



80 MLD TREATMENT PLANT UPGRADED WITH ORGANICA FCR

Municipal WWTP Upgrade – Budapest, Hungary

CHALLENGE

When constructed in 1966, the South Pest wastewater treatment plant location was considered the outskirts of Budapest. However, due to “urban sprawl”, the neighbourhood has grown in around the wastewater facility. Increased development has resulted in dwellings near the site, as well as increasing loads on the facility, creating both odour and operational issues. In addition, over the years the owner installed an anaerobic digester converting sludge and external food waste into biogas. The highly concentrated dewatering return liquor of the process significantly enhances the load on the biological treatment process. In 1999, the treatment plant installed a post-secondary clarifier nitrification-denitrification system in order to meet tighter ammonia consent. However this did not fully solve the capacity issues, resulting in higher operating costs, occasional extreme foaming, and foul odours affecting neighbourhoods around the property. The facility had to find a way to resolve all of these issues in the limited space available on the site.

Organica FCR is an ideal upgrade solution for aging WWTPs

RESULT

The FCR upgrade successfully resolved the secondary treatment-related issues of the South Pest wastewater treatment plant. It enhanced overall reactor efficiency, providing an average 50% reduction in effluent total nitrogen. This results in lower nitrogen loads on the tertiary treatment units, saving the facility significant costs. Further, the upgraded reactors require over 50% less aeration, also resulting in energy savings. The sludge production is reduced by 25% relative to conventional ASP, which enables the operator to receive and process more food waste in the waste to energy plant, generating substantial additional revenues. Finally, the enhanced appearance of the WWTP has allowed the client to open up to the public for weekly tours, which has significantly improved relationships with its clients.

SOLUTION

Initially the client evaluated various alternatives for upgrading the facility. In 2009 Organica was selected as the most economic choice to upgrade the treatment plant, and was awarded a design contract (followed by an equipment supply contract in 2011) for its Organica FCR solution. As Organica’s solution increases biomass available for treating waste, the facility will now be able to meet the effluent limits in the same space despite a projected 40% increase in biological load over the next five years. Additionally, the fixed biofilm results in an extended sludge age (SRT), improving nitrogen removal in the biological stage. Due to reduced suspended solids in the system, aeration requires less power, and secondary clarifiers receive decreased solids loadings. The aesthetics, accessibility and odourless operation of Organica’s design also serve to improve relations with the client’s customer base in the surrounding neighbourhood. Upgrading of the three biological reactors was accomplished in phases, ensuring the facility remained fully functional through the project without interruption of service or violation of effluent consents.



“Due to the upgrade, treatment efficiency improved significantly, and botanical gardens replaced the wastewater pools. Consequently, the WWTP discharges much cleaner water, and zero odours.”



György Palkó
General Manager of Budapest Sewage Works Pte Ltd.

Location
Budapest, Hungary

Project Scope
Municipal WWTP upgrade, design, build

Operating since
2012

Footprint
17 ha

Hydraulic Capacity
80 000 m³/day
(21 MGD)

Community Served
500 000 people

THE ORGANICA SOLUTION

Organica Water is a global provider of innovative solutions for the treatment and recycling of wastewater. The Organica solution is an Integrated Fixed-Film Activated Sludge (IFAS) system utilizing a fixed-bed biofilm that grows on root structures, all housed in a compact, odourless, botanical garden-like facility.

The resulting solution offers a significantly reduced physical footprint, zero “psychological” footprint, and lower operational and infrastructure costs when compared to other activated sludge-based wastewater treatment solutions.



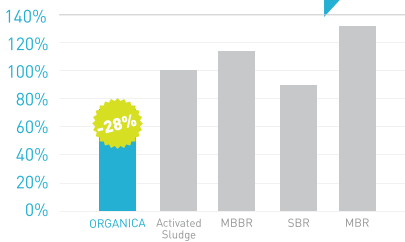
Cost savings on CAPEX

» Reduced civil costs



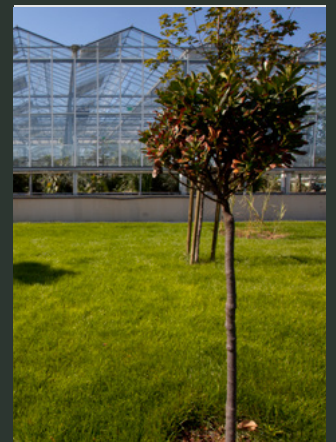
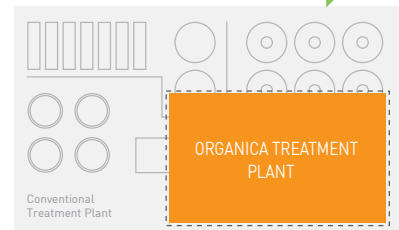
Cost savings on OPEX

» 30%+ lower energy consumption
» 30%+ less sludge production



Footprint Savings

» 50-75% smaller geographic footprint



PERFORMANCE SUMMARY OF THE SOUTH PEST FACILITY				
Parameter	Influent (mg/L)		Effluent (mg/L)	
	Design	Actual	Limit	Actual
COD	737	452	60	57
BOD	381	226	20	14
TP	14	8.6	1	0.7
TSS	140	106	35	9.4

2013-2014 averages from monthly spot samples (following primary clarification)

RELIABLE AND RESILIENT

As a result of their unique ecological diversity, Organica facilities are not only able to meet the strictest effluent limits, but also are highly resilient to changes in influent conditions. This is especially important where industrial flows can unpredictably mix with municipal flows and threaten biological processes. The enhanced diversity of the Organica solution means the system can adapt to rapid spikes in influent much more effectively than other approaches. And because almost all of the biomass is fixed on root structures, oxygen transfer is much more efficient, resulting in significantly lower energy requirements. All of these benefits make the Organica solution ideal for nearly any application.