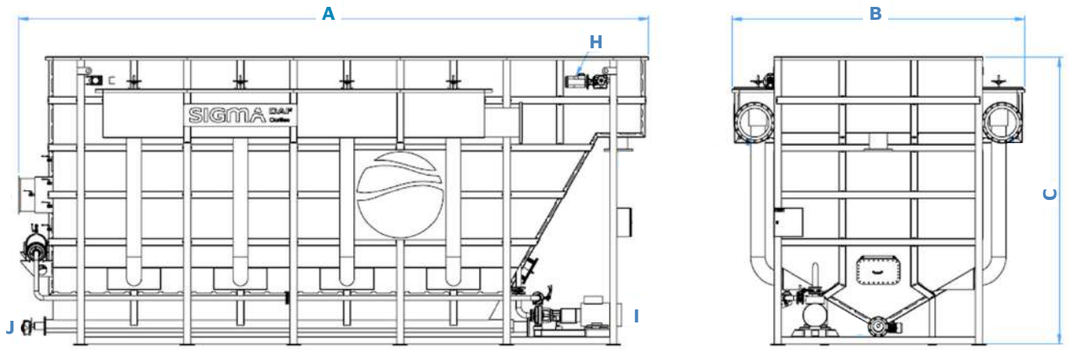
DAF-**FPBC**

TYPE	HYDRAULIC CAPACITY	PROJECTED LAMELLAR SURFACE AREA	FLOTATION FREE AREA	LENGTH A	WIDTH B	HEIGHT C	SKIMER - POWER H	RECIRCULATION PUMP	RECIRCULATION PUMP - POWER	SCREW - POWER	EMPTY WEIGHT	FULL WEIGHT
	(m^3/hr)	(m^3)	(m^2)	(mm)	(mm)	(mm)	Kw	(m^3/hr)	Kw	Kw	Kg	Kg
FPBC 10	10	0,7	1,1	2200	1400	2100	0,37	1,5	5,5	NA	650	2700
FPBC 15	15	1,0	1,6	2200	1900	2100	0,37	2,3	5,5	NA	750	3700
FPBC 20	20	1,2	1,7	3000	1400	2100	0,37	3,0	5,5	NA	900	5080
FPBC 35	35	2,0	2,6	3000	1900	2700	0,37	5,3	7,5	0,37	1150	6400
FPBC 40	40	2,4	3,5	3000	2400	2700	0,55	6,0	7,5	0,37	1350	8500
FPBC 50	50	3,4	4,9	3750	2400	2700	0,55	7,5	7,5	0,37	1500	9000
FPBC 75	75	5,0	5,9	4500	2400	4000	0,55	11,3	7,5	0,37	1800	12500
FPBC 100	100	6,5	6,9	5000	2400	4000	0,55	15,0	11,0	0,37	2200	14800
FPBC 125	125	8,1	10,2	5000	3400	4000	0,55	18,8	11,0	0,37	2600	17000
FPBC 150	150	9,4	11,5	5500	3400	4000	0,55	22,5	15,0	0,37	3200	18900
FPBC 175	175	11,0	12,6	6000	3400	4000	0,55	26,3	15,0	0,37	3700	22000
FPBC 200	200	12,6	14,4	6500	3400	4000	0,55	30,0	15,0	0,37	4300	25000
FPBC 250	250	15,7	16,0	7000	3400	4000	0,55	37,5	15,0	0,37	5200	27000



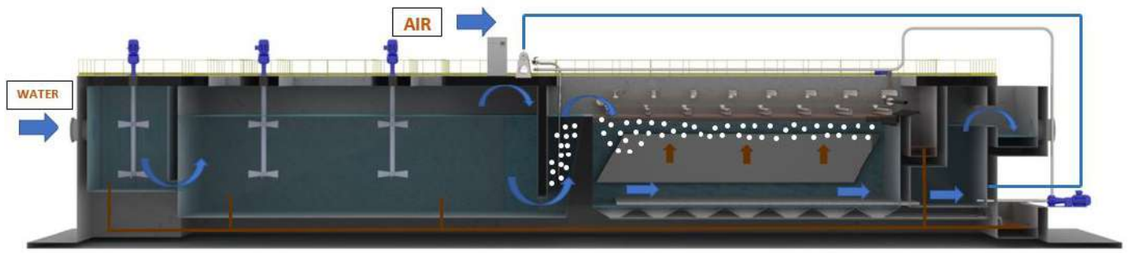
DAF-**FPHF**

TYPE	HYDRAULIC CAPACITY	PROJECTED LAMELLAR SURFACE AREA	FLOTATION FREE AREA	LENGTH A	WIDTH B	HEIGHT C	SKIMER - POWER H	RECIRCULATION PUMP I	RECIRCULATION PUMP - POWER I	SCREW - POWER J	EMPTY WEIGHT	FULL WEIGHT
	(m^3/hr)	(m^2)	(m^2)	(mm)	(mm)	(mm)	Kw	(m^3/hr)	Kw	Kw	Kg	Kg
FPHF 300	300	12,0	14,5	6250	4000	4000	0,55	45,00	15,00	0,37	7000	30000
FPHF 400	400	18,0	17,3	7500	4000	4000	0,55	60,00	30,00	0,37	8000	40200
FPHF 500	500	24,0	21,0	8750	4000	4000	0,55	75,00	30,00	0,37	10000	45000
FPHF 750	750	29,0	23,8	10000	4000	4000	0,55	112,50	30,00	0,37	12000	49000
FPHF 1000	1000	40,0	29,2	12000	4000	4000	0,55	150,00	37,00	0,37	13500	60000



MEGADAF

TYPE	FEED FLOW	SOLIDS CONC. (1)	RECYCLE RATE (2)	HLR FLOW LOAD (INCL. RECYCLE)	PLATE PACK VOL	FLOAT SURFACE	RESIDENCE TIME	LENGTH	WIDTH	HEIGHT	SKIMMER SURFACE	RECIRCULATION	AIR COMPRESSOR	TOTAL FLOW	ASR
	(m^3/hr)	ppm	(%)	(m^3/m^2/hr)	(m^3)	(m^2)	(min)	(mm)	(mm)	(mm)	(Kw)	(m^3/hr)	(Kw)	(Kw)	m³/h	kg/kg
FPBC2000CW	1500	< 50	15%	32	69	54	7.5	11000	6000	4000	0.55	225	75	4.0	1725	0.30
		< 100	20%	33	69	54	7.2	11000	6000	4000		300	90	5.5	1800	0.20
		< 150	25%	31	77	60	8.6	12000	6000	4500		375	110	7.5	1875	0.18
FPBC2500CW	2000	< 50	15%	32	92	72	9.6	11000	8000	4000	0.55	300	90	7.5	2300	0.30
		< 100	20%	33	92	72	9.1	11000	8000	4000		400	132	11.0	2400	0.20
		< 150	25%	31	102	80	10.8	12000	8000	4500		500	160	11.0	2500	0.18
FPBC3000CW	2500	< 50	15%	33	112	88	11.3	13000	8000	4000	0.55	375	110	7.5	2875	0.30
		< 100	20%	31	122	96	11.5	14000	8000	4000		500	160	11.0	3000	0.20
		< 150	25%	33	122	96	12.2	14000	8000	4500		625	200	15.0	3125	0.18
FPBC4000CW	3000	< 50	15%	35	128	100	12.3	12000	10000	4000	0.55	450	132	11.0	3450	0.30
		< 100	20%	33	140	110	12.6	13000	10000	4000		600	200	11.0	3600	0.20
		< 150	25%	31	153	120	14.4	14000	10000	4500		750	250	15.0	3750	0.18
FPBC4500CW	3500	< 50	15%	34	153	120	14.2	14000	10000	4000	0.55	525	160	11.0	4025	0.30
		< 100	20%	32	166	130	14.2	15000	10000	4000		700	200	15.0	4200	0.20
		< 150	25%	31	179	140	15.9	16000	10000	4500		875	250	15.0	4375	0.18
FPBC5000CW	4000	< 50	15%	33	179	140	16.0	16000	10000	4000	0.55	600	200	11.0	4600	0.30
		< 100	20%	33	184	144	15.0	14000	12000	4000		800	250	15.0	4800	0.20
		< 150	25%	32	199	156	16.8	15000	12000	4500		1000	315	18.0	5000	0.18



TYPE	FEED FLOW	SOLIDS CONC. (1)	RECYCLE RATE (2)	HLR FLOW LOAD (INCL. RECYCLE)	SLR SOLIDS LOAD	FLOAT SURFACE	RESIDENCE TIME	LENGTH	WIDTH	HEIGHT	SKIMMER SURFACE	RECIRCULATION	AIR COMPRESSOR	TOTAL FLOW	ASR
	(m^3/hr)	ppm	(%)	(m^3/m^2/hr)	(kg/m^2/hr)	(m^2)	(min)	(mm)	(mm)	(mm)	Kw	(m^3/hr)	Kw	Kw	(m^3/h)	kg/kg
FPAC300CW	250	250	25%	13	2.6	24	18.4	8000	4000	4000	0.55	63	18.5	1.5	313	0.11
FPAC325CW		500	30%	14	5.2	24	17.7	8000	4000	4000		75	22	2.2	325	0.07
FPAC375CW		1500	50%	13	13.4	28	20.2	9000	4000	4500		125	37	4.0	375	0.04
FPAC600CW		5000	130%	10	20.8	60	28.2	12000	6000	4500		325	90	7.5	575	0.03
FPAC625CW	500	250	25%	15	3.0	42	16.1	9000	6000	4000	0.55	125	37	4.0	625	0.11
FPAC650CW		500	30%	14	5.2	48	17.7	10000	6000	4000		150	45	4.0	650	0.07
FPAC750CW		1500	50%	12	11.7	64	20.5	10000	8000	4000		250	75	5.5	750	0.04
FPAC1200CW		5000	130%	10	20.8	120	28.2	14000	10000	4500		650	200	15.0	1150	0.03
FPAC950CW	750	250	25%	15	2.9	64	16.4	10000	8000	4000	0.55	188	55	4.0	938	0.11
FPAC975CW		500	30%	14	5.2	72	17.7	11000	8000	4000		225	75	7.5	975	0.07
FPAC1200CW		1500	50%	13	12.8	88	18.8	13000	8000	4000		375	110	7.5	1125	0.04
FPAC1800CW		5000	130%	10	20.8	180	28.2	20000	10000	4500		975	315	18.0	1725	0.03
FPAC1250CW	1000	250	25%	14	2.8	88	16.9	13000	8000	4000	0.55	250	75	5.5	1250	0.11
FPAC1300CW		500	30%	14	5.2	96	17.7	14000	8000	4000		300	90	7.5	1300	0.07
FPAC1500CW		1500	50%	13	12.5	120	21.6	14000	10000	4500		500	160	7.5	1500	0.04
FPAC2300CW		5000	130%	10	20.8	240	28.2	22000	12000	4500		1300	400	22.0	2300	0.03
FPAC1600CW	1250	250	25%	14	2.8	110	16.9	13000	10000	4000	0.55	313	90	7.5	1563	0.11
FPAC1650CW		500	30%	14	5.2	120	17.7	14000	10000	4000		375	110	11.0	1625	0.07
FPAC1900CW		1500	50%	13	13.4	140	17.9	16000	10000	4000		625	200	11.0	1875	0.04
FPAC2900CW		5000	130%	10	21.7	288	27.0	26000	12000	4500		1625	500	26.0	2875	0.03
FPAC1900CW	1500	250	25%	14	2.9	130	16.6	15000	10000	4000	0.55	375	110	7.5	1875	0.11
FPAC2000CW		500	30%	14	5.4	140	17.2	16000	10000	4000		450	132	11.0	1950	0.07
FPAC2250CW		1500	50%	13	13.4	168	17.9	16000	12000	4000		750	250	15.0	2250	0.04
FPAC3500CW		5000	130%	10	22.3	336	23.4	30000	12000	4000		1950	560	37.0	3450	0.03

(1) Total feed solids (TSS + O&G + other). (2) Aprox water recirculation flow rate. Actual value is calculated based on Solids (1), the applied ASR (air to solids ratio) and the water conditions (TDS, Temp., saturation pressure). (3) DAF tank Height-C depends on the use or not of bottom skimmer.

MEMBRANE BIOREACTORS - **MBR**

Our membrane bioreactors deliver a top-notch performance for the removal of organic, inorganic solids, and nutrients, allowing the recovery of high-quality water that can be reused. An MBR system combines conventional biological treatment processes with a filtration process using a semi-permeable or selectively permeable membrane.

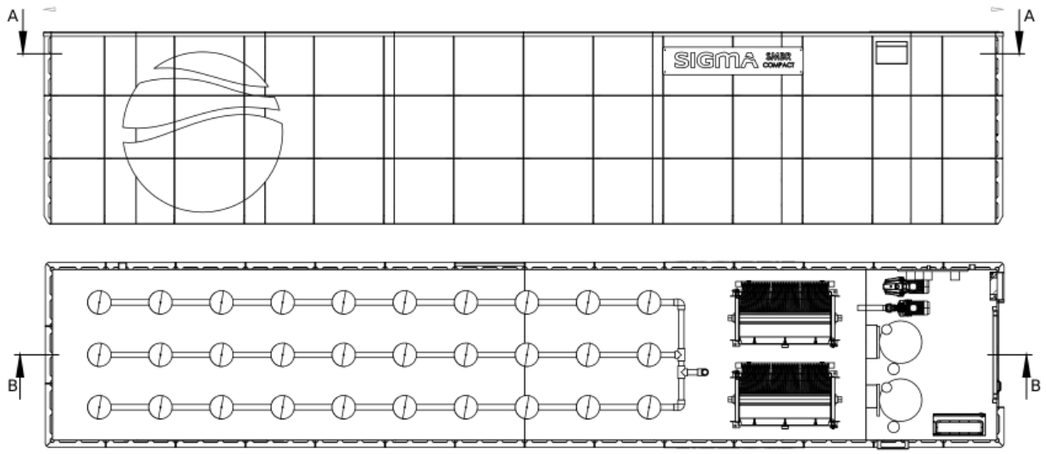
These reactors retain all floating matter, so sedimentation is no longer a restrictive factor for sludge concentration, which can be processed in high volumes. It is an easy to operate technology with low operational costs. The operator only needs to monitor the operation of the permeate, the recirculation pump and the working pressures.

Membrane separation offers significant benefits compared to conventional activated sludge systems:

- ✓ It can treat higher sludge concentrations (between 10 and 20 g/l), meaning the system achieves a higher degradation rate, partly due to the optimization of sludge retention time.
- ✓ Compact, plug&play equipment with small footprint that is delivered fully assembled and ready to operate.
- ✓ The treated water can be safely discharged, or reused as process water in various applications.

Further processes using advanced technologies (reverse osmosis, nanofiltration, evaporation, etc.) are possible for the removal of salts or recalcitrant organic compounds.

TYPE	HYDRAULIC CAPACITY	LENGTH	WIDTH	HEIGHT	INLET FLANGE	OUTLET FLANGE	MEMBRANE UNIT	WEIGHT EMPTY	WEIGHT FULL
	(m^3/day)	(mm)	(mm)	(mm)	DN	DN	Kg	Kg	Kg
SMBR 50	50	11000	2150	2200	GRAVITY	100	60	4500	30000
SMBR 100	100	11000	2150	2200	GRAVITY	100	120	4500	30000
SMBR 150	150	11000	2150	2200	GRAVITY	100	180	4500	30000



MOVING BED BIOFILM REACTORS - **MBBR**

We design and manufacture moving bed biofilm reactors for the treatment of industrial wastewater. MBBR are ideal for facilities where space is limited, as they offer high performance and occupy a small footprint.

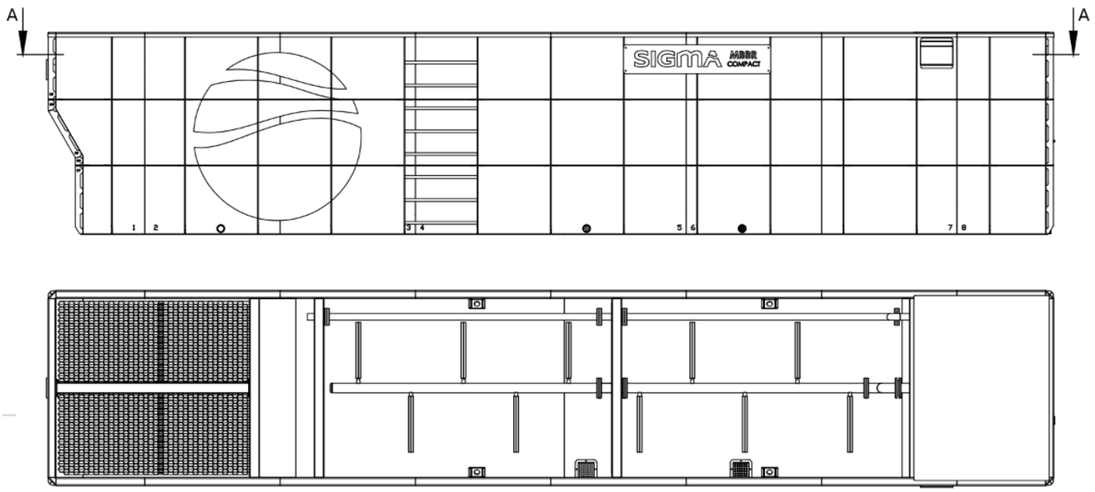
An MBBR system is an aerobic biological process in which the degradation of organic matter is carried out by aerobic bacteria inside a moving bed bioreactor. Our moving bed bioreactors use plastic carriers coated with biofilm to break down organic waste.

The only biomass that needs to be removed from the system is the one that has detached from the carriers and is suspended in the treated effluent.

The main advantages of the SIGMA MBBR are:

- ✓ Small footprint.
- ✓ Simple operation.
- ✓ Elimination of bulking problems in the secondary clarifier.
- ✓ Ability to withstand load peaks and flow variations.
- ✓ It does not require constant attention or interruption of operation.

TYPE	HYDRAULIC CAPACITY	LENGTH	WIDTH	HEIGHT	PACK LAMELLAR SURF.PROJEC	PRE-TREATMENT AND BIOLOGICAL CARRIER VOLUME	WEIGHT EMPTY	WEIGHT FULL
	(m^3/day)	(mm)	(mm)	(mm)	m^2	m^3	Kg	Kg
SMBBR 200	250	11000	2150	2200	26	4 - 7	7500	42500
SMBBR 300	350	11000	2150	2200	26	7 - 10	7500	42500



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SIGMADAF

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