**Flight Dynamics Analysis**

# List of Symbols

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Domain** | **Unit** | **Description** |
|  |  | - | Quaternion angle of rotation |
|  |  |  | Pitch Angle |
|  |  |  | Pitch Angle Rate |
|  |  |  | Propeller Angular Velocity |
|  |  | - | Thrust coefficient of a propeller |
|  |  | - | Power coefficient of a propeller |
|  |  |  | Propeller Diameter |
|  |  |  | Total thrust generated by the propellers, |
|  |  | A | Electrical current consumption of the motor |
|  |  | A | Electrical current consumption of the motor in no-load condition |
|  |  |  | Constant value to calculate the thrust provided by a propeller given its angular speed |
|  |  |  | Constant value to calculate the moment provided by a propeller given its angular speed |
|  |  |  | Constant value that relates thrust and moment of a propeller |
|  |  |  | Propeller’s speed in revolutions per minute per unit of voltage |
|  |  |  | Propeller’s moment |
|  |  |  | Propeller’s speed in revolutions per second |
|  |  |  | Propeller power |
|  |  |  | Air density at sea level and 20°C |
|  |  |  | Electric charge of the battery (usually presented in *mAh*) |
|  |  |  | Propeller radius |
|  |  |  | Propeller Thrust |
|  |  |  | Motor’s power supply voltage |
|  |  |  | Minimum power supply required for propeller rotation |
|  |  |  | Propeller angular speed in S.I. units per unit of voltage |

# Equations

## Typical Values

## Propeller Power

## Propeller Thrust