

## DOMESTIC WASTEWATER TREATMENT UNITS FOR 3-25 PE

### AS-VARIOcomp K, AS-VARIOcomp K ULTRA

#### Advantages of AS-VARIOcomp K

- Certification according to ČSN EN 12566-3/A2
- Low operating costs
- Complete supply (all included in the price)
- Man-bearing cover
- Simple operation handling and reliability
- Customer support and service on the whole territory of the Czech Republic
- Possibility of a simple reconstruction from a conventional WWTP to the ULTRA type by inserting a membrane module
- If the ULTRA type is in service, treated water can be used for non-drinking (industrial) purposes



#### AS-VARIOcomp K

This type range of well-equipped domestic wastewater treatment plants is intended for treating sewage and sullage from family houses. The process design of these treatment plants is based on stable and reliable operations at minimum power consumption. The process design uses aerobic biological processes that are well proven in long-term operations.

#### PROCESS DESCRIPTION

**Wastewater** flows into the settling space (A) of the inlet section of wastewater treatment plant, where mechanical, floating, and settling impurities are removed and consequently decomposed in an anaerobic process. From the settling section, the mechanically pre-treated water flows to the activation section (B). The activation section (B) is used for the biological treatment process. The activation section is fitted with a fine-bubble aeration system located in its bottom part; the air is blown there by a blower. If applicable, the system also contains the biomass carrier (C) improving the process stability in overloaded or low-loaded plants. The accumulation section (D) in the whole plant space is an advantageous facility for accumulating of wastewater and balancing the flow rate on the discharge from the wastewater treatment plant. The activated mixture from the activation process is transferred to the secondary settling (vertical) tank (E). The cleaned water is drawn off by the airlift pump (F) to the discharge trough. Excessive sludge (aerobically stabilised) is drawn off by the airlift pump to the settling and sludge space (A) as necessary.

The wastewater treatment plant passed through a verification test under the supervision of the Technical and Test Institute for Construction Prague (Technický a zkušební ústav stavební, Praha, s. p.). In the course of this test, basic efficiency parameters were verified, including ammonia and phosphorus concentrations. The test results proved the compliance with the requirements of Governmental Regulation No.57/2016 Coll., on indicators and parameters of permissible contamination of wastewater and essentials for permits for discharging of treated wastewater to **underground water**.

It ensues from the measurement results in the original test type as well as from the results of the additional verification test that this **wastewater treatment plant** can be used for:

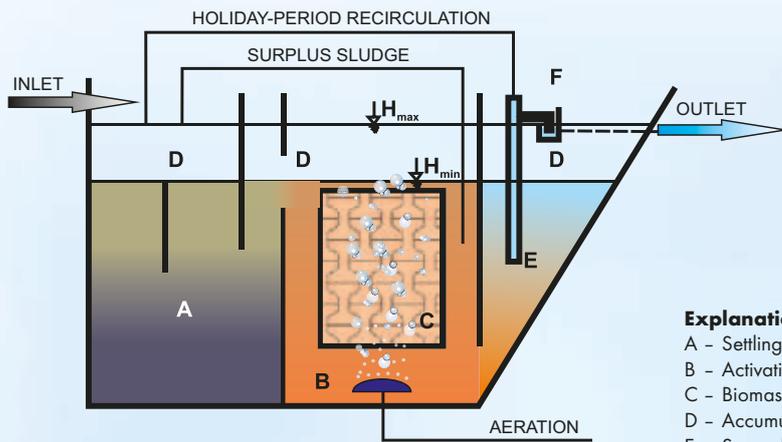
- Proceedings **for the water use permit** – and that even for the discharge to **underground water** – see the guaranteed properties, and
- **Notification** – as the wastewater treatment plant - 1<sup>st</sup> Class.

**Legislation concerning domestic treatment plant in the relation to the AS-VARIOcomp K type** – approval procedures of domestic plants are conducted either through the water-permit proceedings or by the notification

Permit type	Discharge place	Treatment plant type
Water-permit proceedings	Discharge to underground water	AS-VARIOcomp K
	Discharge to surface water	AS-VARIOcomp K
	Use for non-drinking purposes (irrigation, toilet flushing, ...)	AS-VARIOcomp K ULTRA
Notification	Discharge to surface water (1 <sup>st</sup> Class)	AS-VARIOcomp K, AS-VARIOcomp K ULTRA

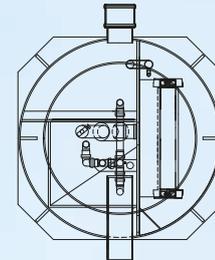
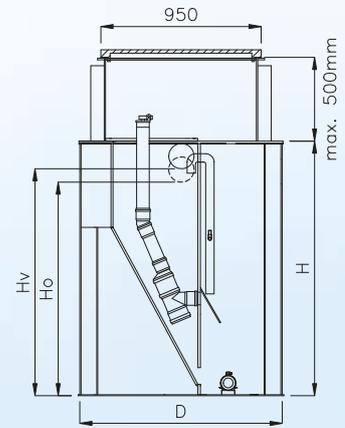
The guaranteed parameter values correspond to the specific requirements of the Czech legislation, while the guarantees for other countries are specified and offered individually and/or upon request. In doing this, it is issued from the values measured in the type test according to EN 12566-3+A2.

# AS-VARIOcomp K



### Explanation:

- A - Settling and sludge section
- B - Activation
- C - Biomass carrier
- D - Accumulation section
- E - Secondary settling section
- F - Air-lift pump



**AS-VARIOcomp 5-20K**

WWTP type/option	Concentration guaranteed values of treated water at the outlet				
	BOD <sub>5</sub> (mg/l)	COD (mg/l)	SS (mg/l)	N-NH <sub>4</sub> (mg/l)	P <sub>total</sub> (mg/l)
<b>AS-VARIOcomp K</b> (basic)	25	90	30	15	8
<b>AS-VARIOcomp K ULTRA</b> (with membrane filtration)	5	70	3	15	8
<b>Values required by GR 401/2015 Coll.</b>	<b>40</b>	<b>150</b>	<b>50</b>	<b>-</b>	<b>-</b>
<b>Values required by GR 57/2016 Coll.</b>	<b>40</b>	<b>150</b>	<b>40</b>	<b>20</b>	<b>10</b>

AS-VARIOcomp 5-20K										
Type	Number of PE	Q (m <sup>3</sup> /day)	BOD <sub>5</sub> (kg/day)	WWTP dimensions (mm)			Inlet (Hv) height (mm)	Outlet (Ho) height (mm)	Weight (kg)	Operating absorbed power (W)
				Diameter D	Max. dimensions a x b	Height				
<b>5K</b>	3-7	0,75	0,30	1200	1250 x 1250	2020	1350	1270	170	40
<b>8K</b>	6-10	1,2	0,48	1480	1500 x 1500	2020	1350	1270	260	50
<b>12K</b>	10-13	1,8	0,72	1925	2000 x 2000	2030	1350	1270	390	95
<b>15K</b>	13-17	2,25	0,9	1700	1740 x 1740	2800	2100	2020	450	75
<b>20K</b>	18-24	3,0	1,2	1945	2000 x 2000	2810	2100	2020	700	95

Note: In the case of individual equipping of WWTP with dosing of coagulants, it is possible to provide for even further reductions in the outlet concentrations in individual cases, namely the removal of phosphorus



Double-jacket domestic WWTP, trafficable and for setting under the underground water level



AS-VARIOcomp 5-20K

AS-VARIOcomp K/PB							
WWTP size	D (mm)	Hv (mm)	Ho (mm)	H1 (mm)	Hz (mm)*	DN inlet & outlet	Weight (kg)
<b>5</b>	1510	1350	1270	1670	5000	150	345
<b>8</b>	1790	1350	1270	1675	5000	150	425
<b>12</b>	2235	1350	1270	1685	5000	150	515
<b>15</b>	2010	2100	2020	2450	5000	150	670
<b>20</b>	2255	2100	2020	2465	5000	150	950

\*Hz (mm) = max. depth of the foundation base

AS-VARIOcomp K/PB/SV							
WWTP size	D (mm)	Hv (mm)	Ho (mm)	H1 (mm)	Hz (mm)*	DN inlet & outlet	Weight (kg)
<b>5</b>	1510	1508	1428	1830	5000	150	375
<b>8</b>	1790	1508	1428	1830	5000	150	455
<b>12</b>	2235	1508	1428	1840	5000	150	595
<b>15</b>	2010	2258	2178	2610	5000	150	710
<b>20</b>	2255	2258	2178	2620	5000	150	1000

\*Hz (mm) = max. depth of the foundation base

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## AS-VARIOcomp K ULTRA

The plant is intended for treatment of sewage from dwellings permanently occupied with 3 to 25 population equivalent units. The wastewater treatment plant is equipped with membrane technology, which removed from the treated water stream a majority of viruses and bacteria. By its quality, the treated water is comparable to rainwater and it can be used for irrigation or as non-drinking water for households.

### PROCESS DESCRIPTION

Wastewater flows into the settling space (A) of the inlet section of wastewater treatment plant, where mechanical, floating, and settling impurities are removed and consequently decomposed in an anaerobic process. From the settling section, the mechanically pre-treated water flows to the activation section (C). The activation section is used for the biological treatment process. The membrane module (B) is installed in this space. Its bottom part contains an aeration system used for blowing oxygen into the activation tank and cleaning the membranes.

A pump is situated over the membrane module. Using underpressure, the pump sucks water away through the filtration membranes to the discharge. The accumulation section (D) in the whole plant space is an advantageous facility for accumulating of wastewater and balancing the flow rate on the discharge from the wastewater treatment plant. Excessive sludge (aerobically stabilised) is drawn off by the airlift pump to the settling and sludge space (A) as necessary. Under emergency conditions (clogged membranes, pump failure, etc.), water is directed over the secondary settling tank (E) to the discharge trough.

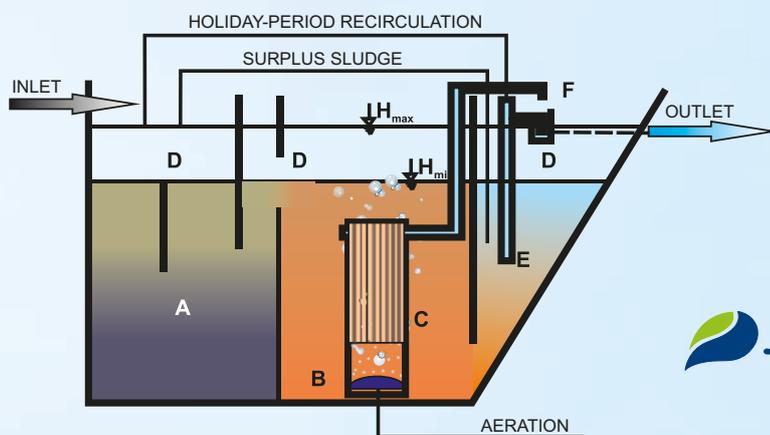
### SERVICING

Servicing works are conducted by authorised service centres.

Membrane maintenance works and setting of drawing excessive sludge off are conducted in pre-arranged intervals (usually annually or biannually) by replacements of the membrane modules for new or regenerated ones. At the same time, the quantity of excessive sludge is evaluated and the excessive sludge draw-off adjusted. For the detailed description and setting methods, see the DESIGN & INSTALLATION SUPPORTING DOCUMENTS.

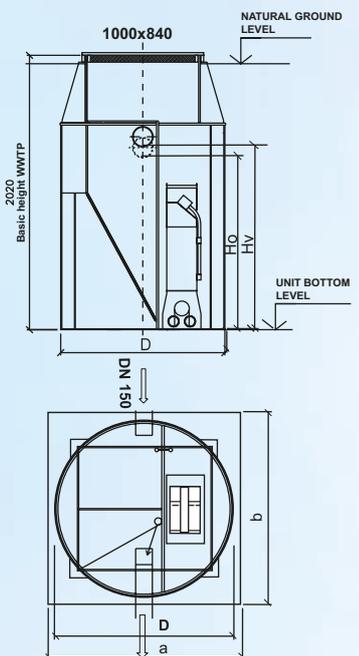


AS-VARIOcomp 5K-20K



#### Explanation:

- |                                 |                        |
|---------------------------------|------------------------|
| A - Settling and sludge section | B - Membrane module    |
| C - Activation                  | D - Accumulation space |
| E - Secondary settling space    | F - Discharge          |



AS-VARIOcomp 5-20K ULTRA

Type	Number of PE	Q (m <sup>3</sup> /day)	BOD <sub>5</sub> (kg/day)	WWTP dimensions (mm)			Inlet (Hv) height (mm)	Outlet (Ho) height (mm)	Weight (kg)	Operating absorbed power (W)
				Diameter D	Max. dimensions a x b	Height				
5K ULTRA	3-5	0,6	0,24	1200	1220 x 1220	2020	1350	1270	195	150
8K ULTRA	6-10	1,2	0,48	1480	1500 x 1500	2020	1350	1270	275	170
15K ULTRA	11-17	2,25	0,9	1700	1740 x 1740	2800	2100	2020	480	390
20K ULTRA	18-24	3,0	1,2	1945	2000 x 2000	2810	2100	2020	730	400

Note: The membrane built-in module can be also used independently for additional equipping of supplied (or already in service) AS-VARIOcomp K and AS-VARIOcomp N units

The guaranteed parameter values correspond to the specific requirements of the Czech legislation, while the guarantees for other countries are specified and offered individually and/or upon request. In doing this, it is issued from the values measured in the type test according to EN 12566-3+A2.

## PLANT INSTALLATION WORKS

The plant is installed to an excavated space on a concrete base plate (it is not necessary to pour concrete around). After this, the plant is connected with its pipe sockets to the sewer system and air supply is brought to the unit from the blower situated outside the plant. The setting of basic functions is already prepared in the manufacturer's factory and apart from the blower connection to the receptacle outlet (mains), no other electrical wiring is necessary. Either the supplier or an authorised servicing organisation puts the plant into service. Due to their dimensions and weight, the types for 5 and 8 people equivalent units can be transported on a trailing truck and their placement into the excavation can be done without a crane.

## WARRANTY

WWTP equipment - 24 months. Plastic shaft - 5 years. ASIO, spol. s r.o. is a holder of the ISO 9001:2000 Quality Certificate. Declaration of Conformity according to the latest European standards is issued for the AS-VARIOcomp type range.

## SERVICING

Warranty and after-warranty servicing works are provided over the whole territory of the Europe.

## AS-GSM – WWTP monitoring

With the aim of checking for correctly functioning processes in wastewater treatment plants, our company has developed monitoring equipment capable of eliminating of their failures and, in the case of membrane WWTPs, informing about the pending necessity of membrane replacement (regeneration). In this way, the plant's operator will be warned in advance. The newly offered options are based on a data transfer system through the GSM network and SMS (text) messages.

## STRUCTURAL STABILITY

The structural stability of the tanks has been designed by the NEXIS finite element computation method for loading requirements of 25 years.

## COMMISSIONING AND TRAINING

These activities are arranged within ten working days from the invitation date. Plant commissioning in the case of AS-VARIOcomp K, AS-VARIOcomp K/PB, AS-VARIOcomp K/PB/SV is free of charge (only the travel costs of the relevant technician for the commissioning are charged). As regards the AS-VARIOcomp K ULTRA types, their commissioning is charged (including the travel costs of the relevant technician for the commissioning are charged).

## SALES AND SERVICING CENTRES

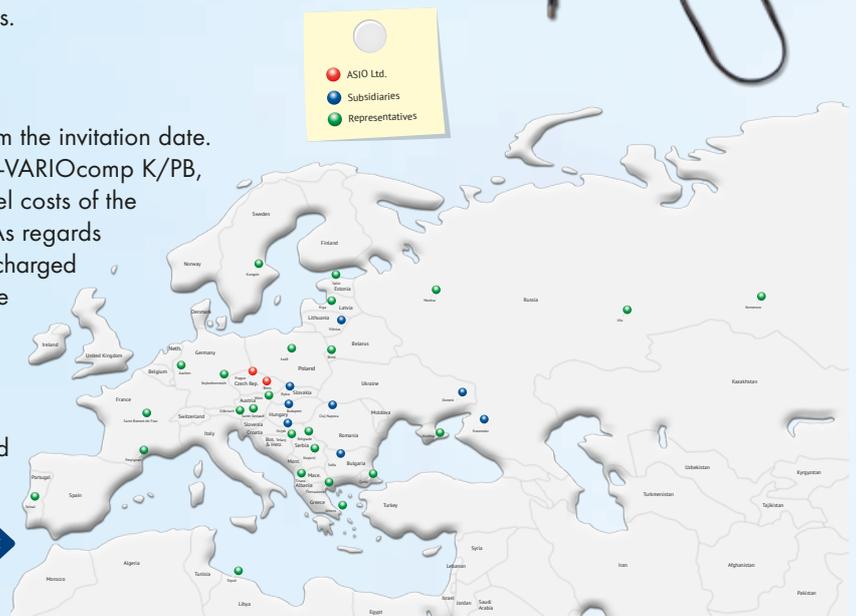
For detailed information about our products and rendered services, please contact our sales and servicing centres (see their list at [www.asio.cz](http://www.asio.cz)) or sales agents or directly at the Sales Department of ASIO Ltd. →

## DOCUMENTATION

Along with the purchase contract, the customer will receive the Design & Installation Supporting Documents. The remaining documents for the plant will be handed over together with the warranty certificate (i.e. the Operations Log, Operating Manual, and Draft Operating Rules). →

## UPON REQUEST WE CAN ALSO SUPPLY (NOT INCLUDED IN THE PLANT PRICE)

- 1) We provide for preparations of the design documents, including negotiations with the relevant authorities
- 2) Free of charge, we can swing the discharge from the WWTP (according to the customer's wish)
- 3) Construction of the blower accommodation shaft
- 4) Extra-height extension piece
- 5) In case of high-level underground water we can supply a double-jacket plant
- 6) Biomass carrier for the activation process (for the "K" type) - additional installation is also possible



VISIT [WWW.ASIO.CZ](http://WWW.ASIO.CZ) TO FIND MORE INFORMATION

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