



Nizhny Novgorod
Institute of
Applied Technologies

Let's do without dismantling!

We use eco-friendly solution for cleaning of your heating system **from 98%** of scale and sediments without equipment dismantling.



Problem:

Today the control of sedimentation in heat-exchange, technological process equipment and pipelines is a challenging issue worldwide.



Solution:

NNIAT specialists have elaborated an effective solution to eliminate this problem. The comprehensive solution ensures efficient remote monitoring of the heat-exchange equipment.

Our own laboratory allows to select the appropriate preparation formula for the removal of various sediments in process and heat-exchange equipment, including pipelines, which makes this service **highly effective** and cost-efficient for your company.

Advantages:



Automated cleaning,
without mechanical
interference



Increase of heat exchange
equipment efficiency



No need to perform
dismantling



Advanced system of remote
monitoring and control



Safety



Saving time and resources

Comprehensive solution– what is it?

Each heat exchanger is equipped with a special **sensor device**



Sensor device indicators (pressure, temperature, consumption) on heat exchange efficiency are transmitted automatically and continuously through the cloud service to any portable devices (PC, smartphone, tablet etc.).



Upon reaching critical value of these indicators, alert push-notifications, calls or messages are sent to your portable device, which allows to react quickly and efficiently to the situation and ensures saving of resources by means of in-time maintenance without supplementary monitoring of each heat exchanger at the place of work.



E-log of events and appliances values is generated and can be displayed as a schedule or Excel table.




If necessary, online data can be transmitted into processes automation and control system as 3D graphics, mnemonic diagram and multimedia, image displayed on PC screen based on Master-SCADA and SoftLogic-systems for Automated Process Control System and MES.



All sensors used at explosion hazardous zone are certified in accordance with technical regulation of the Customs Union, have explosion protection certificate, compliance certificate GAZPROMCERT, and are registered in state register of measuring instruments.

Comprehensive solution (CS) advantages in the operation of heat exchange equipment.

 Sediments of 1 mm thickness	In-time notice	Scheduled maintenance works on heat exchanger cleaning	Company financial losses	Expenses for emergency repair	Turnaround expenses	Product with the given characteristics
Work of heat exchanger of the Company in normal operation	✗	✗	₽ ₽	₽ ₽	₽ ₽ ₽ ₽	💧 💧
"Cooling heat exchanger"	✗	✗	₽	₽	₽ ₽	💧
"Heating Exchanger"	✗	✗	₽	₽	₽ ₽	💧
Work of heat exchanger of the Company with the implementation of NNIAT CS	✓	✓	✗	✗	₽	💧 💧 💧 💧
"Cooling heat exchanger"	✓	✓	✗	✗	₽	💧 💧
"Heating exchanger"	✓	✓	✗	✗	₽	💧 💧

Qualification and vast experience of NNIAT specialists in the field of technological process equipment cleaning allow to apply highly effective individual approach to comprehensive equipment cleaning.

As a result:

- ✓ All types of mineral deposits (salts, oxides, scale, limescale) are removed;
- ✓ No damage to the treated surface, including metal, plastic, rubber, as well as gaskets, components and welds, etc.;
- ✓ Post-treatment protective film (passivation layer) remains, preventing the accumulation of new sediment;
- ✓ No special disposal for the preparation is required, the preparation is biodegradable and non-toxic to the environment.



4-6 mm Limescale

25-30 % Reduces
heat exchanger
intensification

Monitoring the heat-exchange equipment from any part of the world



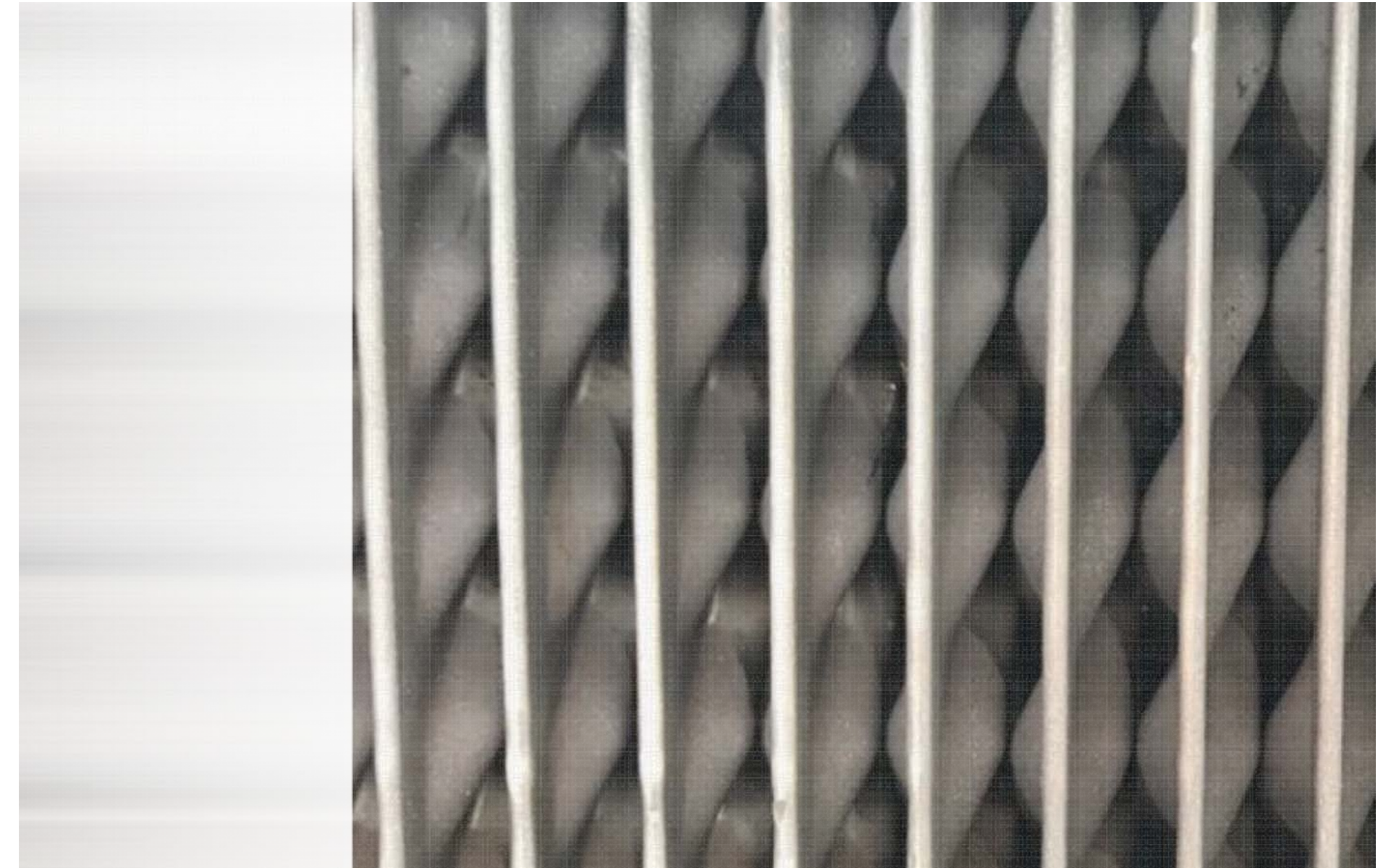
Comprehensive solution helps you to monitor the heat exchange equipment without leaving your office, when you are on a business trip or vacation.



Result of heat exchange equipment cleaning by NNIAT method compared with others.













Other methods



NNIAT Method

The advantages of heat exchange equipment cleaning by NNIAT method

CLEANING METHOD	SUSTAINABILITY	CLEANING EFFICIENCY %	TERMS	WORK COST	EQUIPMENT INTEGRITY SEALS, PLATES ETC	DISMANTLING
NNIAT Method	+	98-100		₽ ₽	+	-
Other solutions	-/+	85-95	 	₽ ₽ - ₽ ₽ ₽	+/-	+
Mechanical cleaning	+	90	  	₽	-	+
Chemical cleaning	-	85		₽ ₽	-	+
Electro-impulse cleaning	+	70	  	₽ ₽	-	+



Thank you for
our possible
cooperation!