

EMPOWERING TOMORROW WITH CLEAN TECH

Mechanical and magnetofluidic sealing systems



HISTORY

- Experience in seal manufacturing dates back to **1978** at IMPF Odorheiu Secuiesc
- Division of IMPF Odorheiu Secuiesc in **1990** into:
 - S.C. MATRIȚA S.A.
 - **S.C. ROSEAL S.A.**
- Products and capabilities at S.C. ROSEAL S.A.:
 - Mechanical seals for automotive industry;
 - Standardized mechanical seals;
 - Mechanical seals for agitator reactor;
 - Special mechanical seals;
 - Manufacturing lines for spare parts:
 - carbographtic materials
 - superaluminous ceramic
 - PTFE
 - elastomers
 - metals
 - remediation and modernization of centrifugal pumps, valves, etc.
- In **1989** starts collaboration with R&D institutes and academies.



INDUSTRIAL SECTORS

- Nuclear industry
- Oil & Gas industry
- Pump factories
- Chemical plants
- Petrochemical plants
- Hydropower plants
- Water supply and treatment installation
- Pharmaceutical industry
- Pulp and paper industry
- Food and beverage industry
- Textile and paints industry
- Aerospace industry



MAIN CLIENTS



NUCLEARELECTRICA



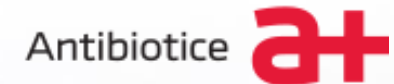
COMOTI
ROMANIAN RESEARCH &
DEVELOPMENT INSTITUTE FOR
GAS TURBINES



HIDROELECTRICA



COMPANIA DE APA
BUZAU



OLTCHIM S.A.
in cateva cuvinte



S.S.H. HIDROSERV S.A.
in insolvență, in insolvency, en procedure collective

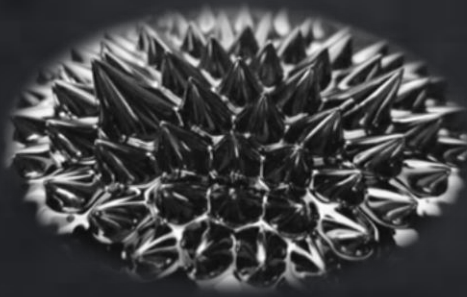


COMPANIA DE NAVIGATIE ROMANA
NAVROM



MAIN ACTIVITIES





OUR VALUES

Research
Innovation
Development

Custom
Design
Solution

Manufacturing
flexibility

Seal
reconditioning
Pump repairing

Collaboration &
Teamspirit

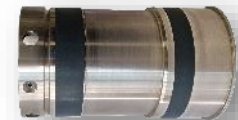
Training



Our expertise

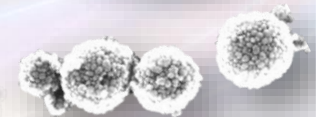
Core offerings

- Mechanical seals (single, double, cartridge)
- Seal faces & rings (carbon, silicon carbide, tungsten carbide)
- Gaskets and customized sealing components
- Pump and compressor spare parts
- Engineering support, training. reverse engineering, and repair



Capabilities

- Technical design and engineering
- Condition assessment & reporting
- Precision machining and finishing
- Material know-how for harsh media and temperatures
- Quality management and product testing



Roseal experiences in the nuclear energy field

Roseal has long-term activity in the following sectors of the nuclear energy production:



Raw Material Production for Nuclear Fuel Cycle

-since 1985 -



Cooling agent (heavy water) production

- since 1984 -



Nuclear fuel production

- since 2010 -



Nuclear energy production

- since 1988 -



Nuclear waste disposal

- since 2008-



PRODUCTS: MECHANICAL SEALS FOR NUCLEAR EQUIPMENT

Seals for main pumps at the **Nuclear Power Plants** with operating parameters such as: flow rate up to 4000 tons/hour, diameter up to **450 mm**, pressure up to **100 bars** and peripheral speed up to **70 m/s**.

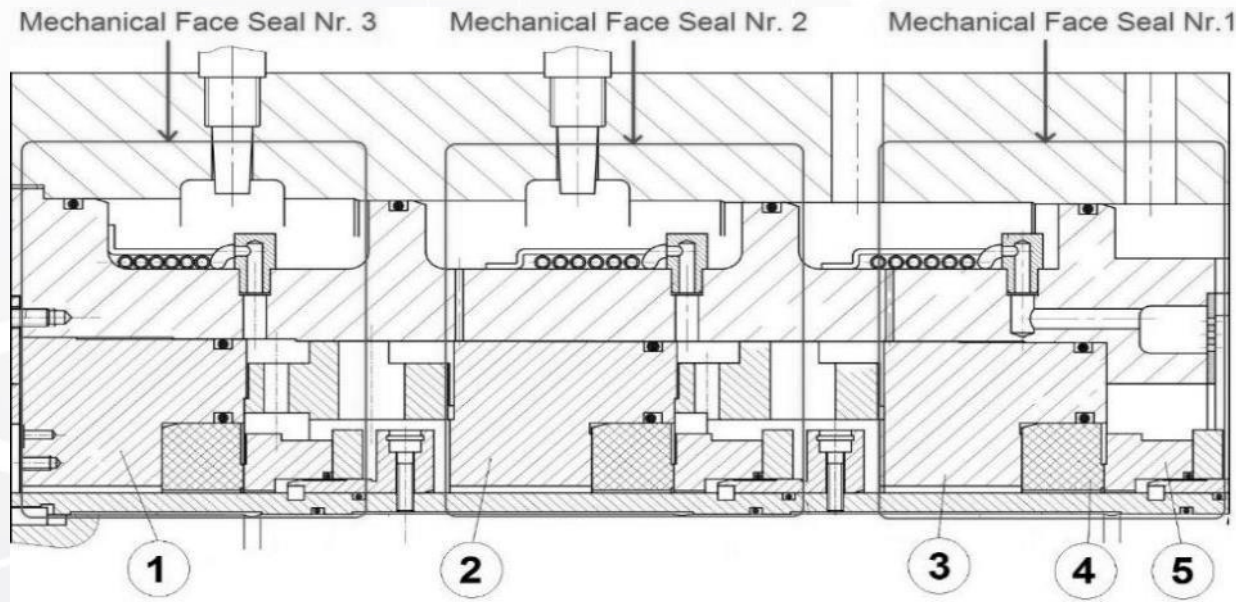


Fig. Partial drawing of the mechanical face seal system: 1- superior stationary ring holder, 2 – middle stationary ring holder, 3 – inferior stationary ring holder, 4 – stationary ring, 5 – rotating ring;



MAGNETIC NANOFUID SEAL FOR NUCLEAR EQUIPMENT

Magnetic nanofluid seal for protective nuclear equipment used for fans in the contaminated radioactive air recirculation system.



The leakage of tritium is reduced below 10^{-7} mbar·l/s!

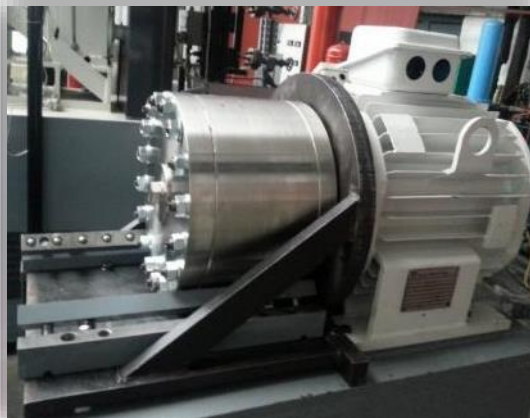
NFM seal testing capabilities:

- High-pressure and UH vacuum environments
- Variable rotational speeds >10,000 rpm
- Helium leak detection
- Temperature, pressure and vacuum measurements
- Real-time data monitoring and logging



Working conditions:

- Radiation field: 100 mR/h
- Temperature: 43 °C
- Medium: heavy water+salts of bor / gadolinium

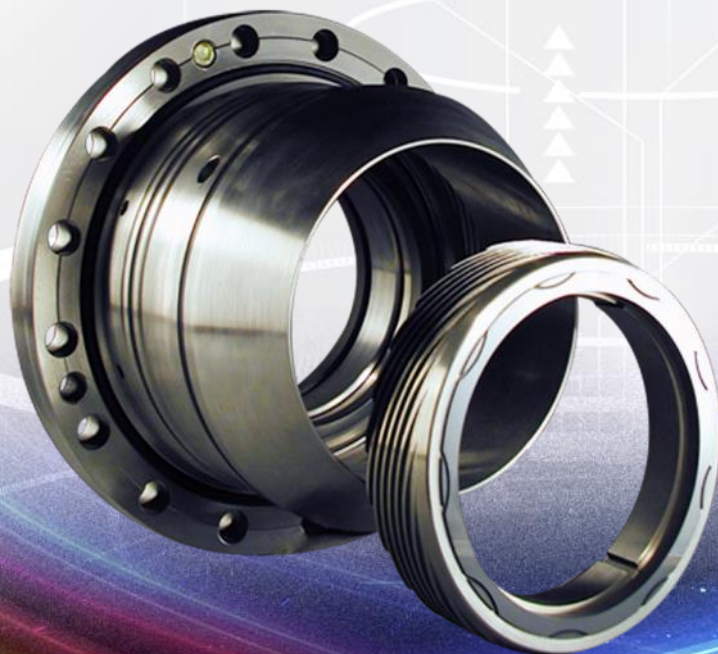


PRODUCTS: MECHANICAL SEALS FOR NUCLEAR EQUIPMENT

Seal Ø125 used for auxiliary pumps:

Working conditions:

- Pressure: 70 bar
- Temperature: 170 °C



PRODUCTS: MECHANICAL SEALS FOR NUCLEAR EQUIPMENT

Special echilibrated seal of Ø50



Working conditions:

- Pressure: 60 bar
- Rotation: 3000 rot/min
- Temperature: 260 °C



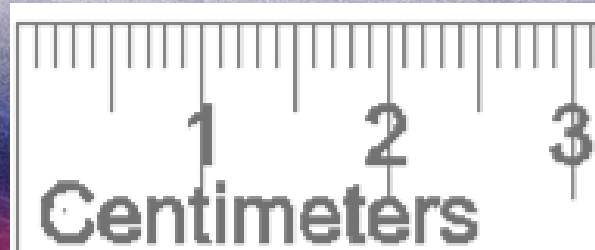
PRODUCTS: SPECIAL EQUIPMENT FOR NUCLEAR INDUSTRY

Beam assembling device

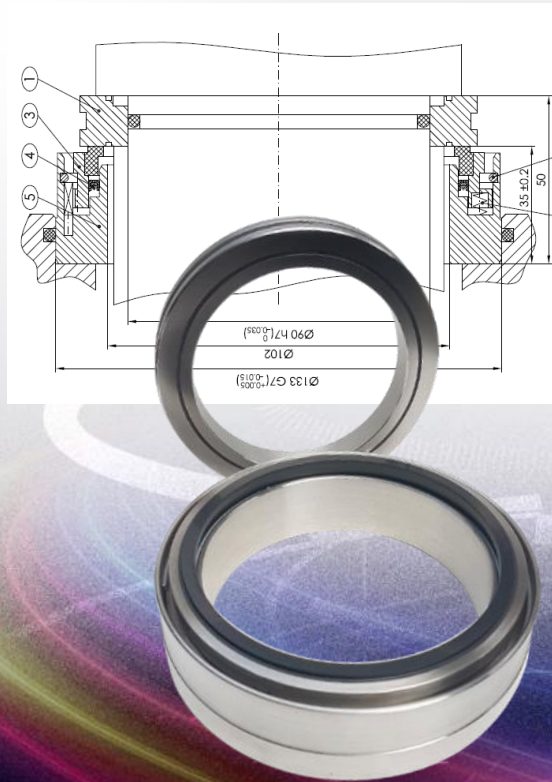


PRODUCTS: SPECIAL COMPONENTS FOR NUCLEAR INDUSTRY

Carbide mill



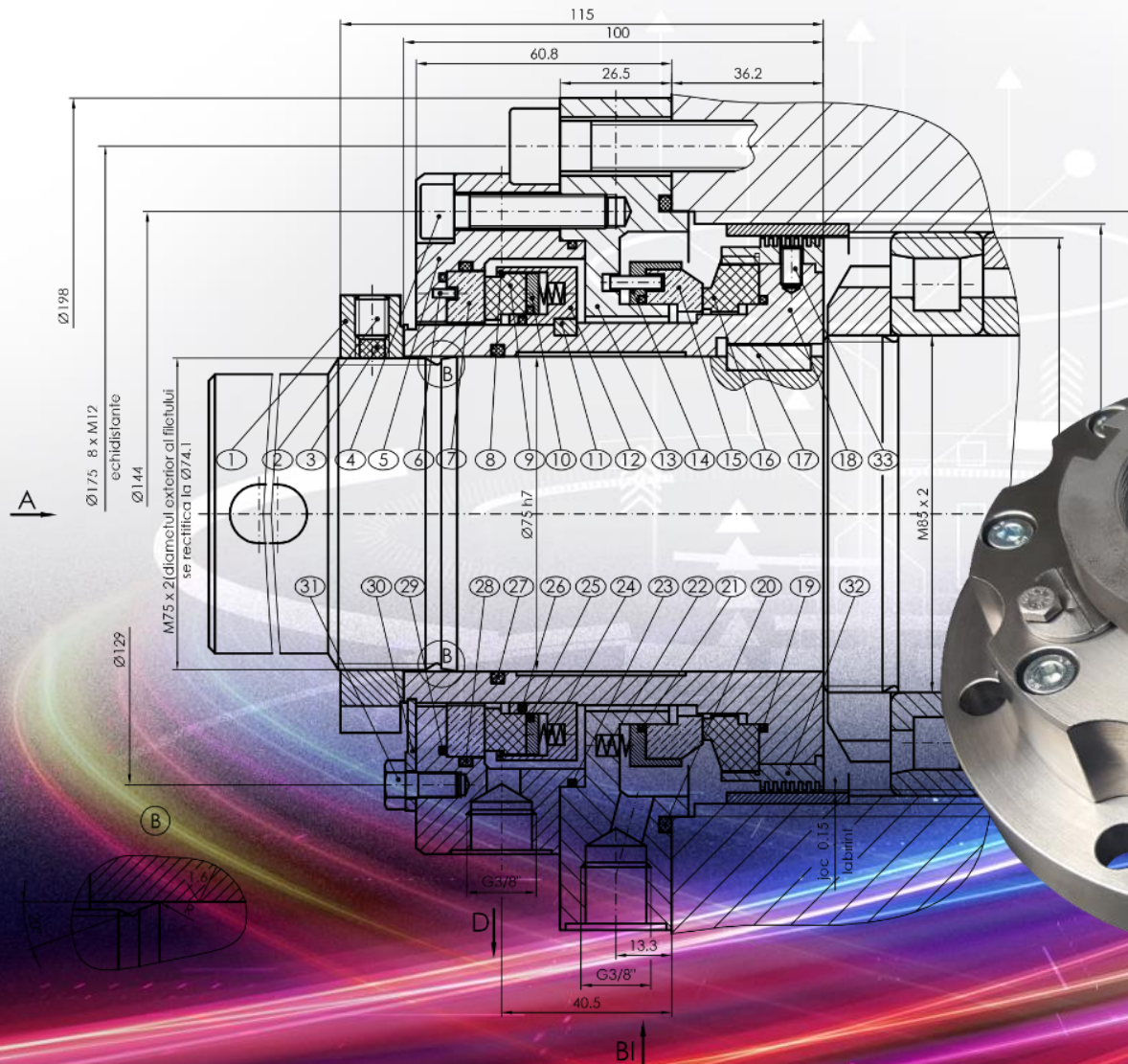
PRODUCTS: COMPRESSOR SEALS



SPECIAL SEAL Ø141



PRODUCTS: COMPRESSOR SEALS



Working condition:

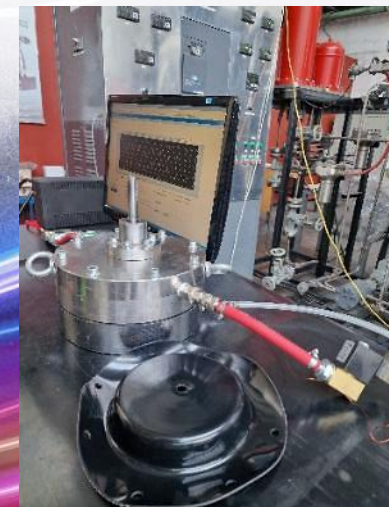
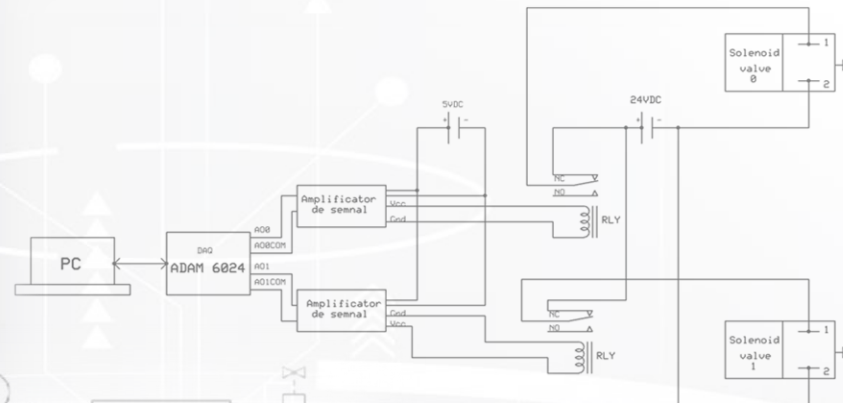
- Media: gas-metan
- Suction pressure: 20 bar
- Discharge pressure: 45 bar
- Max. temperature: 50°C
- Rotational speed: 4000 rot/min



Fabric-reinforced diaphragm, spare part for Masonelian Dresser valve actuator

Working parameter:

- 3 different sizes: effective operating area:
72 cm² / 270 cm² / 560 cm²
- Valve stroke: 10 mm / 10 mm / 25 mm
- Max. pressure: 6 bar
- Test pressure: 10/11 bar
- Cycle lifetime: **100,000 cycles**



Pressure pipeline elements

Authorization ISCIR PT N SCP 1 – 2008 for manufacture and installation of components under pressure and pump pipe elements.

Manufacture and installation of pressure retaining elements for pump sealing systems:

$P_{max} = 12 \text{ MPa}$,

$D_{max} = 500 \text{ mm}$,

$T_{min} = + 5 \text{ }^{\circ}\text{C}$, $T_{max} = + 500 \text{ }^{\circ}\text{C}$;

nuclear class 1, 2, 3, 4 and non-nuclear class (class 6)

Manufacture, by mechanical processing, of pipe elements:

$P_{max} = 40 \text{ MPa}$,

$D_{max} = 500 \text{ mm}$,

$T_{min} = + 5 \text{ }^{\circ}\text{C}$, $T_{max} = + 500 \text{ }^{\circ}\text{C}$;

nuclear class 1, 2, 3, 4 and non-nuclear class (class 6)



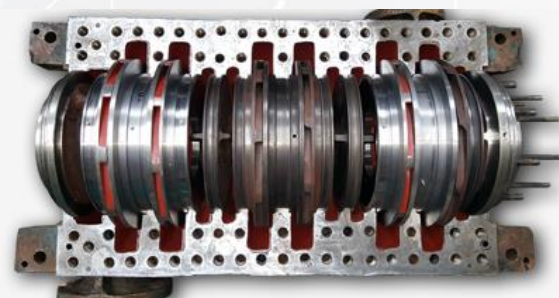
SERVICES

Enhancing the repair culture and sustainable consumer practices:

- Waste reduction through recycling and re-purposing materials to reduce environmental impacts
- Spare parts manufacturing and repairing services for pumps and compressors, life-time extension (for.e.g. adding *coating layer for erosion/corrosion protection*)



Seal reconditioning



Pump repairing

Wide experience:



MANUFACTURING LINES OF MATERIALS

ELASTOMERS

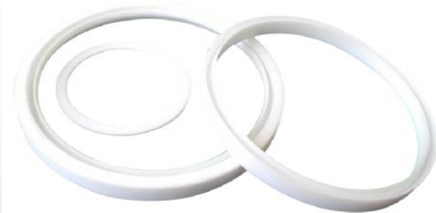


- S1 – Silicone
- S2 – Nitrile butadiene
- S3 – Fluorcarbon (viton)
- S4 – Ethylene-propylene (EPDM)
- S5 – Elastomer covered by PTFE
- S6 – Spring covered by PTFE
- S7 – Chloroprene
- Sc – Perfluoroethylene

SUPERALUMINOUS CERAMIC



PTFE



- PTFE
- PTFE galssfibre reinforced
- PTFE carbon reinforced
- PTFE with bronze

CARBOGRAPHITIC MATERIALS



- Carbograhitic
 - antimony impregnated
 - resin impregnated
- Expanded graphite

MAGNETORESPONSIVE MATERIALS



- Magnetic nanofluid
- Composite magnetizable fluid
- Magnetic nanoparticles



SEAL GASKETS FOR HIGH TEMPERATURE



Materials:

- Expanded graphite type B5
- Fluorocarbon rubber type S3
- Composite graphite material type B8
- Composite graphite material type B14
- Composite graphite material type B1

Seal gaskets and bipolar plates:

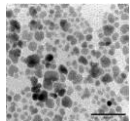
- Seal gasket made from B5 type expanded graphite material
- Seal gasket made from T1 type sintered politetrafluoretylen material
- Seal gasket made from S3 type fluorocarbon rubber material
- Seal gasket made from S1 type silicone rubber material
- Bipolar plates made from B8 type carbon materials composite
- Bipolar plates made from B14 type carbon materials composite
- Bipolar plates made from B1 type carbon materials composite



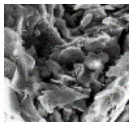
MAIN RESEARCH PARTNERS



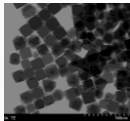
Romanian Academy – Timișoara Branch,
Center for Fundamental and Advanced
Technical Research



"Politehnica" University of Timișoara,
Research Center for Engineering of Systems
with Complex Fluids



**National Institute for Research and
Development in Electrical Engineering
ICPE-CA Bucharest (ICPE-CA)**



**National Institute for R&D of Isotopic and
Molecular technologies - Cluj Napoca**
Physics of nanostructured systems



Scientific results: several scientific articles, posters, diplomas, certificates, patents:



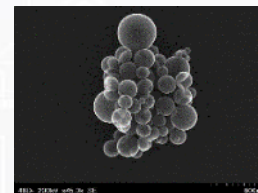
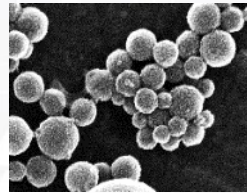
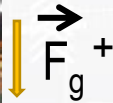
RESEARCH DIRECTIONS:

Nanotechnology: soft magnetic matters

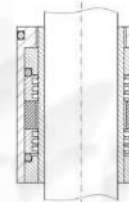
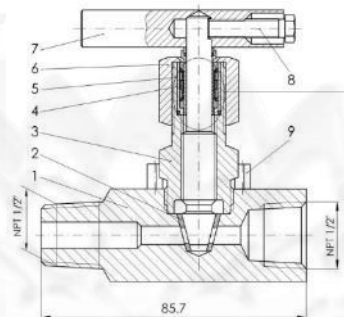
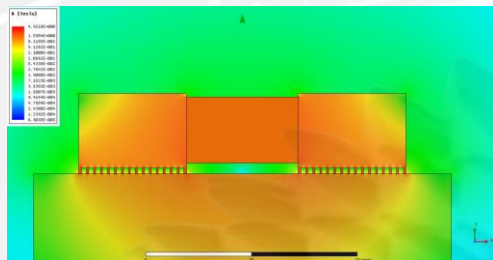
Magnetically controllable composite fluids with highly increased magnetization, specially developed for seals for gas valve applications. These fluids have non-polar or polar magnetic nanofluid carrier and their magnetization is enhanced by soft magnetic microparticles or magnetic nanoparticle clusters. We also apply design activities (including magnetic field simulation – Ansys Maxwell QS) and manufacturing.



High magnetization magnetic nanofluids



High magnetization magnetic nanoparticle clusters with controlled size with hydrophilic coating



AUTHORIZATIONS

S.C. ROSEAL S.A. is authorized for activities of **design, manufacturing and services** in accordance with CNCAN regulations for quality management in **nuclear domain**, class 1, code ASME, Section III, Subsection NCA, art. 3800 and 4000.



GUVERNUL ROMÂNIEI
COMISIA NAȚIONALĂ PENTRU CONTROLUL
ACTIVITĂȚILOR NUCLEARE
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Telefon: 021 316 04 25
Fax: 021 317 38 87
Operator date cu caracter personal nr. 35647

**AUTORIZAȚIE
PENTRU SISTEMUL DE
MANAGEMENT AL CALITĂȚII ÎN DOMENIUL NUCLEAR
Nr. 22 – 007**

În temeiul Art. 8 și Art. 24 din Legea Nr. 111/1996 privind desfășurarea în siguranță, reglementarea, autorizarea și controlul activităților nucleare, republicată, a normelor CNCAN privind sistemele de management al calității, ca urmare a analizării documentațiilor prezentate în Anexa nr. 01, Capitolul I,
Constatând că sunt îndeplinite prevederile legale,

COMISIA NAȚIONALĂ PENTRU CONTROLUL ACTIVITĂȚILOR NUCLEARE

**AUTORIZEAZĂ
SISTEMUL DE MANAGEMENT AL CALITĂȚII
AL**

ROSEAL S.A.
din Odorheiu Secuiesc, str. Nicolae Bălcescu, nr. 5/A, jud. Harghita, cod 535600,
persoană juridică înregistrată la Oficiul Național al Registrului Comerțului,
Cod Unic de Înregistrare 526618

**pentru activități de
PROIECTARE
în domeniul nuclear**

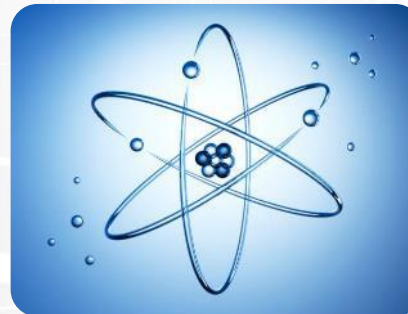
În conformitate cu documentația prezentată, reglementările CNCAN pentru managementul calității în domeniul nuclear, limitele, condițiile și documentele din anexa nr. 01, care face parte integrantă din prezenta autorizație.
Răspunderea privind stabilirea și dezvoltarea sistemului de management al calității revine unității autorizate.

Intră în vigoare la data de: 11.04.2022
Expiră la data de: 10.04.2024



PREȘEDINTE,
Cantemir CIUREA-ERCĂU

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GUVERNUL ROMÂNIEI
COMISIA NAȚIONALĂ PENTRU CONTROLUL
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Bd. Libertății nr. 14, Sector 5, București
Telefon: 021 316 04 25
Fax: 021 317 38 87
Operator date cu caracter personal nr. 35647

**AUTORIZAȚIE
PENTRU SISTEMUL DE
MANAGEMENT AL CALITĂȚII ÎN DOMENIUL NUCLEAR
Nr. 22 – 006**

În temeiul Art. 8 și Art. 24 din Legea Nr. 111/1996 privind desfășurarea în siguranță, reglementarea, autorizarea și controlul activităților nucleare, republicată, a normelor CNCAN privind sistemele de management al calității, ca urmare a analizării documentațiilor prezentate în Anexa nr. 01, Capitolul I,
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Cod Unic de Înregistrare 526618

**pentru activități de
FABRICARE ȘI SERVICII
în domeniul nuclear**

În conformitate cu documentația prezentată, reglementările CNCAN pentru managementul calității în domeniul nuclear, clasa 1 de aplicare gradată acordată sistemului de management al calității și codul ASME, secțiunea III, subsecțiunea NCA, art. 4000, limitele, condițiile și documentele din anexa nr. 01, care face parte integrantă din prezenta autorizație.
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