

MODERNIZATION OF THE SECONDARY CLARIFIERS

Novosibirsk, Russia

PROJECT	Modernization of secondary clarifiers
CUSTOMER	MUE «Gorvodokanal» Novosibirsk
OBJECT	WWTP Novosibirsk
COMMISSIONING	summer 2019

INTRODUCTION

The municipal company of the city of Novosibirsk "Gorvodokanal" cleans and supplies about 600 000 m³ of drinking water and transports and disinfects about 500 000 m³ of sewage per day. Among consumers, more than 1.8 million residents of Novosibirsk and the region. About 70% of the services provided for them. The remaining 30% are industrial companies. The metropolis ranks third in terms of the length of the water supply system in Russia. Gorvodokanal manages about 3,500 km communications, three water intakes, three pumping and filtering stations and 69 sewage pumping stations and also WWTP.

Since 2007, the company has been implementing large-scale investment programs for the technical re-equipment of treatment facilities. The company has been cooperating with the EKOTON Industrial Group since 1997, during which time mechanical treatment complexes (about 20 rake bar screens, screw conveyors and screw compacting presses) were modernized, penstocks were installed and the aeration system was re-placed. As part of the next stage of modernization in 2019, two sets of equipment for radial secondary clarifiers were delivered – radial suction scrapers IRVO-40.

PROJECT GOALS

The main objective of the project was to increase the efficiency of sludge removal from secondary clarifiers. The technological condition of the existing equipment at the time of the start of work was unsatisfactory - the suction pumps installed in the 1980s were used. The condition of concrete structures also left much to be desired.

The replacement of equipment was supposed to lead to an improvement in cleaning performance, a reduction in energy consumption, as well as a stable and proper process management.

PROJECT IMPLEMENTATION

At the request of the Customer, two radial suction scrapers IRVO-40 with the following design features were produced at the EKOTON plant:

- an enlarged sludge pipe (sludge collector) with a diameter of 630 mm was used;
- a new reinforced system of rods (fasteners) was applied between the truss of the bridge and the silt collector;
- all-wheel drive trolley with planetary gear type;
- the control unit is equipped with a Modbus RTU data transmission system.

An additional challenge was that, at the request of the Customer, we independently installed the equipment simultaneously with the construction work of the concrete park of the clarifier and the replacement of the discharge tray. Due to the repair of the side part of the clarifier, it was not possible to drive up standard lifting equipment; a crane with a lifting capacity of 250 tons was used. In order to meet the deadlines and not to stop the installation work, one of the two bridges had to be temporarily put on an unfinished side of the clarifier.



RESULTS AND CONCLUSIONS

Despite the difficulties that arose during the installation of the equipment, it was possible to complete the commissioning in accordance with the schedule.

The use of modern technological solutions in the design of equipment ensured high efficiency, energy efficiency and reliability. As a result of the replacement of existing radial sludge scrapers at the WWTP "Gorvodokanal" in Novosibirsk, all the necessary customer requirements related to maintenance and repair were achieved.