

# "Atyrau Su Arnasy" Public State Enterprise: Replacement of 90% of obsolete pumping equipment with Grundfos through leasing.

## The site

Atyrau – the oil capital of the Republic of Kazakhstan, one of the fastest growing cities in the country.

The history of Vodokanal in Atyrau, the state-run managing body for the city's water facilities, goes back to 1948, when Guryev Vodokanal was formed. Since its creation, Vodokanal has repeatedly changed its name and was reorganized many times. Public State Enterprise "Atyrau Su Arnasy" PSE was founded in 2006.

The source of water supply of Atyrau city is the Ural river. Water intake from the river is 18-20 mln. m<sup>3</sup>/year. Atyrau water supply and sewerage system serves more than 250 thousand of citizens and residents of Makat district suburban villages. The city has a centralized domestic and firefighting water system. The actual water supply is 70-75 thousand m<sup>3</sup>/day, the maximum one is up to 90 thousand m<sup>3</sup>/day. The volume of wastewater that are pumped with sewage pumping stations is 33 thousand m<sup>3</sup>/day in average.

"Atyrau Su Arnasy" PSE operates:

Complex of water treatment plants Water supply and sewerage networks with a total length of 1282.6 km Water booster pumping stations, 45 units. Sewage pumping stations, 89 units Sewage treatment plant with capacity of 31 thousand m<sup>3</sup>/day.

## The task

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### TOPIC:

Water Utility

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### LOCATION:

Atyrau in the Republic of Kazakhstan

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### COMPANY:

Atyrau Su Arnasy

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Before upgrading, approximately 20% of operating costs accounted for the payment of electricity.

Before the implementation of the program, in-depth analysis involving calculations and experience of Grundfos Company were carried out. For five years, the Grundfos specialists conducted the preparatory work. In 2008, 2009 and 2013, Grundfos conducted the free of charge Pump Audit for "Atyrau Su Arnasy" PSE. Grundfos in Central Asia offers Pump Audit with no cost for customer in order to support them in auditing of pumping equipment. Official dealers and service partners of Grundfos in Kazakhstan - "Research and Production Company Ergonomica" LLP and "Akvatoriya Aktobe" LLP - were involved in Pump Audit. Optimal solutions for the use of new pumping equipment were provided based on the comprehensive analysis.

Replacement of pumps and control cabinets with frequency converters at water treatment plants, replacement of pumps and control cabinets at sewage pumping stations has been planned based on Pump Audit. Replacement of the prefabricated pumping stations was planned on the water booster pumping stations.

#### Solutions

The project was planned for several stages of the replacement of equipment in "Atyrau Su Arnasy" PSE. Special offer as leasing for three years was one of the bidding conditions. 191 units of pumps with 91 control cabinets were delivered in 2014 in accordance with the contracts between the "Atyrau Su Arnasy" PSE and "Research and Production Company Ergonomica" LLP in frame of the first stage of program execution. 96 pumps with 42 control cabinets and 3 prefabricated sewage pumping stations "PUST" were delivered in frame of the second stage of program execution. This project in housing and communal services is a pilot project in Kazakhstan with an investment of private capital in state-owned enterprise.

#### Remote management

Grundfos Remote Management (GRM) - data transmission system developed by Grundfos – was installed on the most remote booster pumping station of Atyrau as a part of the development of capacity of the Grundfos equipment. The system is a data transmission module with antenna and backup battery for the controller with the possibility of the pump station control within a GSM signal. The system allows sending the main parameters of the controller installed in the control cabinet to the central operator board, which makes it possible to track occurred errors and to react promptly, to monitor the power consumption of pumps, control of pumps operating hours, to change the set pressure in the pressure manifold automatically. GRM system configures and converts all the obtained data in the charts, allowing analysing and programming the work of the

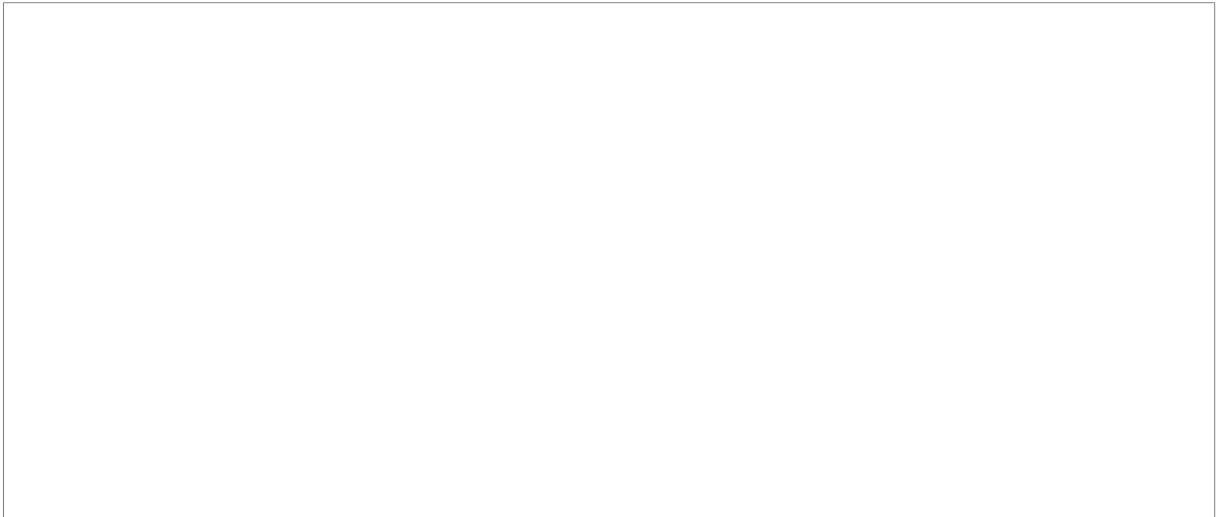
pumping station. In addition, the program displays the duty staff with the indication of name and phone number. In case of a pumping station failure the manager and duty staff receive warning text via SMS message.

#### Energy Efficiency

Energy-efficient equipment saved electricity consumption up to 30%. Company's energy saving were 5 million kWh for the period of 2014-2015. In general, the installed equipment allowed "Atyrau Su Arnasy" PSE to reduce energy costs, to improve the reliability of serviced systems, to reduce human resources for maintenance of facilities, to reduce operating costs.

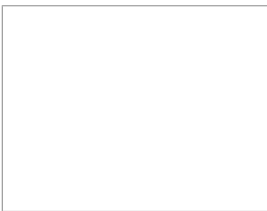
Scope of equipment Horizontal split case pumps, HS model (200 kW) - 7 pcs End-suction pumps, NB model (11 - 75 kW) – 63 pcs Horizontal multistage pumps, CM model (5.8 kW) – 27 pcs Vertical multistage pumps with integrated frequency converter, CRE model (15 kW) – 8 pcs "In-line" pumps with integrated frequency converter, TPE model (2,2 – 15 kW) – 3 pcs Sewage pumps, SEV model (4 kW) – 36 pcs Sewage pumps, S model (43 – 160 kW) – 23 pcs Sewage pumps, SE1 model (15 kW) – 112 pcs Dosing pumps, DME model – 6 pcs Prefabricated boosting pump stations, PUST model – 3 pcs Control cabinets with frequency converters for water supply, Control MPC model – 48 pcs Control cabinets for sewerage, Control DC model – 85 pcs Pressure booster with a frequency converter, CMBE model – 1 pcs Compact water supply system, MQ model – 1 pcs

## Additional Images



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## Related Products



### HS HORIZONTAL SPLIT CASE PUMPS

Split case, single-stage, non-self-priming, centrifugal, double volute pumps



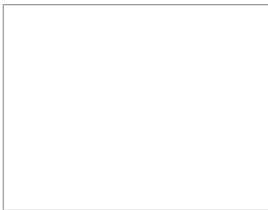
**NB, NBG, NBE, NBGE END-SUCTION CLOSE-COUPLED PUMPS**

A complete range of non-self-priming, single-stage, centrifugal volute pumps.



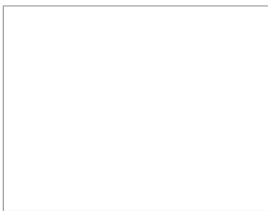
**CM, CME CLOSE-COUPLED HORIZONTAL MULTISTAGE PUMP**

The Grundfos CM and CME pumps are non-self-priming, horizontal, multistage, end-suction centrifugal pumps.



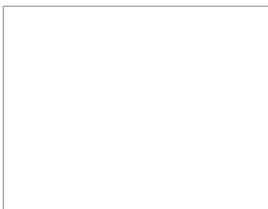
**CR VERTICAL MULTISTAGE CENTRIFUGAL INLINE PUMPS**

Multistage pumps for pressure boosting in a wide range of applications



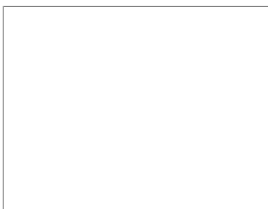
**TP, TPE INLINE CIRCULATOR PUMP - AIR-CONDITIONING AND HEATING**

For air-conditioning and heating applications in commercial buildings



**SE 1.1-11 KW DRAINAGE, EFFLUENT AND SEWAGE PUMPS - HEAVY DUTY**

Drainage, effluent and sewage pumps



**S PUMP - SUPER VORTEX SINGLE OR MULTI CHANNEL IMPELLER**

Pumping of raw water, unscreened raw sewage, water containing sludge, industrial effluent



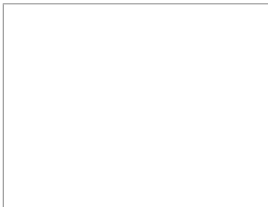
### SE AND SL 9-30 KW WASTEWATER PUMPS - HEAVY DUTY

The SE and SL ranges of wastewater pumps provide the highest total efficiency on the market. Innovative technologies from Grundfos bring together intelligence, motors, hydraulics and functionality to meet the challenges of modern wastewater, maximising the hydraulic, electrical and mechanical efficiency of your pumps.



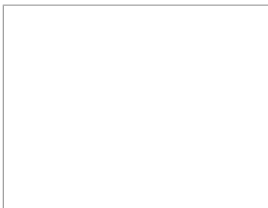
### DIGITAL DOSING, DME DIAPHRAGM DOSING PUMP

Grundfos DME Digital Dosing pumps combine perfect precision with user-friendliness, covering large dosing quantities in the range from 60 l/h to 940 l/h with few variants.



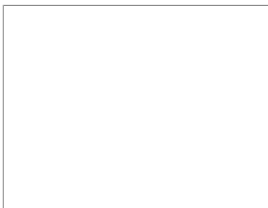
### WASTEWATER PUMPING STATIONS - PREFABRICATED PUMPING STATIONS

Full range of modular pumping stations



### CONTROL MPC - MANAGING BOOSTER AND CIRCULATION SYSTEMS

Grundfos Control MPC is a control cabinet with a CU 352 controller that permits monitoring and control of up to six identical pumps connected in parallel.



### MQ SELF-PRIMING PUMP FOR DOMESTIC - AGRICULTURAL - HORTICULTURAL APPLICATIONS

Compact water supply system designed for domestic, agricultural and horticultural applications