





## CHALLENGES IN CASTING-BASED MANUFACTURING?

– THAT'S WHAT WE SPECIALIZE IN

We are an aluminium high-pressure foundry specialized in the casting and mechanical processing of products for various applications. Lumi Team produces casting parts for organizations across different sectors such as lighting, automotive, heating, electronics, medical technology, etc. We are proud to offer a complete service from design and toolmaking to die-casting and trimming, up to CNC machining and powder painting, as well as contractual assembly. Our team is comprised of experienced professionals who implement complex and specialist projects professionally and qualitatively. Apart from offering our services to other companies across various industries we create our own products. Our extensive list of completed projects proves that our machine park can take on any challenge. If your foremost priority

is to be certain that the solution provided will meet all your needs and requirements without compromise, we invite you to get in touch with us. At each stage of co-operation, from inquiry all the way to the final handshake, we focus on sharing knowledge and providing support in the selection of solutions tailored to fit your needs. Our design office, tooling and assembly workshops as well as the state-of-art machine park are at your service, ready to turn any idea into reality. You have found your OEM manufacturer.

## A TECHNOLOGICAL ECOSYSTEM

### ADVANCED AND FULLY AUTOMATED ALUMINIUM FOUNDRY

Advanced casting machines with real time casting system guarantee products surpassing expectations of most demanding clients. Our DAK series FRECH cold-chamber die casting machines with 800 and 950 tonnes locking force, work along KUKA pick and place robots with product completeness check system in two automated casting cells. We use top aluminium alloys for die casting and can die cast any workpiece up to 10 kg heavy. We work with trusted and reliable suppliers that can deliver a quality certificate and document the chemical composition of alloys sold. In our automatic refining process the alloy is further prepared for casting to ensure maximum quality. The casting cells and smelting furnaces are completed by automatic 30 tonnes TECNOPRES KZP 30 trimming presses in an effort to fully automate the whole casting process making it more efficient, cost-effective and fast. Nevertheless, it is a well-designed and made casting mould that guarantees a smooth and efficient manufacturing process and this is why we offer a tooling service. Our expert process engineers design die casting moulds using the latest CAD/CAM software, taking that responsibility off the shoulders of our clients. All moulds can be manufactured at our machine park.

### WORLD-CLASS CNC MACHINING

Our manufacturing area (4,500 m<sup>2</sup>) includes over 20 advanced CNC machine tools by renowned manufacturers such as Mazak, Brother, Citizen, Okamoto. Our team, with our technical facilities, provide the following machining and grinding services:

- turned components Ø10 to Ø500 mm
- milled components from 5 × 5 × 5 mm to 3,500 × 820 × 500 mm using multi-axis systems
- multi-tasking machining length 1700 mm and Ø400 mm
- deep hole drilling on vertical 4 and 5-axis machining centres
- surface grinding up to 1,000 × 500 mm
- mass manufacturing of aluminium components using advanced methods and fast machining centre.

### ECO-FRIENDLY POWDER COATING SPRAY BOOTH

The arrangement of our powder coating spray booth guarantees the highest coating quality in the stable conditions of an automated process. A modular manufacturing line design ensures flexibility and allows to expand our production capacity when faced with higher demand. A surface treatment tunnel allows to coat not only cast aluminium but also cast steel and cast iron parts. The maximum coated part dimensions: height - 180 cm, width - 45 cm, length - 30 cm. Placing our powder coating spray booth in close proximity to our foundry, CNC machine park and assembly department guarantees optimal lead times of a multi-stage manufacturing process.

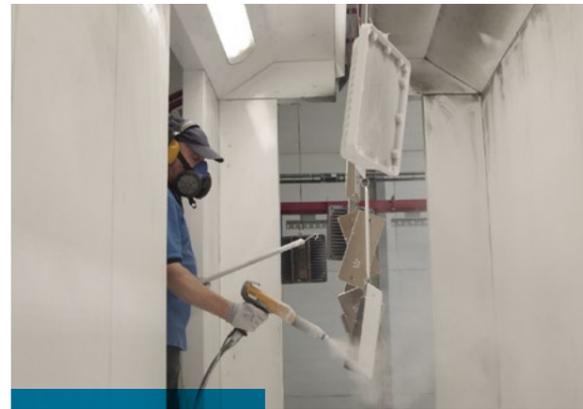
# DISCOVER THE POTENTIAL

## OF OUR MACHINE PARK

Quality will only remain a promise if it is not confirmed by the team's experience and backed up by a modern machine park. Because in our Technology Centre we focus on providing comprehensive services to customers from various industries, we constantly strive to modernize and expand our machine park. As a result, the average age of our machines does not exceed 5 years.

1. DAK series FRECH cold-chamber die casting machines with 800 and 950 tonnes locking force
2. Milling centres, vertical machining centres, multi-axis machining centres: MAZAK, BROTHER, MIYANO and CITIZEN
3. Automated machining cells
4. Automated and eco-friendly powder coating spray booth

Are you interested in solutions for automation? Visit us on [www.rexioteam.eu](http://www.rexioteam.eu)



4 ▲



9 ▼



3 ▶



9 ▼



1 ▲



11 ▶



10 ▼



◀ 8



5 ▼



◀ 7

2 ▼

5. KUKA pick and place robots with product completeness check system after casting
6. Automatic 30 tonnes TECNOPRES KZP 30 trimming presses
7. LAC tilting gas furnace, 1,100 kg capacity
8. STAR E2000 PYROTEK molten aluminium treatment system
9. MELTEC aluminium tank holding furnaces, 5 and 10 kg dosing capacity
10. Measuring instruments, e.g. WENZEL coordinate measuring machine, spectrometer, surface roughness tester etc.
11. Automated FLEXLINK assembly line prepared for integration with robots

# MANUFACTURING PROCESS

– STEP BY STEP

## 01. MOULD PREPARATION

A well-designed mould guarantees a smooth and efficient manufacturing process to meet all expectations at the final stage - our expert process engineers design the moulds using the latest CAD/CAM software.

## 02. ALUMINIUM SMELTING

The first stage of the casting process is crucial - with low quality raw materials, the casting will not match expectations. That is why we have chosen to work with trusted and reliable suppliers that can deliver a quality certificate and document the chemical composition.

## 03. LADLE REFINING

The next manufacturing stage is based on an automatic refining process. After smelting, the metal is poured into a pouring ladle in which a refiner head is immersed and rotated. An inert gas flowing through the head moves to the surface of the liquid metal capturing solid inclusions and hydrogen. The refining process is crucial, since it guarantees low gas content in the alloy - it reduces the volume of air retained in the die castings to the minimum.

## 04. ALLOY CLEANING

After refining, melting loss is removed from the metal surface. The cleaned alloy is transferred into the holding furnaces in the casting cell and is ready for further processing.

## 05. CASTING

Our priority is to achieve the highest durability and structure uniformity greatly surpassing traditional methods. We use the latest generation of casting machines with real-time casting capabilities. The quality is further improved by process automation - our casting machines work along with robots in the automated casting cells.

## 06. MACHINING

Accuracy is crucial at this stage - removing the allowance must not affect the properties of the end product. We have in-house CNC machine tools - over 20 advanced multi-axis machining centres. The process is fully automated to guarantee repeatability and perfect results every time.

## 07. SOAKING

Before coating, the parts are soaked at temperature higher than coating temperature to remove the air trapped in the aluminium casting before powder coating and to prevent porosity in a powder coating film.

## 08. COATING

After preparation, the parts are coated in an in-house eco-friendly powder coating spray booth. Eco-friendly properties are not the only advantage. The spray booth features a five-zone washer system for corrosion protection of aluminium and other alloys. The chemical surface treatment improves the coating's durability, a feature highly appreciated by our clients.

## 09. ASSEMBLY

Our machine park includes an automated assembly line prepared for integration with robots. Its set-up guarantees highest reliability and quality. The assembly line features a system of roller conveyors with pallets dedicated to the assembled products. With the assembly line, the manufacturing process may be fully completed in-house, with the client receiving a finished product.

## 10. LABORATORY QUALITY CONTROL

Quality is the key to our success - our laboratory uses Wenzel coordinate testing machine with a measuring range up to 800×1400× 600 mm, Foundry-Master Xline spectrometer, Mitutoyo projector, Mitutoyo surface roughness tester and many other measuring instruments. Quality control of finished products and ongoing inspections at each manufacturing process stage ensure that highest attention to detail is paid to every project.

# SAMPLE PROJECT

## LED LUMINAIRE BODY



### 01 TASK

Scope:  
Design > Mould > Casting > Machining  
> Coating > Assembly

### 02 CHALLENGE

The luminaire's die cast body required extensive processing capabilities and advanced engineering skills due to its complex shape. High and thin ribs and external rims, as well as large flat surfaces are a challenge that requires high-accuracy setup of the casting process.

### 03 SOLUTION

The production was supervised by our team of engineers and process engineers. Using CAD/CAM software we have prepared the light fittings for serial manufacturing. The clamping systems, moulds, trimming dies and tooling required for assembly including steel frames were designed and manufactured in-house.

At the casting stage we focused on achieving an optimum distribution of temperature in the mould, temperature control and spraying. Real Time system allows high-precision control of piston movement for uninterrupted molten aluminium casting in the mould. Therefore, we achieved the highest durability and structure uniformity greatly surpassing traditional methods.

The level of accuracy required when drilling holes and making structural elements of the light fitting bodies was provided by our advanced CNC machine tools. The automation of the manufacturing process guaranteed a perfect fit of the body and components of the light fitting.

Durable and aesthetic finish of the light fittings was achieved in a coating process using best quality powder.

### 04 RESULT



LUMINAIRE BODY  
AFTER DIE-CASTING  
ON FRECH DAK  
720 MACHINE

1



DIE-CAST AFTER  
TRIMMING ON  
TECNOPRES KZP  
30 PRESS

2



DIE-CAST AFTER  
MACHINING ON  
BROTHER 650  
MACHINE TOOL

3



LUMINAIRE DIE-  
CAST BODY  
COMPONENT AFTER  
COATING IN OUR  
POWDER COATING  
SPRAY BOOTH

4



## CERTIFIED

### QUALITY

Satisfaction of our clients is what we aspire to and an indicator of the quality of our products and services. We are striving to improve our manufacturing processes and standards as well as our services to achieve a world-class quality. Therefore in our day-to-day work, we also apply an Internal Quality Policy.

1. We focus on development and implementation of the latest technologies.
2. We raise the qualification of our staff through regular trainings.
3. We monitor the processes at every step of our cooperation with the client, from order to shipment to guarantee the highest reliability.
4. We are fully committed to every single project, provide constant flow of information on its progress and actively monitor every process to eliminate errors and immediately respond to any problems that may arise.
5. We regularly carry out customer satisfaction surveys to analyse their needs and expectations.

We perform to the highest standards of ISO 9001:2015 and AS 9100D Certificate of Approval (equivalent to EN 9100:2016 and JISQ 9100:2016) following an audit and technical inspection by Lloyd's Register Quality Assurance Limited.





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WE SPECIALIZE IN  
CASTING-BASED MANUFACTURING

