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Asia Pacific Aircraft Engine Forging Market Size and Forecast (2021 - 2031), Regional Share, Trend, and Growth Opportunity Analysis Report Coverage: By Forging Type (Closed Die Forging and Seamless Rolled Ring Forging), Material Type (Nickel Alloy, Titanium Alloy, Aluminum, and Others), Aircraft Type (Commercial Aircraft, Military Aircraft, and General Aviation), and Application (Fan Case, Combustion Chamber Outer Case, Turbine Disc, Rotors, and Others)

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Abstracts

The Asia Pacific Aircraft Engine Forging Market is projected to grow significantly, reaching an estimated US$ 1,921.3 million by 2031, up from US$ 1,181.6 million in 2024, reflecting a compound annual growth rate (CAGR) of 7.3% from 2025 to 2031. This growth is primarily driven by the expanding aerospace sector in the region and the increasing demand for both commercial and military aircraft.
Countries such as China, India, Japan, and South Korea are making substantial investments in aerospace manufacturing infrastructure, particularly in advanced forging capabilities necessary for producing high-performance engine components like turbine discs, shafts, and compressor blades. China's state-supported aerospace initiatives and India's "Make in India" program have catalyzed local development and fostered foreign collaborations, enhancing domestic forging capacities. Concurrently, Japan and South Korea are at the forefront of high-precision forging technologies, supplying critical components to major engine manufacturers including Rolls-Royce, GE Aviation, and Pratt & Whitney.

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The region's aircraft engine forging market benefits from a robust supply chain, competitive labor costs, and government incentives that attract global original equipment manufacturers (OEMs) and tier-1 suppliers. As aircraft orders increase to accommodate rising travel demand and fleet modernization, the market is experiencing sustained growth, technological advancements, and a trend towards localizing the manufacturing of essential components.

In 2024, significant industry developments were noted. For instance, the joint venture between Safran and HAL in India commenced production of vital turbine parts for the LEAP engine, expanding operations in Bengaluru and Hyderabad. Additionally, Godrej Aerospace and Azad Engineering made strides in India's indigenous Kaveri-derivative engine program, with Godrej delivering early modules in April 2025 after initial manufacturing began in 2023. South Korea's Hanwha Aerospace also announced plans to develop a KF-21 fighter engine by 2036, backed by a substantial investment of approximately US$ 3.7 billion, along with new research and development (R&D) and factory infrastructure.

Looking ahead to 2025, Queensland, Australia, is enhancing its regional role by expanding its maintenance, repair, and overhaul (MRO) infrastructure to include engine overhauls, aiming to support a regional fleet projected to grow by 4% annually. Furthermore, India is set to receive GE-404 engines for its LCA-Mark 1A fighter program, with 12 units expected in the current financial year.

The Asia Pacific Aircraft Engine Forging Market can be segmented by various criteria. By forging type, the market is divided into Closed Die Forging and Seamless Rolled Ring Forging, with Closed Die Forging holding the largest market share in 2024. In terms of material type, the market includes Nickel Alloy, Titanium Alloy, Aluminum, and others, with Titanium Alloy leading in market share. When categorized by aircraft type, the market is segmented into Commercial Aircraft, Military Aircraft, and General Aviation, where Commercial Aircraft dominates. Lastly, by application, the market includes components such as Fan Case, Combustion Chamber Outer Case, Turbine Disc, Rotors, and others, with the Combustion Chamber Outer Case holding the largest share.

The aerospace industry is increasingly adopting nickel-based superalloys for forging critical components in modern jet engines. This shift is driven by the need for materials that can withstand extreme thermal and mechanical stress, as engines are designed to operate at higher temperatures and pressures to enhance fuel efficiency and reduce emissions. Nickel-based superalloys are recognized for their exceptional strength, oxidation resistance, and high-temperature creep stability, making them essential for high-performance applications.

Manufacturers are improving alloy compositions and forging techniques, which allow for the production of components with tighter tolerances, better yield, and reduced waste.

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As engine pressures increase, these alloys maintain their structural integrity, resisting mechanical creep even at elevated temperatures. This trend aligns with the industry's sustainability goals and regulatory pressures to lower carbon emissions, prompting OEMs to explore materials that support next-generation engine designs.
In summary, the growing adoption of nickel-based superalloys, exemplified by innovations like ATI 718Plus, indicates a strategic shift towards materials that offer high-temperature robustness, structural integrity, and cost efficiency. This trend is expected to continue as aerospace manufacturers adapt to evolving performance criteria and environmental regulations, shaping the future of aircraft engine forging in the Asia Pacific region.
By country, the market is segmented into Australia, China, India, Japan, South Korea, and the Rest of Asia Pacific, with China holding the largest market share in 2024.
China's aircraft engine forging industry is rapidly advancing as part of its goal to develop a self-sufficient aerospace sector. Historically dependent on foreign technology, China is now investing heavily in domestic forging capabilities to produce advanced aircraft engines for both military and civil aviation. The industry is focused on producing high-strength, precision-forged components critical to engine performance, with state-owned enterprises leading the charge in advancing forging techniques and quality control systems.

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