



PROJECT  
IMPLEMENTATION  
FROM **A TO Z**



DIAGNOSTICS AND REPAIR  
OF CHEMICAL EQUIPMENT  
**AT HAZARDOUS  
INDUSTRIAL FACILITIES**

# EXPERIENCE AS ADVANTAGE

**For more than 65 years** JSC NIIK has been performing corrosion studies, preparing methods for inspection of equipment at urea and other production plants, developing procedures for repair of complex design lined vessels.



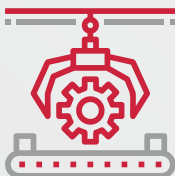
JSC NIIK has **all permissive documents** for execution of works on diagnostics and monitoring of equipment technical state at urea plants. JSC NIIK laboratory of non-destructive testing, diagnostics, metals, corrosion and welding has non-destructive testing system **certification**.

JSC NIIK also performs corrosion inspections and diagnostics of equipment at **acetic, nitric, sulfuric acids, ammonium nitrate, ammonia** etc. plants.



Gained experience allowed development of **industry-based guides** on performing corrosion inspections, current and overhaul repair of the equipment, on carrying out welding works at urea plants.

Undeniable advantage of our company is possibility to execute all works as **turn-key** projects, including supply of steel structures.



JSC NIIK has a **direct** cooperation with Russian and foreign equipment manufacturers.

# HUMAN RESOURCES

- ◆ Metallographers
- ◆ Mechanical engineers possessing knowledge on equipment design features.
- ◆ Category IV welding specialists allowing developing unique welding procedures.
- ◆ Category III and II welding specialists allowing control over execution of welded work by the developers of repair procedures.
- ◆ Category I welding specialists which are able to perform welding of high alloy steels, titanium, zirconium and aluminum.
- ◆ Specialists on visual and measuring, ultrasonic, eddy-current and other types of non-destructive testing of metals and welded joints (also of international certification) allowing a quick quality assessment of works performed during repair.



# DIAGNOSTICS AND REPAIR OF EQUIPMENT

## Main methods of non-destructive testing at diagnostics of equipment

- ◆ Visual and dimensional examination
- ◆ Eddy current testing (identification of surface and subsurface cracks in equipment elements)
- ◆ Eddy current testing and thickness measurement of heat-exchanging tubes
- ◆ Quality control of weld joints (ultrasonic inspection, liquid penetrant inspection)
- ◆ Ultrasonic thickness measurement of equipment casing, lining and internals
- ◆ Metallographic examinations
- ◆ Intergranular corrosion test

## Full complex of works on turn-key repair of lined column-type, capacitive (tanks and vessels) and heat-exchanging equipment operated at high, medium and low pressure

- ◆ Development of repair procedures and technical documentation considering design features of certain equipment item
- ◆ Development and supply of necessary process accessories
- ◆ Technical support at manufacturing, supply and installation of new equipment
- ◆ Supply of all necessary blanks and welding materials
- ◆ Installation and welding works
- ◆ Quality control of executed works by non-destructive methods
- ◆ Unique process accessories for each equipment item
- ◆ Replacement of tubes in heat-exchanging equipment
- ◆ Cleaning of heat-exchanging tubes using thermo-pneumo-abrasive method



## Equipment repair using own methods

- Method of complete lining replacement in urea synthesis columns of small diameter by rolling up the repair shell in a roll for moving through the neck – method, which is still used widely at columns repair
- Method of lining replacement by separate elements ensuring reliable monitoring of weld joints tightness. This method is used for columns with diameter of more than 1500 mm
- Methods of replacement of hemispheric and elliptic bottoms and nozzles of HP equipment.

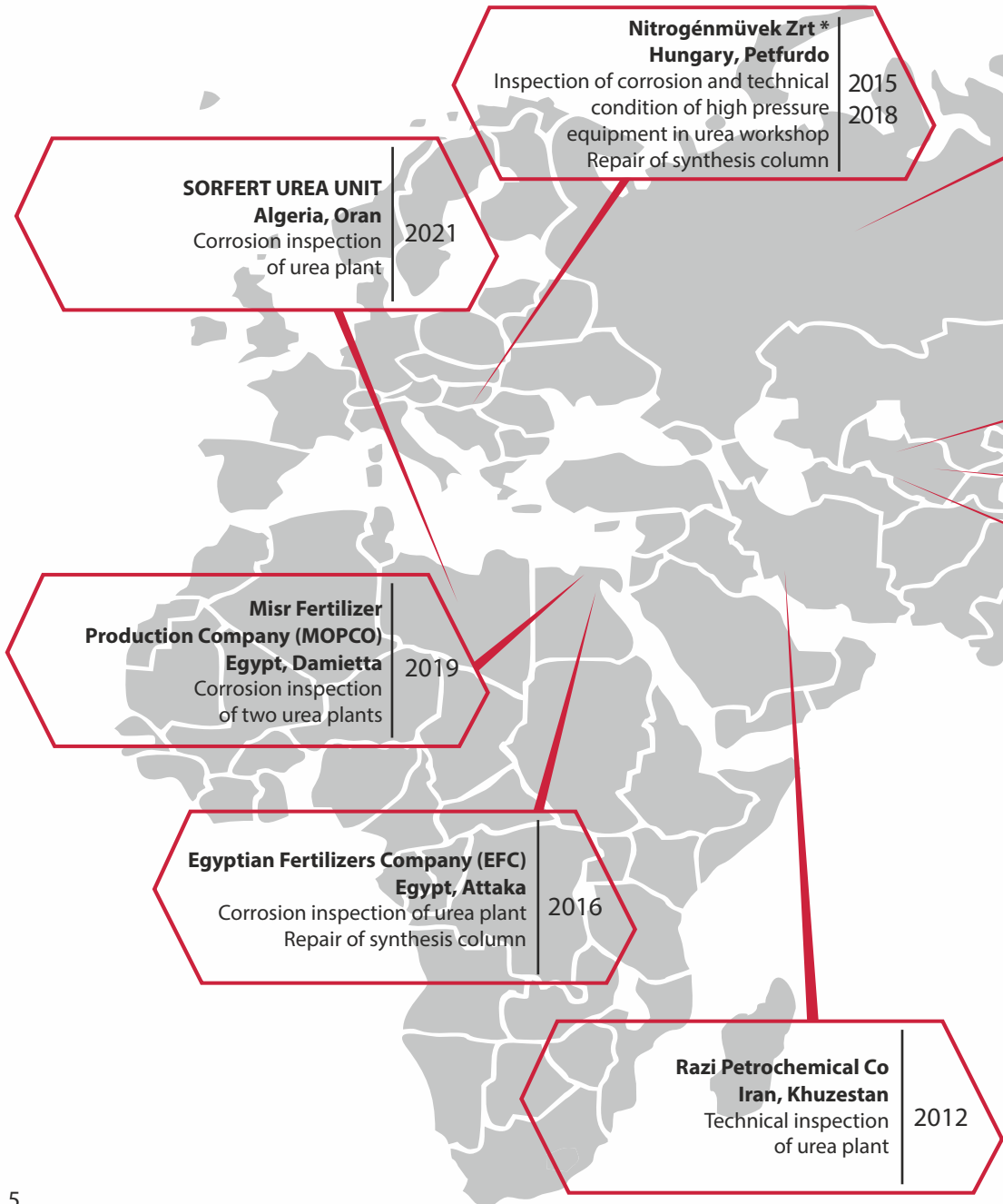


## JSC NIIK develops unique technologies for each certain case:

- Recovery of bearing casings of HP equipment using a unique technology of defects welding in casings of pearlitic steels, which doesn't require either preliminary and concurrent heating or further heat treatment
- Full or partial replacement of linings of different geometric shapes and sizes incl. non-standard ones
- Replacement of sealing assemblies, nozzles and other elements of equipment
- Installation of internals at revamp of HP equipment

**TECHNOLOGIES ARE DEVELOPED  
BASED ON CONDITIONS  
OF USE DIRECTLY AT INDUSTRIAL SITE**

# JSC NIK REFERENCES ON DIAGNOSTICS AND REPAIR OF PROCESS EQUIPMENT



**AO «Navoiyazot»**  
**Uzbekistan, Navoiy**  
Eddy current testing of  
nitric acid  
production equipment

2007-2023

**AO «Navoiyazot»**  
**Узбекистан, Навои**  
Вихретоковый контроль  
оборудования производства  
азотной кислоты

2004  
2021

**AO «Farg'onaazot» \***  
**Uzbekistan, Fergana**  
Inspections: urea  
ammonium nitrate  
nitric acid

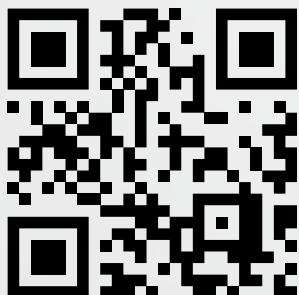
1990-2014

**AO «MAXAM-CHIRCHIQ» \***  
**Uzbekistan, Chirchiq**  
Comprehensive inspection  
of urea workshop  
Repair of two urea  
synthesis columns  
Installation of set of internals

2014  
2012  
2016

**India \***  
**Enterprises of four companies**  
Integration of set of internals  
of JSC NIIK design  
into urea synthesis reactors

2015  
2017-2019



## CONTACT INFORMATION

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