RESIF

SMART PRECISE MACHINING

INDEPENDENT MACHINING SERVICE COMPANY

Technological capabilities

RESIF at a glance

1993
Foundation

>150
Specialists

Company has been engaged in smart precision machining for **25 years**.

We make parts and assemblies of metals and plastics of various serialities: from experimental single products to serial production.

The enterprise' strength is the European organization of production and quality management, high technological professionalism.

We build long-term relations with our partners, solving for them tasks of any complexity.

>10 years
Average experience of company's employee

>11 000
Production capacity, hours per month

ISO 9001:2015
Quality control system in force since 2004

COMPANY'S HISTORY

Established in 1993 as a subsidiary of **RECIF Technologies (France),** the full-cycle manufacturer of robotics for semiconductor industry

- 1993 — incorporation (the original name is "SYROB")
- 1998 — more than 600 employees in Belarus working for head company
- 2006 — renaming to "RESIF Technologies Bel"
- 2008 — crisis in world semiconductor industry; parent company's strategy in Belarus changed from insourcing to outsourcing and staff reduction
- 2011 — group of Belarusian private investors buy "RESIF Technologies Bel"
- 2017 — the launch of new company's development strategy

COMPANY DEVELOPMENT

We think about the prospects and implement the development strategy 2020:

- Investments of more than 2 million EUROS in the newest equipment: there is about 800 thousand EUROS already invested in re-equipment in 2017-18
- Construction of our own production base in 2019-20 years (for this purpose, a plot of land was acquired in the industrial park “Great Stone”)
- Planned output growth of 2,1 times by 2020
- Constant development of new technologies: welding, processing of magnesium and hard anodizing of aluminum alloys were mastered in 2018

Application spheres

Our clients are from the hardware hi-tech industries globally:

Aerospace
Parts and details for aircrafts (France), helicopters (Germany), aircraft overhaul plants (Belarus and Russia)

Food processing machinery
Parts for food processing equipment (Belarus, Germany)

Shipbuilding
Details of deep-sea research apparatus (France)

Optical instruments
Cases, optical pairs and other parts for optical devices (Belarus, Russia)

Aviation Engines
Details for jet engines (Russia)

Medical industry
Details for implants and surgery equipment (Belarus, Russia)

Materials we process

- structural and stainless steels
- aluminum and titanium alloys
- engineering plastics
- magnesium, brass, bronze, copper etc.

Quality of materials is confirmed by the manufacturers' certificates.

Production structure of RESIF

- technological bureau
- milling CNC centers
- turning CNC centers and lathes
- locksmith and assembly operations
- finishing
- heat treatment
- electroplating
- other operations
- engineering services

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Technological bureau

- development of technology for manufacturing parts and assemblies
- technological equipment design
- development of control programs for machining centers (3, 4 and 5-axis)

PTC's Creo Parametric is software for the design and development process.

Milling CNC centers

- 30 vertical milling CNC centers by Cincinnati, Hyundai WIA (3, 4 axis)
- positioning accuracy – 0.005 mm
- maximum machined dimensions: 700x800x1250 mm

Turning CNC centers, lathes

- 10 turning machining centers by CINCINNATI, HYUNDAI WIA
- universal lathes
- power tools
- positioning accuracy – 0.005 mm
- Maximum machined dimensions: Ø600x600 mm

Locksmith and assembly operation

We perform intermediate and final technological operations:

- deburring
- drilling
- holes deployment
- thread cutting
- grinding
- polishing
- straightening
- assembly works, etc.

Finishing

Unique for Belarus finishing area at sliding grinding plants (TROWAL), 11 baths for parts up to 1500 mm.

- edge rounding to 0,2mm (plastics, aluminum alloys)
- removal of traces of machining
- preparation of surfaces for coating
- polishing (aluminum and stainless alloys)

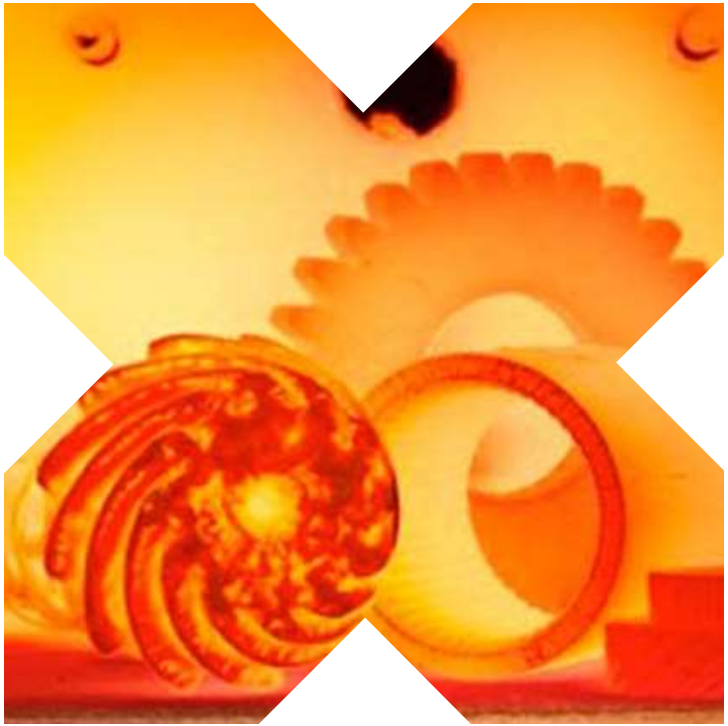
Our finishing allows to improve appearance of the part preserving dimensional accuracy.

Heat treatment

Equipped with Uterna furnaces with a maximum temperature of 1200^{O}C:

- hardening
- structural improvement
- annealing
- normalization
- cementation
- vacuum heat treatment (performed by our trusted partner)

Thermal treatment is used to achieve the necessary physical and mechanical properties and to stabilize parts of high dimensional accuracy.



Electroplating

We provide services for applying high quality galvanic coatings:

- hard anodizing
- anodic-oxide and chemical coatings of aluminum alloys
- zinc coatings of steel
- chemical passivation of stainless steels
- corrosion resistance testing of coatings in a salt spray chamber

We guarantee **the preservation of the parameters of the class and threaded holes** in the tolerance zone when carrying out electroplating on our site.

Electroplating parameters

Designation	Description
Hard coat	the coating thickness up to 80 microns (at the request of the customer, it is possible to increase the thickness), hardness HV > 300, wear resistance of 336 hours of salt spray chamber according to NF ISO 9227
Sulfuric acid anodizing	anodic oxide sulfuric coating with distilled water seal and with chemical or electrolytic coloring
Chromic acid anodizing	anodic oxide sulfuric coating with sodium dichromate seal
Zinc chromate conversion coating	zinc chromate conversion coating with discoloration or iridescent coloration for the subsequent application of paint coatings
Zinc chromate conversion coating, glossy	zinc chromate conversion coating with discoloration, glossy
Chemical oxidation	chemical oxidation of aluminum alloys in chromium (VI) salts (Alodine) and in chromium (III) salts, environmentally friendly (SurTech 650)
Chemical passivation	chemical passivation of stainless steel and alloys

Other operations

Our enterprise make some other services as well:

- cutting of material on band saws
- flat grinding (the table is 200x630 mm)
- centerless grinding works (Ø2-30mm)
- gear milling (up to module 2, max Ø160mm)

and other operations.

Mastering of new technologies for us is on the way!

Subcontracting

We are ready to take care of all the details and components that the customer needs.

The works and services that RESIF can not perform at its own facilities are transferred to a subcontract. Our enterprise bears full responsibility for the final result.

All subcontractors are audited by our employees.

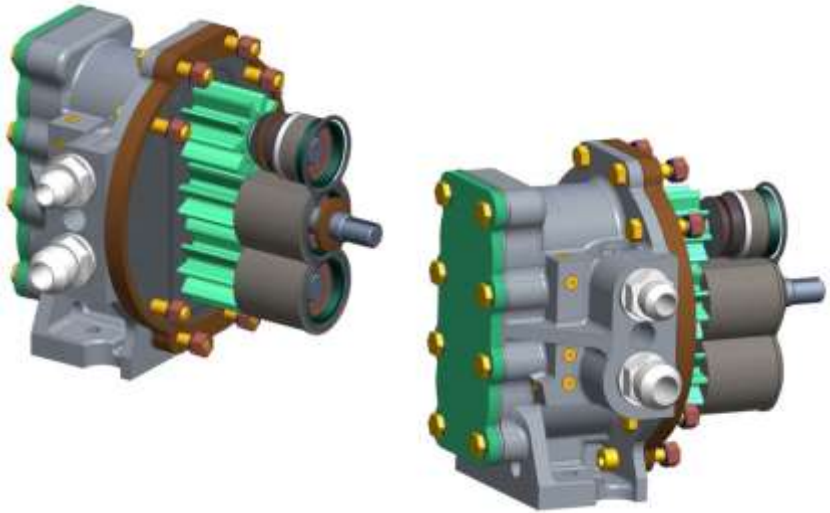
The work performed by outside organizations passes 100% of the incoming control.

Engineering

Complex of engineering and consulting services for the manufacture of parts:

- process engineering
- creating and testing of 3D models
- Writing of control programs for machining centers
- outsourcing and control of subcontract services
- reverse design and so on.

We are always looking for the optimal solution for customers. **RESIF solves the problems of the client, and does not create them!**



Quality control:

- quality management system
- quality assurance department
- calibration laboratory

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Quality management system

Since 2004, the system (QMS) of RESIF is confirmed by ISO 9001 certificate.

- QMS is focused on the lack of inconsistencies in customer requirements for quality

Today, RESIF **has successfully passed** an audit of such demanding partners as

- SIEMENS
- Optical corporation Shvabe

Today RESIF has a certificate of ISO 9001: 2015.

Quality assurance department

The main purpose of the department is to **ensure the impeccable quality** of the products that RESIF manufactures for its customers.

- 3D measuring systems (accuracy 0,003mm)
- measuring columns on an air cushion (accuracy 0,002mm)
- microscopes
- hardness testers
- profilometers, etc.

In 2016, at the entrance control of customers, inconsistencies amounted to 0.16% of the volume of work performed. All of them are fixed in the shortest time at our expense.

In addition, the company provides control and measurement services on the open market.

Calibration laboratory

There is calibration laboratory in the company, which is accredited by ISO/IEC 17025.

All measuring instruments are tested in accordance with the requirements of technological instructions and standards.

The laboratory provides calibration services for measuring equipment, instruments, gages and tools for many customers.

Smart precise machining

If you have parts or components that you could outsource,
let us calculate the price and make a sample.

We are confident you would appreciate our quality level and price competitiveness!

For further information please see **resif.by**

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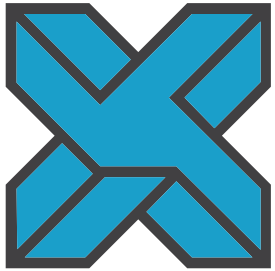

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CONSIDER IT MADE. PRECISELY.

+375 (17) 207 02 50
+375 (17) 212 39 02 fax

14, Korzhenevskogo str.,
Minsk 220108, Republic of Belarus

resif.by
office@resif.by