


TECHNICAL DATA SHEET

CUBE

Status: 12.08.2022

a) Dimensions of the system:

Module	Number of containers/container function/structure		Dimensions
Fish production + supply	4	40' insulated container HC converted for use, including lighting and divided into: - 1 supply - 3 fish production	 12,2 x 9,6 x 2,9 m ~ 120 m ² *

* Due to traffic areas around the system, about 150m³ floor space per cube is recommended for planning.

b) Weight of the system:

		Tare weight	Operating weight
Fish production	Left container	~ 5.6 tons	~ 27.1 tons
	Medium container	~ 5.1 tons	~ 23.1 tons
	Right Container	~ 6.3 tons	~ 40.6 tons
Supply		~ 5.7 tons	~ 9.6 tons

c) Water volumes per system:

Water volume holding tank	~ 55 m ³ ; divided into 3 areas of different sizes by network partitions
Water volume of entire filter technology	~ 15 m ³
Water volume total system	~ 70 m ³

d) Filter technology per system:

Built-in filter technology and auxiliary units:	Circulation pump, drum filter, aerobic biofilter, anaerobic biofilter, sedimentation, flotation (ozone enhanced), compressed air supply, automation, lighting, automatic feeders, ventilation, hygiene station <i>optional:</i> Oxygen generation via mini-PSA systems, temperature control of the water by air/water heat pump system
Performance of the filter technology:	max. 30 kg (feed)/day
Water replacement rate:	~ 1% of the volume of water per day; equivalent to about 700 liters per day (excluding evaporation and water consumption by other cleaning)
Water quality of the inlet water:	Fresh water with drinking water quality *
Salt consumption for the production of artificial seawater:	5,540 kg (salt) / year 1,400 kg for salting up at the first start of the system
Salinity in water: **	~ 2% (= 20 PSU)

* Other water sources, e.g. well water, must be checked for quality by prior water analysis.

** The salinity varies depending on the selected fish species.

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e) Sensor technology per system:

Built-in sensors: *	3x level sensor 2x oxygen measurement 1x conductivity measurement 3x redox measurement 4x temperature measurement 1x pH measurement 2x ozone measurement
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* There are not reliable sensors for each of the operational parameters of the system. Therefore, water values such as nitrate, nitrite, ammonium/ammonia, phosphate and water hardness must be measured manually at regular intervals using chemical test kits using a color change process.

f) Automation technology per system:

Automation technology/software: *	<ul style="list-style-type: none"> ▪ Programmable logic controller, which records the sensor data and converts it into its own control algorithms and control commands ▪ Fully executable software tailored to the respective fish species and stocking model ▪ Mobile radio module for integrating the system into the mobile network and data transmission * ▪ Remote maintenance access for system monitoring <p><i>optional:</i></p> <ul style="list-style-type: none"> ▪ Cloud-based long-term data storage ▪ Access to long-term data via personalized dashboard ▪ Central monitoring and management of many production units, even at different locations
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* A corresponding mobile and data tariff must be concluded and provided by the customer. The corresponding SIM card is used in the communication module in the control cabinet.

g) Annual production volume per system:

Average production loss:	~ 1%
Annual production volume:*	~ 7.8 tons/year (raw fish)

* The annual production quantity may vary depending on the fish species used and on the individual stocking model.

h) Working hours for plant operation:

Annual working hours:*	~ 400 h/year
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*The working time includes all activities that are necessary to operate the plant and to maintain the plant's operability. These activities are summarized in a checklist for plant service. The checklist shows days with very little routine work, so that the working time on these days is only a few minutes, but also days with more complex cleaning and maintenance work, so that the working time can be 2-3 hours. The same applies to days with work such as setting seedlings, as well as transferring them to the next larger basin section and possible intermediate sorting of cohorts.

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i) Electrical power per system:

Electrical connection:	1x three-phase current 400 V; 50 Hz; 63 A Cable is routed inwards through opening in the container (strain relief screw connection) and placed in the control cabinet.
Nominal connected load:	17 kW (in the basic configuration); max. 22 kW
Average power consumption:*	~ 5.5 kW
Average power consumption:	~ 50.000 kWh/year

* The actual power consumption deviates significantly from the specified connected load because filters and auxiliary units are demand-driven and therefore neither under maximum power nor in continuous operation. Under partial load, the specified devices consume significantly less power than their specified maximum connected load.

j) Transfer points and requirements for fresh water, waste water and oxygen

Attachment fresh water:	D32 mm; open PVC pipe; Connection fitting flexible (e.g. inch internal threads or external threads possible)
Water quality:	tap water
Pressure demand:	min. 2 bar
Flow demand:	min 2,5 m ³ /hour
Average consumption: *	approx. 565 m ³ /year

* The actual water consumption deviates depending on individual use.

Attachment waste water:	D110 mm; open HT pipe
Average amount: **	approx. 565 m ³ /year

** The actual amount of waste water is directly connected with fresh water consumption. Therefore, the waste water amount deviates depending on individual use

Attachment external oxygen supply: ***	D50 variable passage; hose line provided by the customer is routed inwards through this opening in the container and connected to the built-in oxygen system
Oxygen quality:	technical oxygen; purity ≥ 99,5 % The recommendation is to provide at least two oxygen bundles (12x50l 200 bar or 300 bar). Alternative sources of oxygen (e.g. LPG tank systems) are also possible as long as all requirements are met.
Pressure demand:	min. 3 bar
Flow demand:	min. 30 l/min
Average oxygen consumption:****	ca. 10 l/min bzw. ca. 5.500 m ³ p.a.

*** A general oxygen supply for the system has to be provided by the customer.

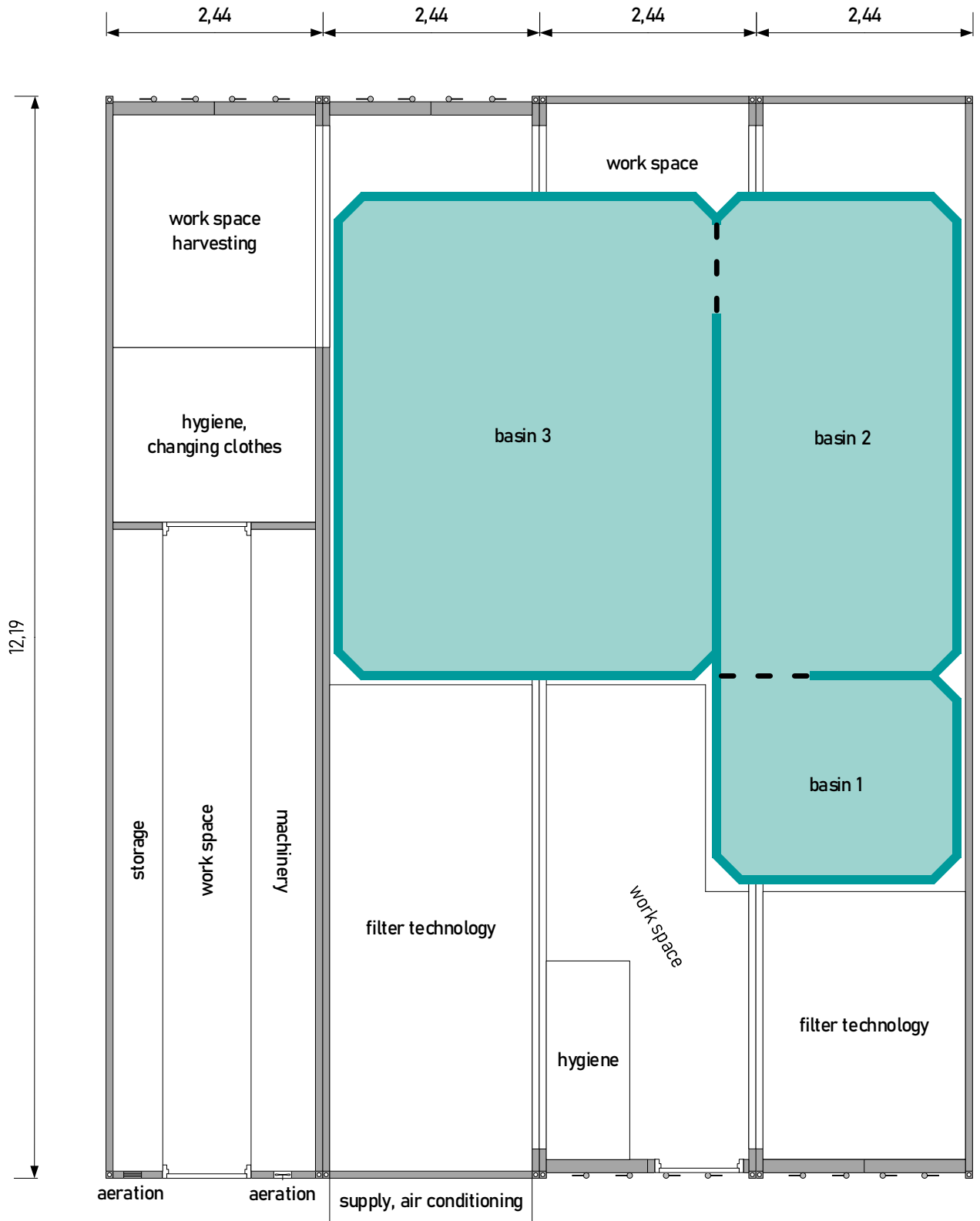
**** Actual oxygen consumption may vary based on system usage. This includes the base load coverage as well as the peak load or emergency oxygen supply. The base load can be covered by an oxygen generator by purchasing the "oxygen generation" option. (ozone generation has a separate oxygen generation).

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k) System diagram of the Cube:

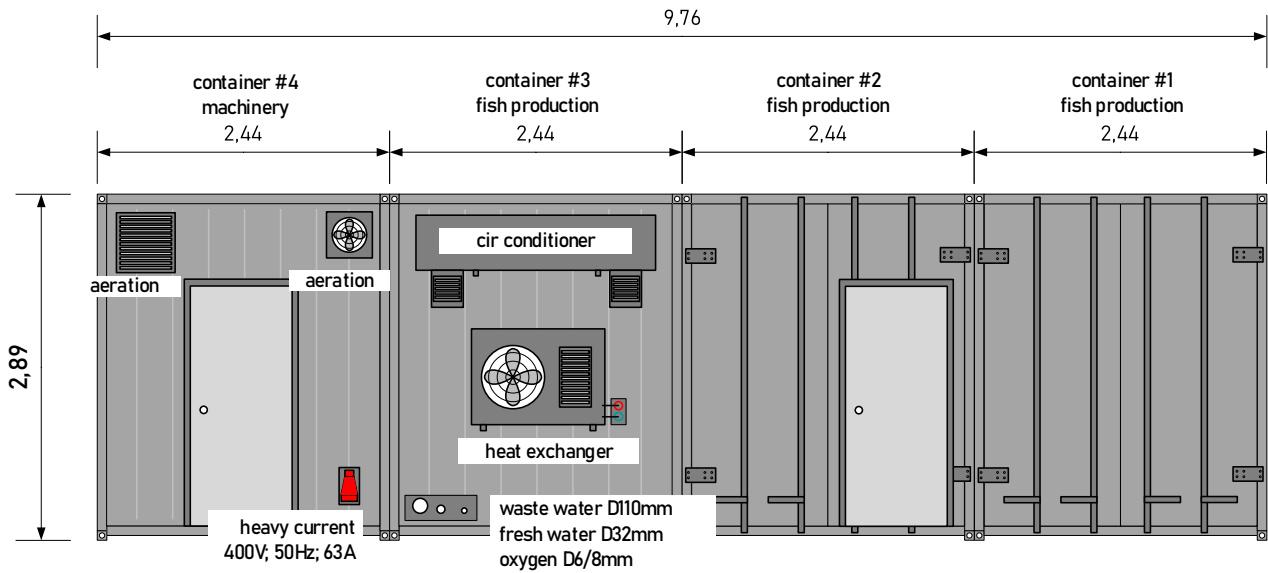


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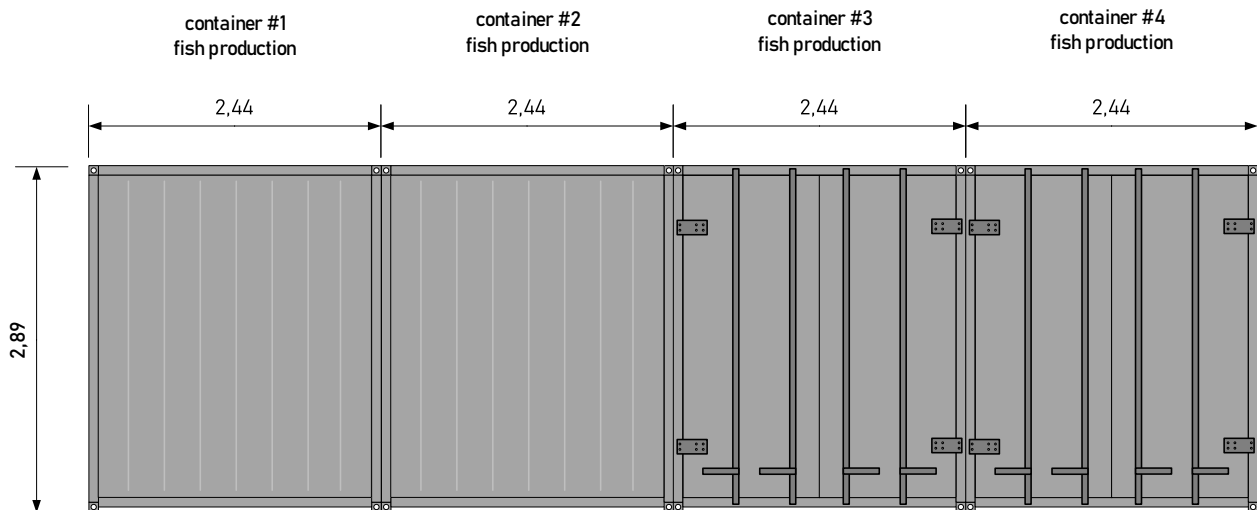
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I) Exterior views of the Cube:

View A – Front view (main entrance)



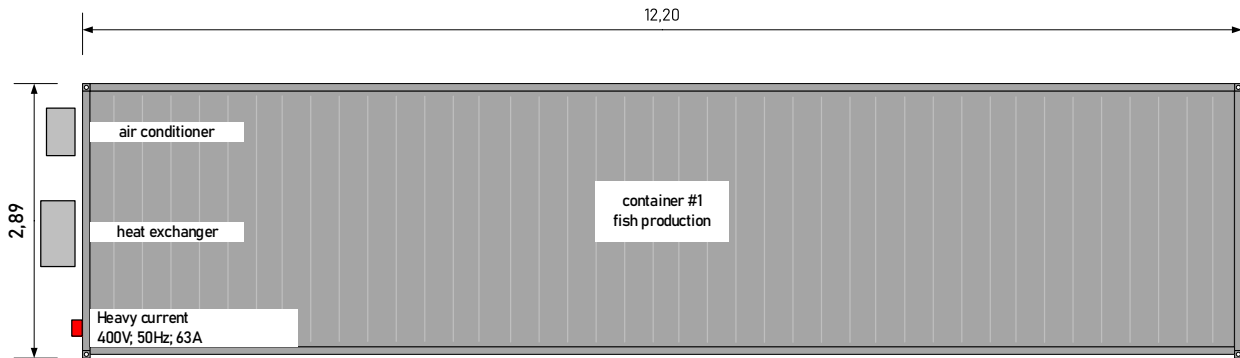
View B – Rear view



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View C – Side View (View of Container#1)



View D – Side View (View of Container #4)

