

CASE STUDY

NIKUNI PUMP DELIVERS LONGEVITY & PERFORMANCE

CUSTOMER: Ceiling Tile Plant, Minnesota
DATE INSPECTED: January, 2003
PROJECT SCOPE: To achieve reliable dissolved air generation

OVERVIEW

This ceiling tile plant was experiencing rapid failure rates of its Edur air dissolving pumps. These pumps would require major reconstruction every 1-3 months. One 30-HP M80FP Nikuni pump was installed in place of the two 30-HP Edur pumps. Not only is the pump lasting (to date 6 months without incident), the one pump is providing better performance than the previous two pumps combined. The results have yielded significant maintenance and energy cost savings.

PROBLEM

Several years ago, this ceiling tile plant installed a large Dissolved Air Flotation system. It was installed with three 30-hp Edur pumps (one being a fully installed back-up pump). The water being processed contained perlite and a sand-like material called "shot." These materials caused the pumps to wear prematurely. The problem was significant because, not only did the mechanical seals crack, but the shaft, impeller bushing and casing all experienced tremendous wear requiring replacement. A picture below shows the wear experienced on the diffuser blades of the pump. Replacing all these parts every 1-3 months obviously contributed to significant maintenance costs. The manufacturer of the pumps did not provide any real answers.



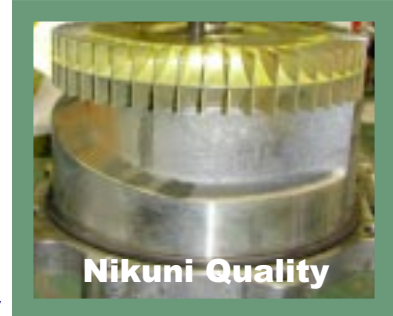
RESEARCH

The customer and World Water Works investigated different types of seals, coatings for the pump, and a different water source. None of these options provided much, if any, improvement in pump longevity.

Next, World Water Works conducted a thorough investigation into different types of air dissolving technologies. Four technologies were chosen for side-by-side testing on the pilot scale: Edur, Nikuni, Travaini, and Sihi. The NIKUNI pump demonstrated not only the most consistent and finest quality micro-bubbles, it proved to be significantly more durable than the other technologies.

The reason for such durability is easily understood comparing the **NIKUNI vs. the Edur.**

- **PUMP SPEED:** 1750 rpm vs. 3500 rpm
Slower rotation equates to less wear
- **PUMP STAGES:** 1 stage vs. 2-3 stages
Fewer stages mean fewer moving parts
- **PUMP TOLERANCES:**
Non-critical vs. very critical
The Nikuni pump generates pressure from the impeller inducing three different forces on the water. The Edur pump and similar technologies generate pressure through a tight tolerance between the impeller and the casing. Thus, in the Edur pump, the casing becomes a wearable part.
- **PUMP QUALITY:** Ball Bearings vs. Brass Bushings
The NIKUNI pump uses ball bearings to support the shaft. The Edur pump uses a small brass bushing. Comparing the significant difference in shaft diameter also shows the difference in expected durability.
- **SEAL OPTIONS**
The NIKUNI pump offers both a mechanical seal as well as a packing gland option. This flexibility is important in such circumstances.



SOLUTION

Based upon this information, the ceiling tile plant elected to install the NIKUNI pump. It was found that one (1) 30 HP NIKUNI pump provided comparable quantity of air as two (2) 30 HP Edur pumps. This factor alone yielded a savings of over \$10,000/year! The pump has been functioning for over six months at this time without incident. This has provided significant reduction in maintenance costs. The NIKUNI pump has provided the much needed improvements.

FURTHER INFORMATION

World Water Works exclusively imports the Nikuni pumps from Japan. If you would like further information about the Nikuni Pump, please call World Water Works at 1-866-NIKUNI-1.