

## CASE STUDY

# Wastewater Discharge



**Customer:** ENKA İnşaat ve Sanayi A.Ş.  
**Location:** Yajva District, Perm Region, Russia  
**Process:** Combined Cycle Power Plant

Overhead view of power plant, with Kama River in background

**APPLICATION:** Hydrocarbon removal from wastewater for discharge

### OBJECTIVES OF THE TREATMENT

- Remove hydrocarbons to below 0.3 mg/L as per local requirements
- Protect sensitive ecosystem in surface water discharge area
- Continuously monitor hydrocarbon concentration in effluent

### DATA & CONCLUSIONS

- Inlet oil content from Turbine Lube Oil avg. 8 ppm
- Outlet oil content below detectable limits
- Highly variable solids concentrations dependent on time of year

### FLOW RATE:

- Design – 180 gpm

### CONTACT / REFERENCE:

Upon Request

System Performance Sample:  
Inlet (R) - 6.9 mg/L, Outlet (L) - < 0.1 mg/L



## MYCELX DELIVERED:

**Complete skid mounted two stage redundant polishing system**

**Low Shear Process Pumping package**

**>99% removal of hydrocarbons, reliable operation over 9 yrs. operation**



## CHALLENGE

- Power plants generate wastewater that can be contaminated with hydrocarbons from lube oils
- High pressure and heat stress loads can cause the hydrocarbons to become extremely emulsified in water phase, along with mixing of other water sources containing detergents
- Location of installation specified waste water discharge to the surface of the Kama River under strict environmental limit because of aquatic wildlife spawning grounds.
- All equipment had to meet rigorous standards for Russian power equipment and have Russian language manuals and documentation.

## SOLUTION

MYCELX provided a two stage treatment solution driven by patented technologies for an optimized solution.

MYCELX provided a prefabricated skid to drop into place at site, requiring minimal site labor. Non-shearing charge pumps were included in scope of supply

Primary treatment removes neutrally buoyant hard particles covered with oil, like pipe scale and dust, to 5 microns in size.

Secondary treatment by MYCELX polisher removes oil and hydrocarbons larger than 0.5 micron in diameter. Removing all oil to this level shows non-detect by the oil monitor, which is capable of PPB levels of detection from UV Fluorescence.



5 stage filtration with redundancy for complete oil removal

## IMPACT

The MYCELX solution delivered commercial and environmental benefits for the power plant. Benefits include:

- **Complete oil removal** to protect sensitive aquatic life in surface waters
- **Reduced Footprint** compared to competitors (30% of footprint of GAC absorber)
- **Efficient use of pumping** having scope of charge pumps for filtration and piping to discharge point allowed proper specification of non-shear pumps
- **Seamless remote monitoring** saves labor from check ups etc. and frees operation to monitor operation from common control center



Integrated controls with on-line oil in water monitor. Note discharge level shown – 0.068 ppm or 68 ppb.