

MODULE 17. PROPELLER

17.1 Fundamentals

Blade element theory;
High/low blade angle, reverse angle, angle of attack, rotational speed;
Propeller slip;
Aerodynamic, centrifugal, and thrust forces;
Torque;
Relative airflow on blade angle of attack;
Vibration and resonance.

17.2 Propeller Construction

Construction methods and materials used in wooden, composite and metal propellers;
Blade station, blade face, blade shank, blade back and hub assembly;
Fixed pitch, controllable pitch, constant speed propeller;
Propeller/spinner installation.

17.3 Propeller Pitch Control

Speed control and pitch change methods, mechanical and electrical/electronic;
Feathering and reverse pitch;
Over speed protection.

17.4 Propeller Synchronising

Synchronising and synchrophasing equipment.

17.5 Propeller Ice Protection

Fluid and electrical de-icing equipment.

17.6 Propeller Maintenance

Static and dynamic balancing;
Blade tracking;
Assessment of blade damage, erosion, corrosion, impact damage, delamination;
Propeller treatment/repair schemes;
Propeller engine running.

17.7 Propeller Storage and Preservation

Propeller preservation and depreservation