JÄGER GROUP

CASE STUDY

REVOLUTION OF THE STRIP DIFFUSER

DER SMART STRIP DIFFUSER

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STARTING POINT

LIFE CYCLE OF A STRIP DIFFUSER

In biological wastewater treatment, bacteria are used to degrade carbon and nitrogen in the wastewater by providing oxygen. The oxygen supply to the wastewater is provided by the input of compressed air through membrane diffusers fixed to the bottom of the aeration tank.

By introducing the air, not only oxygen is released into the wastewater. It also causes precipitation, formation of films and crusts on the membranes and in the area of perforation. This tends to reduce the oxygen transfer of the system and the headloss increases. Depending on the waste water characteristics and the operating mode of the system, each aeration membrane reaches a condition in which the replacement is reasonable from an economic point of view. It must be replaced at the latest when the membranes fail mechanically. Up to now, in the case of plate and strip diffusers, the entire diffuser was replaced.

Replacing the membranes of plate and strip diffusers was not possible or only possible with considerable time investment. Jäger has now solved this issue.

SOLUTION

DEFINE GOALS TOGETHER

Together with operators, contractors and environmental engineers, the product specialists at JÄGER have defined the main objectives of the new device:

Reduction of operational costs

- ✔ Fast, safe and cost-effective replacement of the membrane on site
- ✔ Fast safe and cost-effective assembly
- ✔ Single-variety recycling

Reduced enviromental impact and optimized sustainability

- ✔ Significantly less plastic waste and no need for glues
- ✔ Recycling materials for the base structure
- ✔ CO_2 footprint of the product is reduced by about 25%
- ✔ Base structure as local content components is possible
- ✔ Basic structure made of various materials is possible
- ✔ Low freight costs due to small packing volume

SOLUTION

THE FLEXIBLE MEMBRANE

The patented solution is amazingly simple: the membrane is designed as a continuous airtight double membrane and is fitted with an air connection. The air introduced between the membranes can only escape via the microperforation of the upper membrane. A base body is no longer required to form an airtight area. As a result, the membrane is completely decoupled from the base structure - a feature unique to this diffuser type.

With the new SSD, the base structure is only used to fasten the membrane. The connection is guaranteed by lateral guides according to the tongue and groove principle. The membrane can be pushed into the guides of the basic structure in a few seconds. This can be mounted on the tank floor in a height-adjustable arrangement.

The basic structure can be made of plastic or metal. The strip diffuser is supplied fully assembled or in individual parts. If only the membrane is to be supplied, it can be rolled up in a spiral form. This drastically reduces shipping weight and volume. On customer request, the basic structure / support guides can be produced in the country of destination, so the local content required in many projects can be achieved.

The installation of the membrane can be carried out on the floor of the aeration tank as the last step of the installation of the aeration system. This prevents the membrane from being damaged by preceding transport and installation steps.

The fastening of the membranes via the lateral guides makes a quick, inexpensive and safe installation and replacement of the membrane possible.

The foils of the membrane are made of the same material, so that single-variety recycling is possible.

RESULT

WHAT ARE YOUR ADVANTAGES?

For the Designer:

- High oxygen efficiency with low head loss
- The basic structure can be manufactured locally, e.g. simple steel rails can be used

For the Contactor:

- Easy to handle
- Small packing units
- Low risk of damage, robustness
- Own added value with suppliers who operate a stainless steel production
- Manufacture of own mountings possible
- Use of steel rails is possible

For the Operator:

- High oxygen efficiency with low head loss
- low costs and little effort for replacement
- Membrane replacement is possible in a few seconds

For Everybody:

- avoiding plastic waste through further use of the basic structure
- Use of recycled / recyclable materials
- CO_2 footprint of the product is reduced by about 25%
- No glues
- Little buoyancy for the use on liftable frame construction

CONTACT

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