



## Successful Replacement of Rotary Brush Aerators with FUCHS OxyStar® Aerators

The Waste Water Treatment Plant Goseong in South Korea is composed of Oxidation Ditches, originally designed with brush aerators. In total there are two double oxidation ditches, each having one ditch for aeration and one anoxic ditch.

The Goseong Sewage Treatment Plant faced the following issues with the existing equipment:

1. Problems of sludge accumulation at the bottom of the basin.
2. The brush rotors require periodic maintenance and lubrication, and if a large amount of sewage flows in, the depth of the rotor's bracing is increased and the load on the rotor increases, resulting in failure.
3. In case of brush rotor failure (bearing, blade damage), the period for repair is very long (several months) and replacement (lifting, disassembly, and assembly of the brush rotor) is very difficult.

### Technical Data

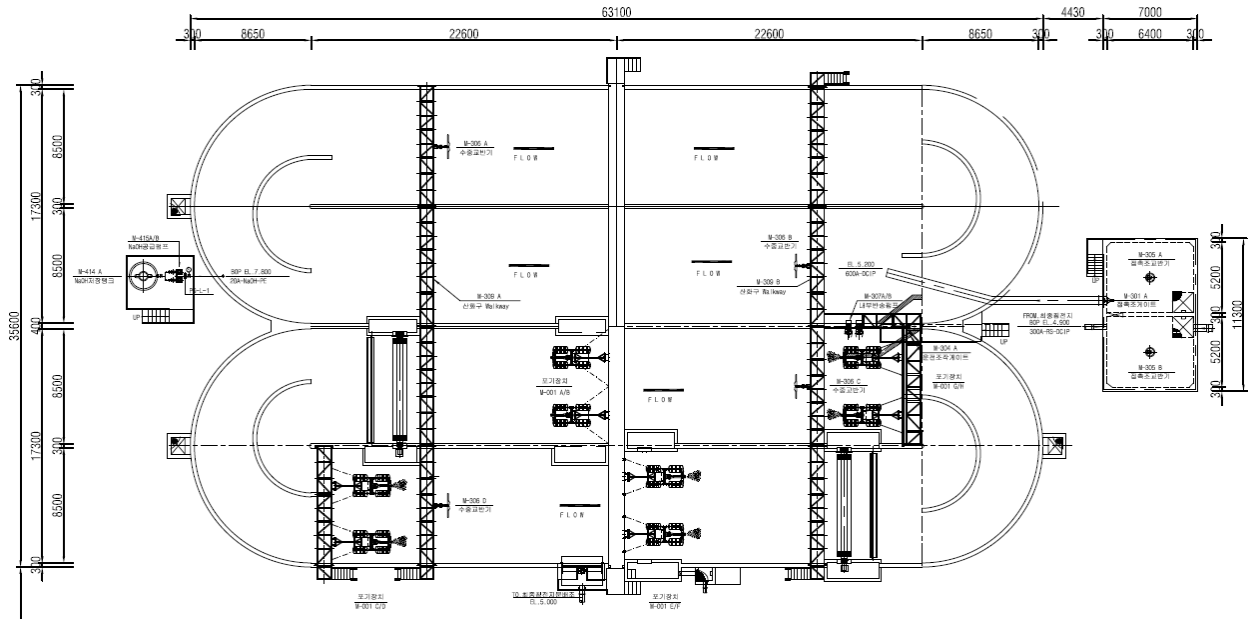
Design capacity per tank:	13,505	m <sup>3</sup> /day
BOD <sub>5</sub> concentration (actual):	150	mg BOD <sub>5</sub> /l
TSS concentration:	140	mg BOD <sub>5</sub> /l

### Previous aeration equipment per tank:

8 pcs Brush aerator (1 Basins : 4 pcs ) 37.0 kW (each)

### Tank dimensions:

Water level:	3,55 m
Length:	63.0 m
Width of channel:	8.5 m
# Channels per basin:	4
# Basins:	2 (1 Aerobic + 1 Anoxic Zone)



### Oxidation ditch Basin 1

In 2018 one set of brush aerators was replaced with OxyStar® OS 30 units. The brush aerators were replaced with one aerator and one spare aerator per basin, so there is no problem with oxygen supply even if another one fails or has a problem. With the use of multiple OxyStar® aerators the oxygen supply can easily be adjusted to the load by turning individual units off during low load phases. This allows the plant to be more energy efficient compared to brush aerators, that have to run continuously.

OxyStar® aerators, with the directed mixing, are the ideal solution for oxidation ditches because they achieve mixing in further depth, while brush aerators only mix at the surface.

Due to the successful implementation and positive results, all brush aerators have been replaced successively with OxyStar® aerators until 2021.

Apart from combining excellent aeration and mixing with a sturdy design OxyStar® Aerators also offer easy installation. This is a valued aspect for retrofits.

After installing a total of twelve sets of FUCHS OxyStar® Aerators (30 hp / 22 kW each) in the years 2018 – 2021, the customer is very appreciative.



Decommissioned brush aerators (right) and new OxyStar® Aerators (left)!



FUCHS OxyStar® Aerators are available in various sizes. They can be mounted on a bridge, wall or floats. Due to their sturdy design OxyStar® Aerators are highly reliable and almost maintenance-free.

## Advantages of FUCHS OxyStar Aerators at a glance

- Efficient aeration
- High mixing and circulation capability and flexibility
- Outstanding quality of material and production
- Almost maintenance-free (no lubricating or greasing required)
- Versatile and simple modes of installation
- Endling and installation due to low weight
- No spray water (No sprayed pathogens and surrounding structures always kept clean)
- Low noise emission
- Energy consumption reduction  
(Existing brush rotors operate for mixing regardless of DO concentration, so they must operate without stopping) The brush rotor does not stir up to the bottom of the base, so a lot of sludge is deposited and the treatment efficiency is lowered.

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