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Editorial

Editorial note on Aircraft technology

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EDITORIAL

Any of a type of fixed-wing aircraft that is heavier than air, powered by a screw propeller or a high-velocity engine, and supported by the dynamic reaction of the air against its wings is referred to as an aeroplane. See history of flight for a detailed account of the invention of the aeroplane and the birth of civil aviation. A wing structure to keep the plane in the air, tail surfaces to stabilise the wings, movable surfaces to regulate the plane's attitude in flight, and a power plant to provide the thrust needed to propel the aircraft through the air are the basic components of an aeroplane.

The plane must be assisted when it is on the ground, as well as during takeoff and landing. In unaccelerated straight-and-level flight, an aircraft is subjected to four forces. (Additional forces are involved in spinning, diving, and climbing flight.) Lift is an upward-acting force; drag is a retarding force induced by the resistance to lift and friction as the aircraft passes through the air; weight is the downward effect of gravity on the aircraft; and thrust is an upward-acting force.

To comprehend lift, you must first comprehend an airfoil, which is a device built to receive reaction on its surface from the air it travels through. Early airfoils were usually just a slightly curved upper surface and a smooth undersurface. Airfoils have developed over time to meet evolving requirements. Airfoils usually had a rounded upper surface by the 1920s.The wing's airfoil obtains a reaction useful for flight from the air flowing over its surface by going forward in the air. The “angle of attack” of an airfoil, or its angle relative to the sky, has an effect on the amount of lift it produces. Keeping one's hand out the window of a moving car will show both raise and angle of attack in an instant, although crudely. Since there is a turbulent region behind the hand, much resistance is felt and little "lift" is produced when the hand is turned flat to the wind.

Weight is a force that operates in the opposite direction of lift. As a result, designers aim to make the aircraft as light as possible. Since all aircraft designs have a propensity to gain weight during production, modern aerospace engineering staffs have specialists in the field of weight control from the start of the design process.

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