

TURBINE ENGINES

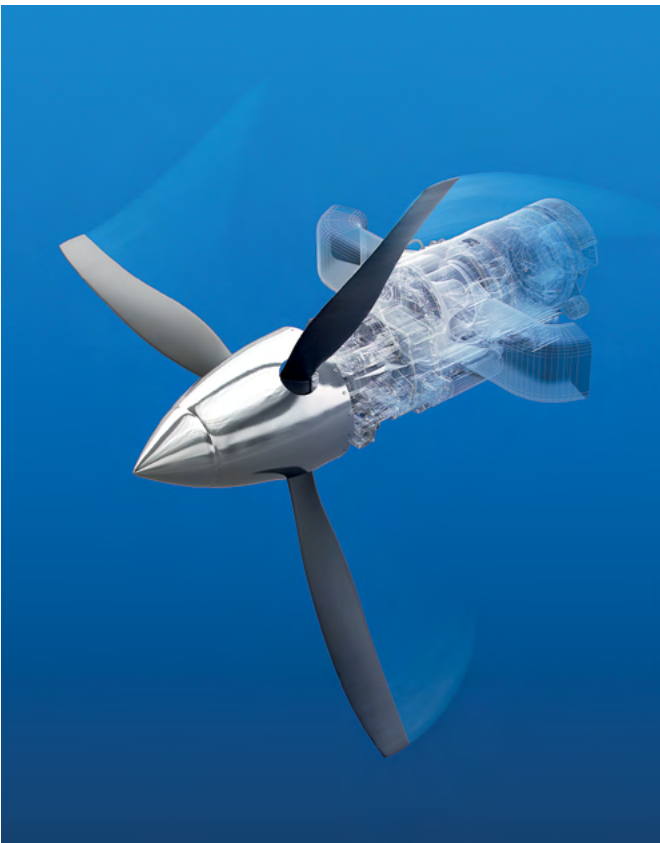
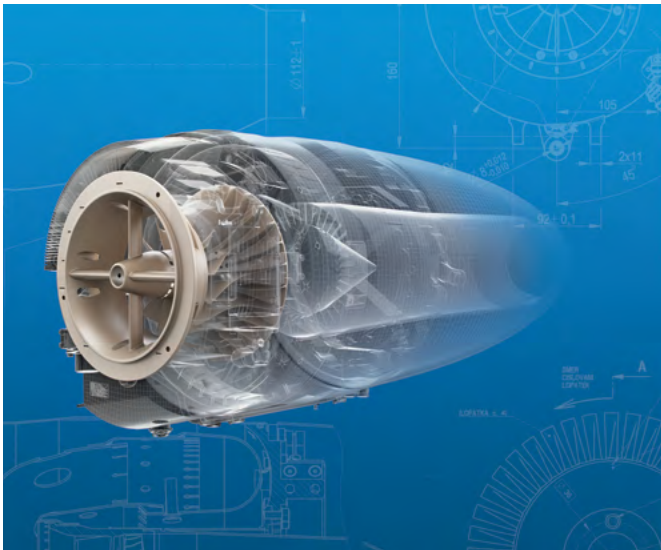


AEROSPACE • INVESTMENT CASTING • CRYOGENICS • SURFACE TREATMENT

WE DEVELOP AND MANUFACTURE TURBINE ENGINES

We have designed and successfully launched several engine programs, delivering reliable, high-quality turbine engines specifically designed for use in unmanned aircraft systems.

Our R&D department is currently finishing the development of a new PBS TJ200 Turbojet Engine, featuring a completely rebuilt design. This will be the most powerful engine of the PBS jet engines range.



EVOLUTION OF THE PBS ENGINE PROGRAMS

PBS offers a wide portfolio of customer modifications. We continuously increase the performance of individual types of engines while maintaining installation dimensions. We modify the engines for **in-flight starting**, for **re-use after landing in salt water** and other **specific customer modifications**. In selected types of engines we offer a choice between two versions of lubrication - by a separate oil system or by an oil admixture in the fuel.

We continuously apply our experience from installations in thousands of UAVs, UCAVs and target drones.

PBS JET ENGINE MODIFICATIONS



OIL
Separate oil system



SALT WATER
Salt water recovery



PYRO
Pyro in-flight ignition



Under development



Under development



Under development

PBS TJ200

The PBS TJ200 turbojet engine is designed primarily as a propulsion unit for modern UAV and UCAV systems. It is a compact engine of a unique design, fuel lubricated, equipped with BLDC starter-generator, electric metering fuel pump and electronic control system of FADEC type. TJ200 will represent the most powerful propulsion unit from the PBS turbojet engine family.



MAIN FEATURES

- › Compact design
- › Excellent thrust-to-weight ratio
- › Built-in starter-generator
- › Full authority digital engine control (FADEC)
- › Windmill starting option under 7 sec.



TECHNICAL PARAMETERS

| TECHNICAL PARAMETERS | METRIC | IMPERIAL |
|-------------------------|---------|------------|
| Thrust | 2,280 N | 512.54 lbf |
| Power supply | 28 V DC | 28 V DC |
| Electrical power output | 4.0 kW | 4.0 kW |

| DIMENSIONS AND WEIGHT | METRIC | IMPERIAL |
|-----------------------------------|---------|----------|
| Outer diameter* | 246 mm | 9.68 in |
| Length (including exhaust nozzle) | 730 mm | 28.74 in |
| Weight | 28.0 kg | 61.73 lb |

*Excluding insulation and equipment

| OPERATING ENVELOPE | METRIC | IMPERIAL |
|--------------------|----------|-----------|
| Max. altitude | 10,000 m | 32,808 ft |
| Max. speed | 0.95 M | 0.95 M |

| STARTING ENVELOPE | METRIC | IMPERIAL |
|-------------------|--------------|--------------|
| Max. altitude | 6,000 m | 19,685 ft |
| Max. speed | 0.4 to 0.8 M | 0.4 to 0.8 M |

PBS TJ150

The PBS TJ150 small jet engine has been developed for unmanned aerial vehicles (UAVs) and target drones.



MAIN FEATURES

- › Compact design
- › Excellent thrust-to-weight ratio
- › The built-in starter-generator allows a reliable start and power supply to the deck network
- › Windmill starting option under 7 sec.



OIL



SALT
WATER



PYRO



TECHNICAL PARAMETERS

| PARAMETERS | METRIC | IMPERIAL |
|------------------|---------------|-----------------|
| Thrust | 1,500 N | 337 lbf |
| Power supply | 28 V DC | 28 V DC |
| El. power output | 600 - 2,250 W | 600 - 2,250 W |
| SFC | 0.12 kg/N/h | 1.138 lb/lbf/hr |
| TBO | 25 - 50 hrs | 25 - 50 hrs |

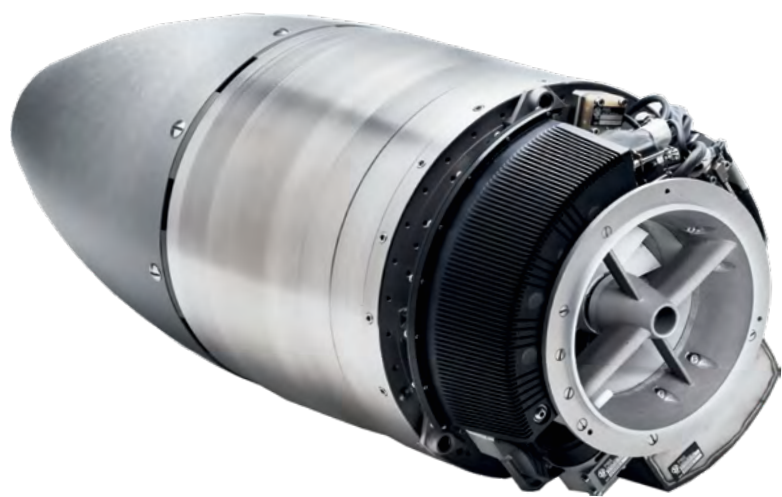
| DIMENSIONS | METRIC | IMPERIAL |
|----------------|----------|----------|
| Outer diameter | 272 mm | 10.71 in |
| Length | 636 mm | 25.04 in |
| Weight | 17.10 kg | 37.70 lb |

| OPERATING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 10,000 m | 32,808 ft |
| Max. speed | 0.9 M | 0.9 M |
| Ambient temperature | -50/+45 °C | -58/+113 °F |

| STARTING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 6,000 m | 19.685 lbf |
| Max. speed | 0.6 M | 0.6 M |
| Ambient temperature | -35/+45 °C | -31/+113 °F |

PBS TJ100

The PBS TJ100 jet engine has been developed for unmanned aerial vehicles (UAVs) including target drones, remote carriers, unmanned combat systems and missiles.



MAIN FEATURES

- › Excellent thrust-to-weight ratio
- › Compact design
- › Built-in starter-generator
- › Electric starting
- › Ground or in-flight restart
- › Windmill starting option under 7 sec.



OIL



SALT
WATER



PYRO



TECHNICAL PARAMETERS

| PARAMETERS | METRIC | IMPERIAL |
|------------------|-----------------|-----------------|
| Thrust | 1,100 - 1,250 N | 247 - 281 lbf |
| Power supply | 28 V DC | 28 V DC |
| El. power output | 700 - 2,300 W | 700 - 2,300 W |
| SFC | 0.126 kg/N/h | 1.236 lb/lbf/hr |
| TBO | 25 - 300 hrs | 25 - 300 hrs |

| DIMENSIONS | METRIC | IMPERIAL |
|----------------|----------|----------|
| Outer diameter | 272 mm | 10.71 in |
| Length | 636 mm | 25.04 in |
| Weight | 17.60 kg | 38.80 lb |

| OPERATING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 10,000 m | 32,808 ft |
| Max. speed | 0.9 M | 0.9 M |
| Ambient temperature | -50/+45 °C | -58/+113 °F |

| STARTING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 6,000 m | 19,685 ft |
| Max. speed | 0.6 M | 0.6 M |
| Ambient temperature | -35/+45 °C | -31/+113 °F |

PBS TJ80-120

The PBS TJ80-120 jet engine has been designed for unmanned aerial vehicles (UAVs) including target drones, remote carriers, unmanned combat systems and missiles.



MAIN FEATURES

- › Best thrust-to-weight ratio in its category
- › Compact design
- › Built-in starter generator
- › Ground or in-flight restart
- › Windmill starting option under 7 sec.



SALT
WATER



PYRO



TECHNICAL PARAMETERS

| PARAMETERS | METRIC | IMPERIAL |
|------------------|---------------|-----------------|
| Thrust | 900 - 1,200 N | 202 - 269 lbf |
| Power supply | 28 V DC | 28 V DC |
| El. power output | 650 - 2,250 W | 650 - 2,250 W |
| SFC | 0.125 kg/N/h | 1.226 lb/lbf/hr |
| TBO | 25 - 50 hrs | 25 - 50 hrs |

| DIMENSIONS | METRIC | IMPERIAL |
|----------------|----------|----------|
| Outer diameter | 235 mm | 9.25 in |
| Length | 636 mm | 25.04 in |
| Weight | 12.80 kg | 28.22 lb |

| OPERATING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 10,000 m | 32,808 ft |
| Max. speed | 0.9 M | 0.9 M |
| Ambient temperature | -50/+45 °C | -58/+113 °F |

| STARTING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 6,000 m | 19,685 ft |
| Max. speed | 0.6 M | 0.6 M |
| Ambient temperature | -35/+45 °C | -31/+113 °F |

PBS TJ40-G1

The PBS TJ40-G1 turbojet engine has been developed for UAVs, target drones and other unmanned systems.



MAIN FEATURES

- › Excellent thrust-to-weight ratio
- › Compact design
- › Built-in starter-generator
- › Electric starting
- › Ground or in-flight restart
- › Starting option under 7 sec.



SALT
WATER



PYRO



TECHNICAL PARAMETERS

| PARAMETERS | METRIC | IMPERIAL |
|------------------|--------------|-----------------|
| Thrust | 395 - 425 N | 89 - 96 lbf |
| Power supply | 14 V DC | 14 V DC |
| El. power output | 150 W | 150 W |
| SFC | 0.147 kg/N/h | 1.442 lb/lbf/hr |
| TBO | 50 hrs | 50 hrs |

| DIMENSIONS | METRIC | IMPERIAL |
|----------------|---------|----------|
| Outer diameter | 147 mm | 5.79 in |
| Length | 304 mm | 11.97 in |
| Weight | 3.40 kg | 7.50 lb |

| OPERATING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 9,000 m | 29,528 ft |
| Max. speed | 0.8 M | 0.8 M |
| Ambient temperature | -50/+50 °C | -58/+122 °F |

| STARTING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 4,500 m | 14,764 ft |
| Max. speed | 0.35 M | 0.35 M |
| Ambient temperature | -40/+50 °C | -40/+122 °F |

PBS TJ40-G2

The PBS TJ40-G2 turbojet engine has been developed for UAVs, target drones and other unmanned systems.



MAIN FEATURES

- › Excellent thrust-to-weight ratio
- › Compact design
- › Built-in starter-generator
- › High electric power output
- › Ground or in-flight restart
- › Starting option under 7 sec.



SALT
WATER



PYRO



TECHNICAL PARAMETERS

| PARAMETERS | METRIC | IMPERIAL |
|------------------|--------------|-----------------|
| Thrust | 395 - 425 N | 89 - 96 lbf |
| Power supply | 28 V DC | 28 V DC |
| El. power output | 1,100 W | 1,100 W |
| SFC | 0.147 kg/N/h | 1.442 lb/lbf/hr |
| TBO | 50 hrs | 50 hrs |

| DIMENSIONS | METRIC | IMPERIAL |
|----------------|---------|----------|
| Outer diameter | 147 mm | 5.79 in |
| Length | 373 mm | 14.69 in |
| Weight | 3.80 kg | 8.38 lb |

| OPERATING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 9,000 m | 29,528 ft |
| Max. speed | 0.8 M | 0.8 M |
| Ambient temperature | -50/+50 °C | -58/+122 °F |

| STARTING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 4,500 m | 14,764 ft |
| Max. speed | 0.35 M | 0.35 M |
| Ambient temperature | -40/+50 °C | -40/+122 °F |

TURBOPROP ENGINE PBS TP100

The PBS TP100 turboprop engine is suitable for MALE UAVs. The engine is designed for use in both pusher and tractor configuration.



MAIN FEATURES

- › Low weight
- › Small installation dimensions
- › Excellent power-to-weight ratio
- › Digital interface for control and monitoring
- › Stable operation at high altitudes and high temperatures
- › Ability to run at cold temperatures below -30 °C without preheating
- › Pusher and tractor configuration option



TECHNICAL PARAMETERS

| PARAMETERS | METRIC | IMPERIAL |
|---------------------------|---------------|----------------|
| Output shaft speed | 2,158 RPM | 2,158 RPM |
| Power supply | 28 V DC | 28 V DC |
| El. power output | 720 - 3,700 W | 720 - 3,700 W |
| Max output power | 180 kW | 241 HP |
| Specific fuel consumption | 0.548 kg/kW/h | 0.901 lb/HP/hr |

| DIMENSIONS | METRIC | IMPERIAL |
|-----------------------------|--------------|------------------|
| Height x width (no exhaust) | 398 x 330 mm | 15.67 x 13.00 in |
| Length | 891 mm | 35.08 in |
| Weight | 61.60 kg | 135.80 lb |

| OPERATING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 9,000 m | 29,528 ft |
| Ambient temperature | -50/+45 °C | -58/+113 °F |

| STARTING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 6,000 m | 19,685 ft |
| Ambient temperature | -30/+45 °C | -22/+113 °F |

TURBOSHAFT ENGINE PBS TS100

The PBS TS100 turboshaft engine is suitable for light and ultralight UAV helicopters weighing up to 1,000 kg. The engine offers a power take-off of up to 180 kW.



MAIN FEATURES

- › Low weight
- › Small installation dimensions
- › Excellent power-to-weight ratio
- › Digital interface for control and monitoring
- › Stable operation at high altitudes and high temperatures
- › Ability to run at cold temperatures below -30 °C without preheating
- › Two output shaft speed configurations



TECHNICAL PARAMETERS

| PARAMETERS | METRIC | IMPERIAL |
|----------------------------|-----------------|-----------------|
| Output shaft speed (ZA/DA) | 5,978/2,158 RPM | 5,978/2,158 RPM |
| Power supply | 28 V DC | 28 V DC |
| El. power output | 720 - 3,700 W | 720 - 3,700 W |
| Max output power | 180 kW | 241 HP |
| Specific fuel consumption | 0.548 kg/kW/h | 0.901 lb/HP/hr |

| DIMENSIONS | METRIC | IMPERIAL |
|-----------------------------|----------------|------------------|
| Height x width (no exhaust) | 398 x 330 mm | 15.67 x 13.00 in |
| Length (ZA/DA) | 829/881 mm | 32.64/34.69 in |
| Weight (ZA/DA) | 56.70/61.30 kg | 125.00/135.10 lb |

| OPERATING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 9,000 m | 29,528 ft |
| Ambient temperature | -50/+45 °C | -58/+113 °F |

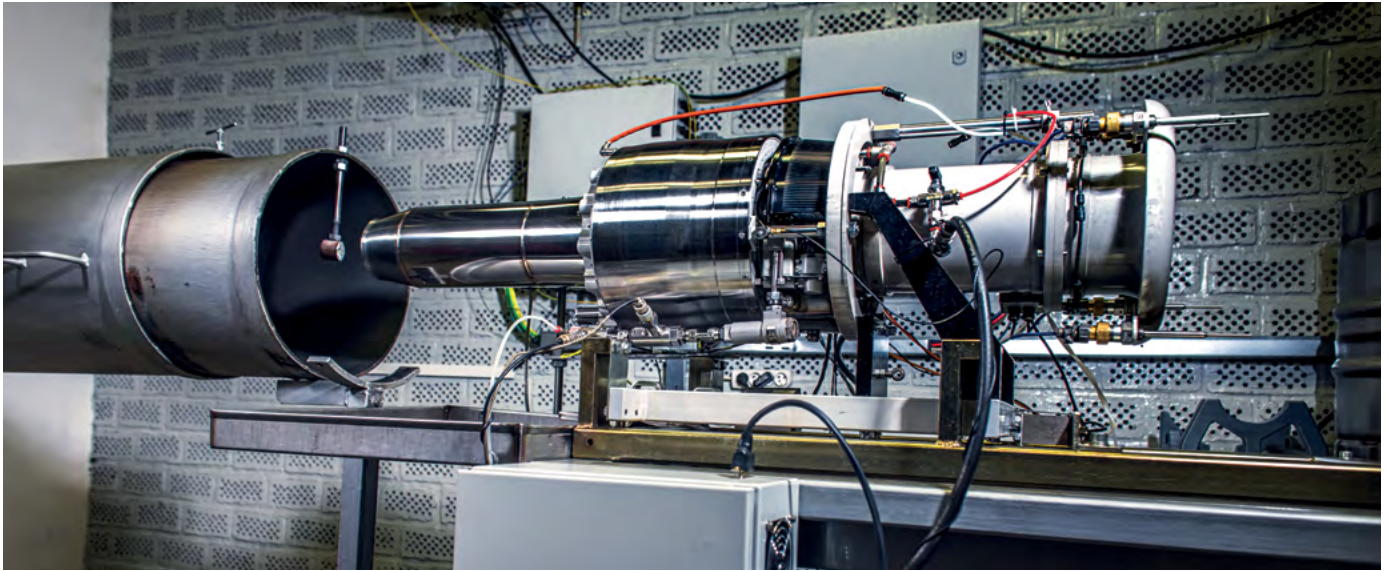
| STARTING ENVELOPE | METRIC | IMPERIAL |
|---------------------|------------|-------------|
| Max. altitude | 6,000 m | 19,685 ft |
| Ambient temperature | -30/+45 °C | -22/+113 °F |

PBS TESTING FACILITY

The development and production of UAV turbine engines at PBS is also supported by our advanced in-house testing facility.

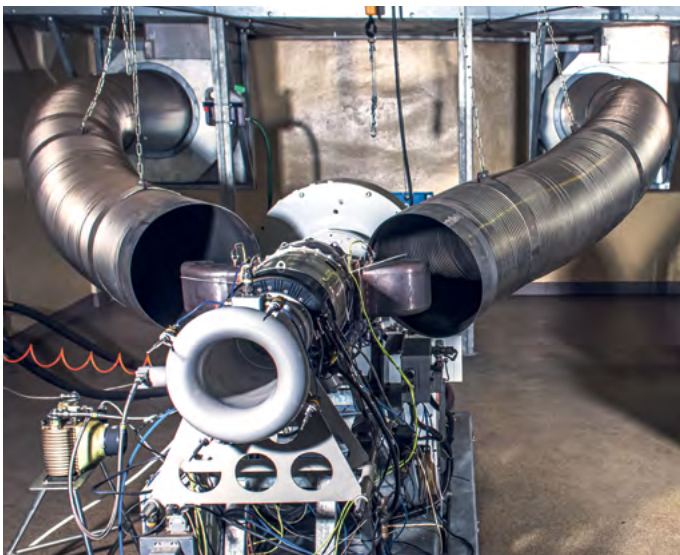
A team of experienced flight test engineers and

technicians utilizes a range of specialized testing cells for comprehensive testing of turbine engines as well as auxiliary power units and environmental control systems.



TESTING CAPABILITIES

- › Turbojet engines with a thrust of up to 2,500 N
- › Flight speed simulations of up to 0.8 M
- › Testing with an air pressure of up to 1,200 kPa
- › Temperatures from -60 to 80 °C
- › G-force limit tests
- › Vibration and impact tests
- › Complete ATP and production testing



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.



DOA



POA & MOA



AS 9100,
ISO 9001 & ISO 14001



Non-destructive
testing (PT, RT)



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