

SCD Probiotics

Case Study Summary – Turek Poland

Wastewater – Sludge Reduction

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|----------------------|---|
| Industry: | City Government, Public Works |
| Application: | SCD Probiotics Technology used to improve the efficiency of urban wastewater treatment facility |
| Customer: | Przedsiębiorstwo Gospodarki Komunalnej i Mieszaniowej |
| Where: | Turek, Poland |
| When: | Since 2005 |
| Products: | Customized solution using SCD Bio Klean™ |
| SCD Licensee: | ProBiotics Polska |

Customer Problem

The wastewater treatment plant in Turek has a designed daily capacity of approximately 15,750 cubic meters/day. Daily influence reaches from 8,500 - 10,500 cubic meter / day.

As is common in many wastewater treatment facilities, the customer faced numerous challenges with the operational efficiency of the system including wastewater quality, foul odors negatively affecting the surrounding communities, difficulties with sludge removal, difficult working conditions for staff, and clogged drains due to sludge.

Goal

All outflow standards established by regulations must be met; further reduction of baseline outflow results are desired (see **Table I** and **Table II** respectively).

Table I: Environmental Regulation Standards

| Parameter | Unit | Outflow Standard |
|--------------------------------|--------------------|------------------|
| Chemical Oxygen Demand (COD) | mg/dm ³ | ≤ 125 |
| Biological Oxygen Demand (BOD) | mg/dm ³ | ≤ 15 |
| Total Suspended Solid (TSS) | mg/dm ³ | ≤ 35 |
| Nitrogen (N) | mg/dm ³ | ≤ 15 |
| Phosphorous (P) | mg/dm ³ | ≤ 2 |

Table II: Mean Wastewater Characteristics (2004) Prior to SCD Probiotics Applications

| Daily inflow [m ³ /day] | Production [t/year] | | | Inflow [mg/dm ³] | | | | |
|---------------------------------------|---------------------|-------|--------|-------------------------------|-------|-------|------|------|
| | Screenings | Sand | Sludge | TSS | COD | BOD | P | N |
| 8435 | 158.1 | 107.8 | 711.0 | 237.2 | 802.6 | 534.5 | 13.5 | 60.1 |
| | | | | Outflow [mg/dm ³] | | | | |
| | | | | TSS | COD | BOD | P | N |
| | | | | 16.4 | 58.4 | 8.1 | 1.1 | 11.3 |

Methodology

SCD Bio Klean™ is added to the sludge once it is separated from the water inflow. A portion of sludge is re-circulated to the system at the beginning of the process.

Results

Significant improvement in all outflow parameters occurred (40 - 65% reduction in outflow parameters compared to mean baseline parameters).

Table III: Mean Wastewater Characteristics (2008) After SCD Probiotics Application

| Daily influence [m ³ /day] | Production [m ³ /day] | | | Influence [mg/dm ³] | | | | |
|--|----------------------------------|-------|--------|---------------------------------|------|-----|------|------|
| | Screenings | Sand | Sludge | TSS | COD | BOD | P | N |
| 8222.0 | 11.7* | 105.0 | 741.1 | 318.6 | 970 | 458 | 13.3 | 64.6 |
| | | | | Effluence [mg/dm ³] | | | | |
| | | | | TSS | COD | BOD | P | N |
| | | | | 5.0 | 35.8 | 2.7 | 0.5 | 5.6 |

(cont.)

Results (continued)

The following benefits also were achieved as a result of the SCD Probiotics application, having a positive impact on the operational and financial performance of the wastewater treatment facility.

1. The structure of the sludge changed from greasy to porous. Consequently, transportation of the sludge became easier.
2. The pathogenic microbes were considerably decreased, accounting for the removal of foul odor and improvement of sanitary working conditions.
3. The amount of utilized coagulation agents was reduced by 35 - 40%.
4. The lime previously applied to the sludge was entirely removed from the hygienization process.
5. The pontoons formerly used to cover the open digestion chambers are no longer in use.
6. The clogging of the drainage system at sludge deposit sites was eliminated.
7. The interest level in applying sludge for farming needs and soil restoration significantly increased.

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