

# GAS TURBINE SPARE PARTS

COMPLETE IN-HOUSE DESIGN & PRODUCTION



[pbsindia.com](http://pbsindia.com)

# INVESTMENT CASTING

PBS, a Czech company with a 200-year history, has been specializing in investment casting since 1969 and is the European leader in this technology. We focus on precision castings of superalloys as wheels for turbochargers, blades for gas turbines, impellers and guide wheels for aircraft engines and many other types of castings for various industrial sectors.

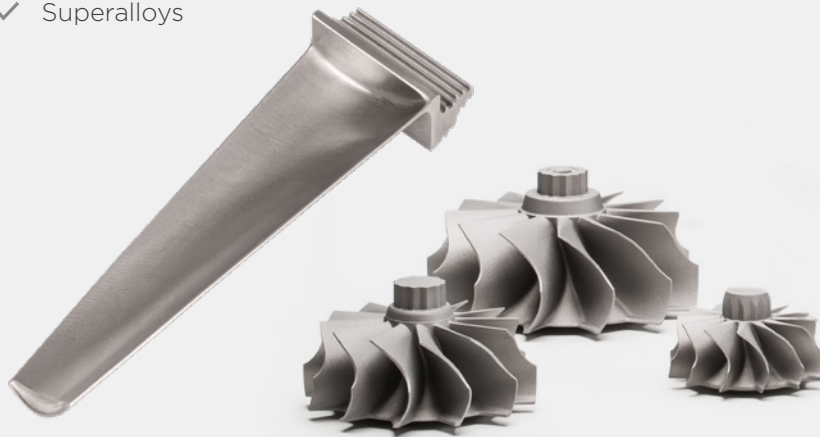
Our advanced technologies, including vacuum and open furnaces, enable us to produce a wide range of materials, including steel alloys. With a reputation for reliability and expertise, we continually evolve to meet our customers' needs and deliver high quality products.

## WHY PBS

- ✓ We provide everything from design, casting and machining to the final product
- ✓ From carbon steels to nickel or cobalt superalloys
- ✓ Technically advanced products with high durability
- ✓ Reverse engineering and rapid prototyping
- ✓ For several decades, we have been cooperating with leading world manufacturers of turbochargers, combustion turbines, aviation components and insulation materials based on glass wool

## PRODUCTION POSIBILITIES

- ✓ Dimension range of casts: 30 - 600 mm
- ✓ Weight range of casts: 0.15 - 50 kg
- ✓ Superalloys
- ✓ Air or vacuum casting
- ✓ Surface roughness: Ra 3,2 µm



**INC 713**  
**INC 738**  
**MAR M247**  
**B1914**

## FOUNDRY TECHNOLOGY

- ✓ 10 injection moulding machines
- ✓ 2 robotic coating lines
- ✓ 2 boilerclaves for smelting
- ✓ 4 carousel gas annealing furnaces
- ✓ 2 electronic resistance annealing furnaces
- ✓ 7 vacuum furnaces
- ✓ 9 blasting machines



# OUR PORTFOLIO OF TURBINE BLADES



**MS3002-1**



**CP MS3002**



**MS5001-1 OT**



**MS3002-2**



**CP MS3002**



**MS5001-2 OT**



**MS5001-1 NT**



**MS5002-1**



**CP MS5002**



**MS5001-2 NT**



**MS5002-2**



**CP MS5002**

# GE TURBINE BLADES



## MS3002-1

### First Stage Bucket

#### TECHNICAL SPECIFICATION

Model of turbine	H-J
Firing temperatures	up to 950 °C
EQV to OEM number	314B7156G007
Bucket in set	80 pcs
Alloy	EEQ 111 / IN 738LC
Coating	HVOF + Aluminizing
Weight	1.40 kg (3.09 lb)



## MS3002-2

### Second Stage Bucket

#### TECHNICAL SPECIFICATION

Model of turbine	H-J
Firing temperatures	up to 950 °C
EQV to OEM number	314B7156G003
Bucket in set	80 pcs
Alloy	IN 738LC
Coating	No
Weight	1.80 kg (3.97 lb)
Z-Welding	Applied

# GE COVER PLATES



## CP MS3002-1

### First Stage Cover Plate

#### TECHNICAL SPECIFICATION

Model of turbine	H-J
Firing temperatures	up to 950 °C
EQV to OEM number	818E0715P002-005
Bucket in set	4x40 pcs
Alloy	IN 738LC
Coating	No
Weight	0.13 kg (0.28 lb)



## CP MS3002-2

### Second Stage Cover Plate

#### TECHNICAL SPECIFICATION

Model of turbine	H-J
Firing temperatures	up to 950 °C
EQV to OEM number	818E0715P006-009
Bucket in set	4x40 pcs
Alloy	IN 738LC
Coating	No
Weight	0.11 kg (0.25 lb)

# GE TURBINE BLADES



## MS5001-1 OT

### First Stage Bucket

#### TECHNICAL SPECIFICATION

Model of turbine	L-P
Firing temperatures	up to 950 °C
EQV to OEM number	314B7158G003
Bucket in set	120 pcs
Alloy	IN 738LC
Coating	Aluminizing
Weight	1.20 kg (2.65 lb)



## MS5001-2 OT

### Second Stage Bucket

#### TECHNICAL SPECIFICATION

Model of turbine	P-PA
Firing temperatures	up to 950 °C
EQV to OEM number	314B7159G006
Bucket in set	90 pcs
Alloy	IN 738LC
Coating	No
Weight	2.00 kg (4.41 lb)
Z-Welding	Applied

# GE TURBINE BLADES



## MS5001-1 NT

### First Stage Bucket

#### TECHNICAL SPECIFICATION

Model of turbine	P-PA
Firing temperatures	up to 950 °C
EQV to OEM number	314B7158G015
Bucket in set	120 pcs
Alloy	IN 738LC / MAR M247 / EEQ 111
Coating	HVOF
Weight	1.40 kg (3.10 lb)



## MS5001-2 NT

### Second Stage Bucket

#### TECHNICAL SPECIFICATION

Model of turbine	P-PA
Firing temperatures	up to 950 °C
EQV to OEM number	314B7159G013
Bucket in set	90 pcs
Alloy	IN 738LC
Coating	No
Weight	2.00 kg (4.41 lb)
Z-Welding	Applied

# GE TURBINE BLADES



## MS5002-1

### First Stage Bucket

#### TECHNICAL SPECIFICATION

Model of turbine	A-C
Firing temperatures	up to 960 °C
EQV to OEM number	3314B7160G018
Bucket in set	80 pcs
Alloy	EEQ 111
Coating	HVOF + Aluminizing
Weight	3.80 kg (8.38 lb)



## MS5002-2

### Second Stage Bucket

#### TECHNICAL SPECIFICATION

Model of turbine	A-C/D
Firing temperatures	up to 950 °C
EQV to OEM number	314B7161G002
Bucket in set	80 pcs
Alloy	IN 738LC
Coating	No
Weight	4.40 kg (9.70 lb)
Z-Welding	Applied

# GE COVER PLATES



## CP MS5002

### First Stage Cover Plate

#### TECHNICAL SPECIFICATION

Model of turbine	A-C/D
Firing temperatures	up to 950 °C
EQV to OEM number	818E0714P002-005
Bucket in set	4x40 pcs
Alloy	IN 738LC / U500
Coating	No
Weight	0.31 kg (0.69 lb)



## CP MS5002

### Second Stage Cover Plate

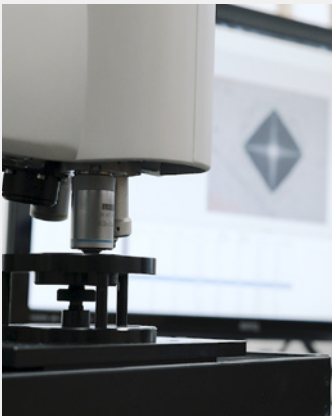
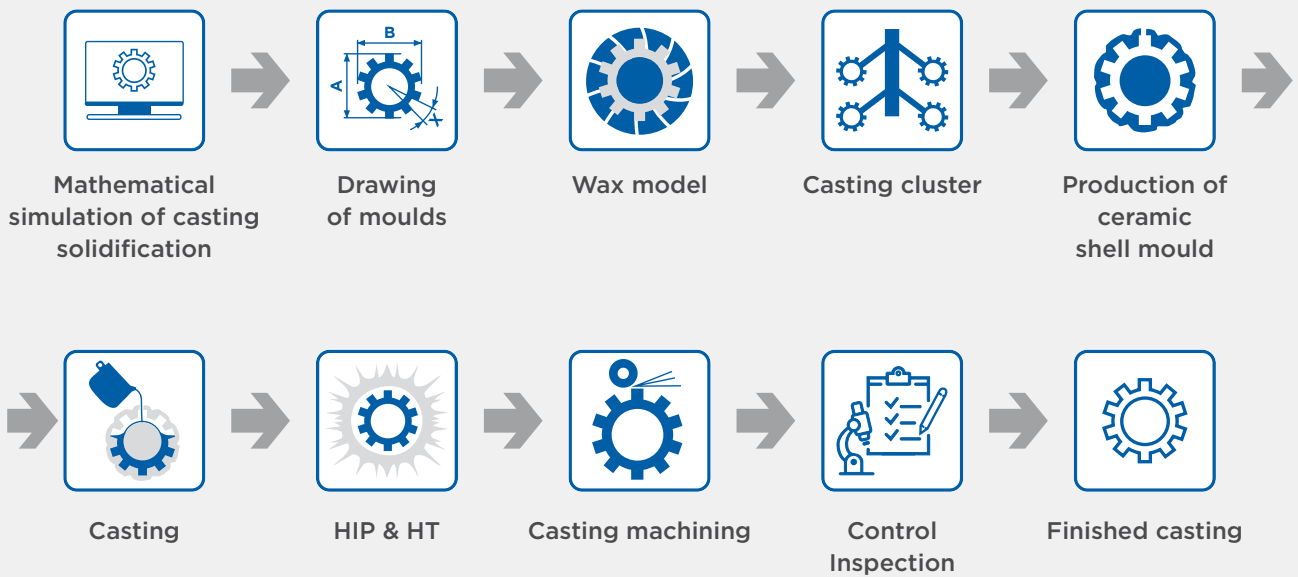
#### TECHNICAL SPECIFICATION

Model of turbine	A-C/D
Firing temperatures	up to 950 °C
EQV to OEM number	818E0714P006-009
Bucket in set	4x40 pcs
Alloy	IN 738LC / U500
Coating	No
Weight	0.27 kg (0.59 lb)

# APPLICATION



## PRODUCTION PROCESS



## ADDITIONAL SERVICES

- › Special types of heat treatment
  - In a protective atmosphere of argon, nitrogen or vacuum
  - Hot isostatic pressing (HIP)
- › Machining and balancing
- › Production of model equipment
- › Removing ceramic cores in a leaching autoclave
- › 3D measurement
- › Chemical and mechanical tests and analysis
- › Micro and macro analysis
- › Testing in our own or independent laboratories
- › Non-destructive tests certified by NADCAP

# OVERVIEW OF OUR PRODUCTS



# ABOUT US

PBS is a globally recognized engineering brand with a history of over two hundred years.


The company specializes in the R&D and manufacturing of turbine engines, APUs, and ECS systems designed for unmanned aerial vehicles, medium helicopters, and airplanes.


PBS also develops and produces cryogenic equipment for the world's largest manufacturers of gas liquefaction systems.

PBS Foundry is one of the leading suppliers of nickel and cobalt-based superalloy castings in Europe.

 **EASA** DOA  
European Aviation Safety Agency

 POA & MOA

 **LRQA** AS 9100,  
ISO 9001 & ISO 14001

 **Nadcap** Non-destructive  
testing (PT, RT)  
Administered by NDT ACCREDITED



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