

safe
above
the SKY



MAPNA GROUP

AERO

Iranian Aero Engine & Equipment Engineering & Manufacturing Co.



MAPNA GROUP
Iranian Aero Engine & Equipment
Engineering & Manufacturing Co.

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“Top priority of Iranian Aero Engine & Equipment Engineering and Manufacturing Company (Mapna Aero Center) is to ensure the continuity of safe operation of commercial aviation fleets in full compliance with international aviation regulations. Every time we issue a certificate of release to service for a part or a repaired/overhauled engine to be delivered to an airline, I can proudly say that another step has been taken to make air transportation safer for our compatriots.”

Roohallah Sobhani, Managing Director

INTRODUCTION

2029

At the Forefront
of Cutting-Edge
Aviation Technology

2024

DOA-MOA-POA
Auxiliary Equipment
Airport Service,...

2015

Foundation of
MAPNA Aero Center



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About Iranian Aero Engine & Equipment Engineering and Manufacturing Co. (MAPNA Aero Center)

MAPNA is a leading industrial enterprise that its achievements for more than two decades bring about remarkable position in the country and also a world class status in the global market in the area of cutting-edge technologies and industries. MAPNA group is known as an original equipment manufacturer and designer of various types of energy systems. MAPNA was constituted so as to increase electric power generation capacity in IRAN with the goal to meet the country's demand in field of design and manufacturing turbine and relevant auxiliary equipment. Recently, MAPNA is broadening its horizon to participate in other markets such as oil & gas industry, electric vehicles, and aviation industry.

MAPNA Aero Center was founded in 2015 to take the opportunity and become a key player in provision of MRO service for domestic airlines. MAPNA Aero Center has progressively grown and boosted up its development in the fields of design, production, and maintenance to respond domestic and regional needs. MAPNA Aero Center mission is designed to be a reliable provider of aero turbine engine solutions to increase total value proposition to customers. MAPNA Aero Center offers viable and cost-effective products and services for a wide range of domestic and international purchasers.



People Current Working
for
MAPNA Aero Center

650+

"We contribute to the CFM56°, V2500°, Arriel 1E2°, JT8D and other civil aircraft engines"



Part
145
Certificate



Able to Repair
Variety Types of
Engine



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MAPNA Aero Center is a leading provider of comprehensive engine repair services, delivers a wide range of capabilities to ensure the optimal performance and reliability of engines across various industries. With a skilled team of technicians and state-of-the-art infrastructure, MAPNA Aero Center consistently delivers high-quality repairs that exceed industry standards.

Comprehensive Repair Services

MAPNA Aero Center offers a comprehensive suite of engine repair services, including:

- **Overhaul:** A complete restoration of an engine to its original condition, ensuring optimal performance and reliability.
- **Repair:** The rectification of specific components to restore their functionality and extend their lifespan.
- **Certification:** The evaluation and validation of repaired engines to ensure they meet industry standards and regulatory requirements.

Part-145 Certification

MAPNA Aero Center holds Part-145 certification, which is an internationally recognized standard for aviation maintenance organizations. This certification demonstrates our commitment to providing the highest quality and safety standards in engine repair. With Part-145 certification, we can legally repair and maintain a wide range of aircraft engines.

Portfolio of Engine Types

MAPNA Aero Center engine repair expertise extends to a diverse range of engine types, including:

- **CFM56:** A comprehensive family of high-bypass turbofan engines developed by CFM International.
- **Arriel:** A range of turboshaft engines produced by Turbomeca.
- **JT8D:** A family of high-bypass turbofan engine developed by Pratt & Whitney.
- **V2500:** A family of high-bypass turbofan engine developed by International Aero Engines (IAE).
- **CF6:** A family of high-bypass turbofan engines developed by General Electric.
- **PW4000:** A family of high-bypass turbofan engines developed by Pratt & Whitney.

Indoor & Outdoor



Engine Test



Test Cell

A modern test cell equipped with a data acquisition system and measuring equipment for continuous airworthiness checks, performance, and acceptance tests after the maintenance of CFM56 family engines.

- Turbofan CFM56 Family Engines Testing
- 60000 lbs. Overhead Thrust Measurement
- Efficient Construction Methodology that has Set a New Low Cost for this Type of Facility
- Fuel Storage and Delivery System and other Skidded Subsystems
- State of the Art ADAQ™ System with Modular Control Room
- Fuel Delivery/Air Start Packaged System

Mobile Outdoor Test Bed (MOTB)

The Mobile Outdoor Test Bed (MOTB) consists of a frame supporting the engine and providing ground-level thrust measurements. The effect of turbulence on input air conditions are suppressed by the Turbulence Control Structure (TCS) fitted around the engine inlet. The MOTB portable design made it possible to conduct tests in different weather conditions from -10°C cold ambient in Ardabil city to over 45°C hot regions in the south of IRAN and also it is able to do acceptance tests after the maintenance.

- Turbofan CFM56 Family Engines
- 60000 lbs. Overhead Thrust Measurement
- Transportable Units to Anywhere





Part
145
Certificate



Able to Repair
1400+
Parts



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MAPNA Aero Center received certificates as a C7 category maintenance Organization in compliance with CAA.IR Part-145, approved to maintain the components, parts and appliances on 29th April, 2020.

Our Techniques provide extensive repair capability of parts across different engine models such as CFM56 family, V2500 A1/A5, CF6-50, CF6-80, JT8D, TAY650-15, LF507-1F. We are at the forefront of repair industry technology and work continuously to remain there. We offer a full service package for engine part repair and replacement. We are able to repair more than 1380 part numbers of hot section components based on part-145 authority.

Portfolio of Services

• Analysis services

- Metallurgical Failure Analysis
- Service Life Estimation

• Full repair services

- Cleaning: Chemical, Mechanical.
- Inspection: VT, FPI, Tomography (X RAY), Airflow, Watercheck.
- Repair: Machining, Welding, Patch Repair, Brazing, Coating, Species Replacement.

• Process services

- Welding: TIG, Laser Welding and Cladding.
- Coating: Low & High Activity Diffusion Coatings (Aluminides), HVOF & APS (MCrAlY, TBC), EBPVD(TBC), CVD (Pt-Aluminide)



15%
of Employees
Work in Design Office



Part
21
Certificate



SAFE ABOVE THE SKY

MAPNA Aero Center Design Organization provides a broad range of design and engineering services, namely fan & compressor design, combustion system design, turbine design, structural design, system design, virtual assembly design, design planning, benefiting top-tier engineers in accordance with the requirements of aviation standards, Part-21.

Fan & Compressor Design

In the compressor design division, three-dimensional analysis involves aerodynamic flow and two-way fluid-solid interaction to acquire aerodynamic loading on the structure, steady state aerodynamic performance characteristic diagrams, and excitation frequencies resulting from transient aerodynamic behavior in all stages of the compression system of turbine engines, adhering to engine standards.

Combustion System Design

The major duty is to provide services in the design areas, reverse engineering, manufacturing and maintenance support for combustion chambers, fuel manifolds and nozzles of aircraft engines.

Turbine Design

Turbine design division targeted to enable the capability of aerodynamic and thermal design, modeling, simulation and optimization of high and low pressure turbine blades and secondary air system.

Engine Structural Design / Life Assessment of Aviation Parts

The main responsibility of structural design division involves design, analysis, testing and evaluation of engine components in the field of strength, vibration, life assessment and structural integrity.

Engine System Design

The main objective of the engine system design division is to provide engineering analysis and breakdown of a problem into simple steps and integration of engineering activities in order to achieve desirable performance and configuration integrity while maintaining safety and reliability.

- Assembly feasibility of aero engine is of vital importance. At present, virtual assembly design technology is one of the high-tech design methods. It can shorten product manufacturing cycle time, enhance design quality, cut testing and development costs, and mitigate manufacturing risks.
- Design planning is a strategic project planning process of outlining and organizing the design approach for a product. It sets the foundation for effective collaboration, efficient execution, and successful outcomes in the product development.



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The POA department is responsible for prototyping and manufacturing various engine modules and parts including turbine, compressor, combustion chamber, minor parts, and also assembling the all kind of aero engines.

Turbine and Expansion System

Turbine manufacturing department is divided into three main sections including: turbine blades, turbine rotor and turbine casing of aero engines. All kinds of turbine blades and nozzles assemblies, turbine disks, shafts, air seals, hubs, turbine exhaust and case assembly are some examples of turbine parts.

Fan & Compressor

Fan & compressor manufacturing department is divided into three main sections including: fan & compressor blades, compressor rotor and fan & compressor casing of aero engines. All kinds of fan & compressor blades and vanes assemblies, fan & compressor disks, shafts, air seals, shrouds, fan inlet and intermediate case, compressor stators assembly are some examples of compressor parts.



Combustion System

Combustion system manufacturing department is divided into three main sections including: manufacturing of liner & case, manufacturing of duct & shell, and sheet forming shop. In this department, all types of combustion chambers, cases as well as shells, which are made from a variety of metals such as Ni-Based, Co-Based, and Ti-Based alloys, are produced. In addition, different fuel nozzle types and related parts are other productions of this department.

Minor Part

Minor part manufacturing department is divided into two main sections including: minor parts and standard parts. All kinds of bearing and expandable and discarded parts such as bolts, nuts, screws, pins, rivets, counterweights, washers, spacers and brackets are some examples of minor parts.

Engine Shop

Engine shop department is divided into five main sections including: assembly technology, balancing & test of parts, pre-assembly and matching of parts, assembly/disassembly of modules and final assembly. These activities for all types of aero engines including turbofan, turbojet, turboprop, turboshaft are done in this department.

Manufacturing Planning and Production Control

The manufacturing planning and production control department is responsible for coordinating and optimizing the various stages of production. It also monitors the progress of manufacturing activities.



Technology Firsts



Part
21
Certificate



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AUXILIARY EQUIPMENT

Design, Manufacturing,
Maintenance



Part
145
Certificate



Able to Repair
570+
Parts



Part
21
Certificate
2 STC



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In Auxiliary and Accessory industry of Mapna Aero Center, we are working on three main fields of civil aviation including design, manufacture, and maintenance (test, inspection, repair and overhaul) of the aircraft components.

Avionics

We specialize in the design, manufacture, and testing of avionics systems, including components such as avionics testers, interface panels, converters, and automatic test software. Our solutions ensure the reliability and performance of aircraft electronics.

FADEC Control System

Our expertise covers the complete lifecycle of FADEC (Full Authority Digital Engine Control) systems, including software and hardware development, as well as maintenance services. We adhere to industry standards such as DO178-C and DO-254 for embedded software and hardware development.

Electrical Accessories

We provide comprehensive solutions for electric systems in aircraft, including manufacturing and maintenance services for components such as ignition plugs, alternators, harnesses, exciter units, and generators. Our services encompass testing, repair, and overhaul to ensure optimal performance and safety.

Mechatronics

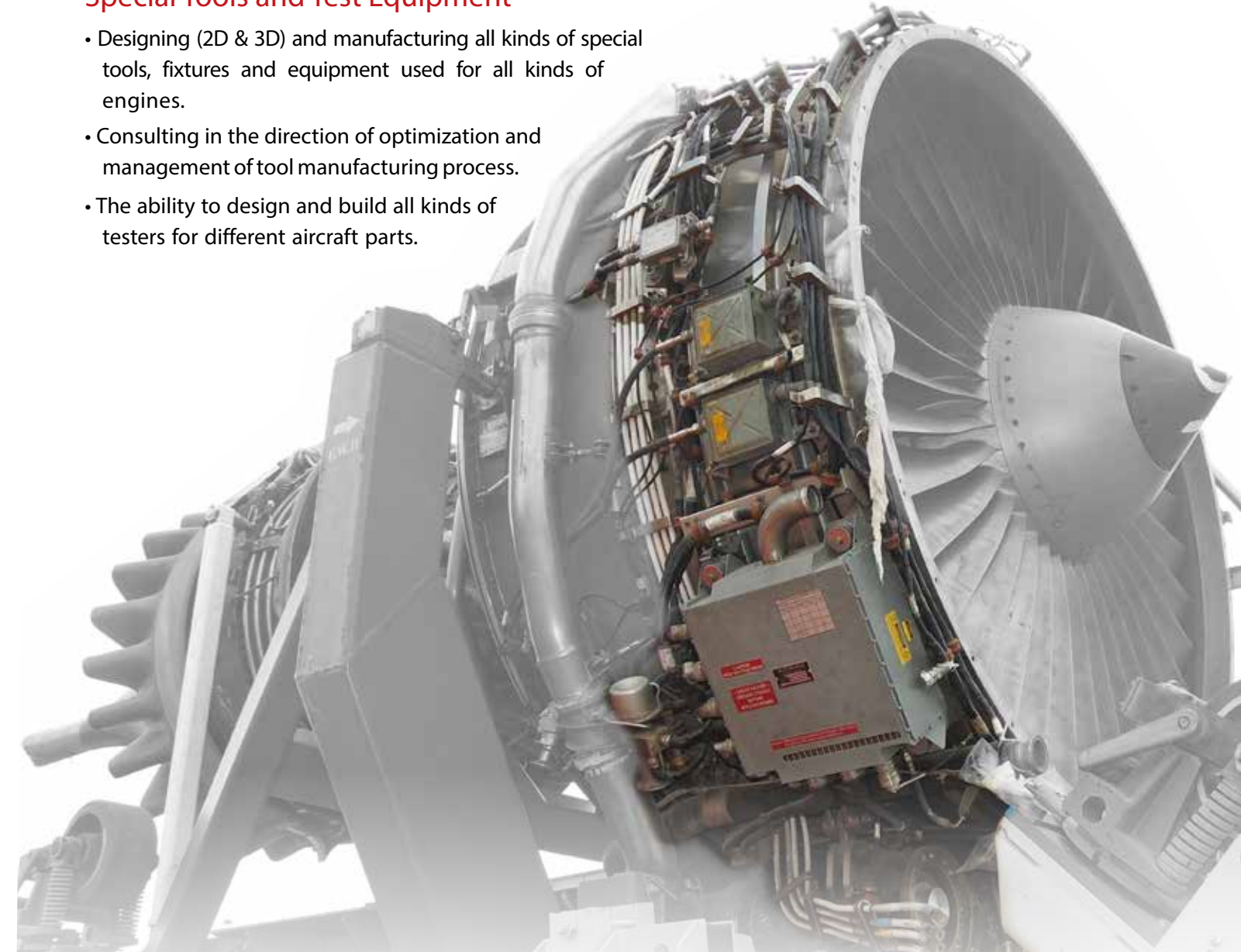
Mechatronics division main focus is on development of sensors, actuators & automation for aviation engines and aircraft systems. Our expertise in manufacturing, test, repair and maintenance of vital components like temperature and vibration sensors, speed pickups and actuation systems ensures precise control and monitoring capabilities.

Mechanical Accessories

In the realm of mechanical accessories, we excel in design, manufacture and maintenance of hydraulic control units, fuel control units, oil and fuel filters, air starters and mechanical seals, ensuring operational reliability and safety.

Special Tools and Test Equipment

- Designing (2D & 3D) and manufacturing all kinds of special tools, fixtures and equipment used for all kinds of engines.
- Consulting in the direction of optimization and management of tool manufacturing process.
- The ability to design and build all kinds of testers for different aircraft parts.





In airport service department, services are provided in three main sections, encompassing a range of offerings designed to cater to various aspects of airport operations and passenger needs.



- Aircraft Auxiliary Equipment Maintenance



- Design and Manufacturing of Aircraft Auxiliary Equipment



- Ground Handling Services

MAINTENANCE, DESIGN AND MANUFACTURING SERVICES

- Ground Power Unit
- Air Condition Unit
- Conveyor Belt Loader
- E-Bus
- Medical Lift Vehicle
- Passenger Stairs Narrow and Width Body
- Water Service Car
- E-Truck
- Lavatory Service Car
- Catering Vehicle
- Air Starter Unit

GROUND HANDLING SERVICES

- Passenger Handling Service
- Cargo Service
- Ramp Service



Airport Services

QUALITY



Maximum Quality



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The Quality Department in organizations involved in the design, manufacture, and maintenance of aircraft engines plays a critical role in ensuring the safety, reliability and optimal performance of products. The primary responsibility of this department is to ensure compliance with both domestic and international regulatory requirements, including those set by the FAA (Federal Aviation Administration), EASA (European Union Aviation Safety Agency), and ICAO (International Civil Aviation Organization). The core duties include overseeing design, production, maintenance processes, ensuring adherence to quality standards, implementing audit programs and continuous improvement initiatives. Additionally, through root cause analysis and risk management techniques, critical failures are prevented and collaboration with certified suppliers is carried out.

Quality Department Responsibilities

- Definition of Technical Requirements and Specifications
- Quality Control in Design, Development and Testing
- Perform Thorough Inspections and Tests Based on Reverse Engineering
- Test and Evaluation of Materials and Components
- Failure and Defect Analysis
- Quality Control in Manufacturing and Assembly
- Quality Management in Maintenance
- Quality Assurance in Operation
- Quality Management at the Lifecycle and End-of-Life
- Continuous Improvement Throughout the Lifecycle
- After-Sales Service and Technical Support



MAPNA Aero Center is committed to providing distinct after-sales services and support for its products and services in order to ensure customer satisfaction. The company strives to promptly and effectively address customer concerns. In this regard, planning and implementation measures are taken:

- Effective communication to identify needs and expectations, facilitate interaction with customers, and establish necessary communication channels.
- Measuring customer satisfaction in various dimensions and at specific intervals, defining and implementing improvement projects to increase customer satisfaction.
- Continuous improvement in support and after-sales services to create added value for customers and fulfill warranty commitments as customer rights.
- Timely and appropriate response to customer requests by a specialized and trained team.





Beginning your studies at the MAPNA Aviation Training Center is a pivotal step towards a successful career in the aviation industry. As a world-class institution, the MAPNA Aviation Training Center offers exceptional training programs for aspiring aviation professionals, and is officially licensed by the Civil Aviation Organization for Part-147.

Aviation Courses Offered

- Basic Trainings

- **B1.1** (Aircraft Airframe & Power plant)
- **B2** (Aircraft Electric & Electronic)

- Type Training

- **Airbus A320 Type for Categories B1.1 & B2** (CFM-56 & V2500 engines)
- **General and Specialized Aviation Courses** (Advanced Navigation Course, V2500 Engine Level 3, CFM56 Engine Level 3, CF6-80 C2 Engine Level 3, Arriel Engine Course Levels 3, JT8D Engine Level3 and Other specialized aviation courses such as NDT, Aviation Legislation, EWIS, etc.)

Key Features of the MAPNA Aviation Training Center

- **Employment Opportunities:** Outstanding graduates are presented with excellent job opportunities.
- **Certified Examinations:** The center conducts official B1 & B2 module exams.
- **Recognized Certification:** The center issues official certificates approved by the Civil Aviation Authority.
- **Experienced Faculty:** Courses are taught by experienced professors who bring extensive knowledge and expertise to the classroom.
- **Comprehensive Training:** Offering both theoretical and practical classes that simulate aviation environments.
- **State-of-the-Art Facilities:** Equipped with complete educational tools to ensure students can apply classroom knowledge to practical scenarios.

Studying at the MAPNA Aviation Training Center not only equips you with essential skills and knowledge for the aviation industry but also provides valuable certifications and opportunities for career advancement.



Part
147
Certificate



MAPNA GROUP

AERO

Iranian Aero Engine & Equipment Engineering & Manufacturing Co.

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