

Save more than Rs 3.5 lakhs with Sulzer submersible mixers

Background

One of India's largest 4-wheeler manufacturers realised huge savings in energy consumption – as much as 40% – when it replaced the air blowers in their effluent treatment plant (ETP) with Sulzer submersible mixers.

Challenges

The factory has an ETP to treat the wastewater generated at various stages of the manufacturing process.

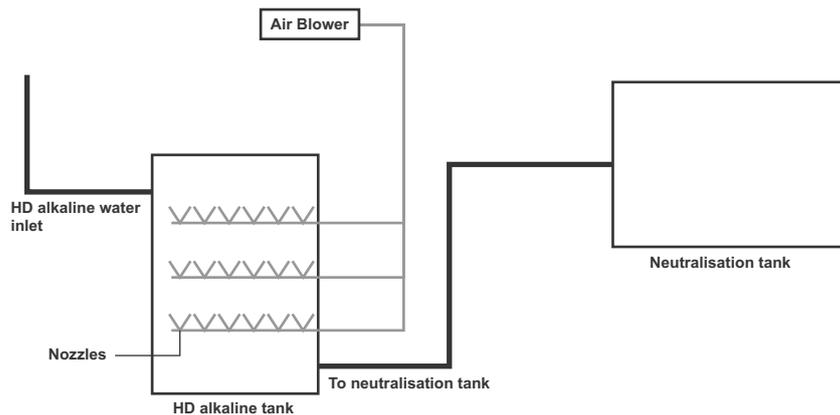
The ETP's tanks had air blowers to feed high pressure air through nozzles into the tanks. In theory, this was to mix the sludge which would otherwise settle at the bottom of the tanks. In practice, however, the nozzles choked frequently and required regular maintenance, which meant downtime of the ETP. The blowers' energy consumption was quite high – more than 50,000 kWh per year!

Furthermore, the maintenance could be carried out only when the tanks were empty, which was possible only once in a year, making the system ineffective. The management wanted a solution to these problems, and quickly. After researching various options, the company approached A.T.E. for a solution. A.T.E.'s engineers studied the problem and suggested an innovative, cost-effective, and energy efficient solution.

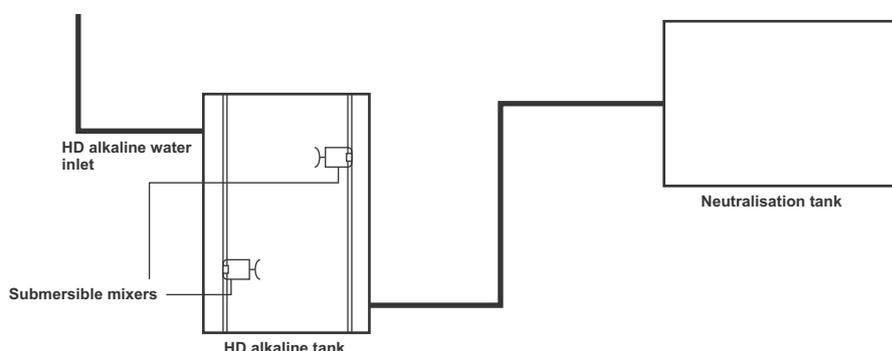
The solution

A.T.E. used Sulzer mixers to keep the sludge particles suspended, preventing them from settling down at the bottom of the tanks. The type of mixer selected was a compact and versatile 3-bladed mixer, designed to achieve high thrust and high flow capacity in the axial direction, which was installed in the high density (HD) alkaline tanks of the ETP.

Old system



New system



Result

▪ **Significant energy saving:**

Energy consumption by air blower/year	Energy consumption by mixer/year	Total energy saving/year
50,008 kWh	30,005 kWh	20,003 kWh

((12-7.2) Ampere × 412 Volt × 0.80 pf × 1.732 × 20 Average hours × 365 days = 20,003 kWh, Average per unit cost – Rs 17.84 / unit)

▪ **Cost saving:** The operational cost was reduced by Rs 3,56,856/year

▪ **Environmental benefits:** Reduction in carbon emissions

Carbon emission with air blower/year	Carbon emission with mixer/year	Reduction in carbon emission/year
38.5 tons	23.1 tons	15.4 tons

▪ **Additional improvements:**

- Adequate sludge mixing, thus avoiding sedimentation; hence, lesser maintenance
- Unlike the air blower nozzles which needed regular cleaning, the propellers of the mixers are self-cleaning, thus ensuring reduced downtime.



The customer was highly delighted with the incredible results achieved with the replacement of air blower with Sulzer submersible mixer.