

Engine ?

Common Properties

Name Engine

Inertia 0.12

Output To: [Clutch] Clutch

General

Engine Type ICE

Stalling Enabled

Stall RPM 300 rpm

Ignition

Auto Start On Throttle

Power & Torque

Max Power 260 kW

Power Curve

Power Modifier Sum 0 x100 %

Starter

Starter Active

Starter Run Time 1 s

Starter RPM Limit 600 rpm

Starter Torque 60 Nm

Idler Circuit

Idler Circuit Enabled

Idle RPM 1200

Idler Circuit Sensitivity 0.2

Throttle

Throttle Smoothing 0

Rev Limiter

Rev Limiter Enabled

Rev Limiter Active

Rev Limiter RPM 8700

Rev Limiter Cutoff Duration 0.01

The screenshot displays the configuration interface for the EngineComponent, divided into two main sections: 'Forced Induction' and 'Events'.

Forced Induction Section:

- Use Forced Induction:** A checked checkbox.
- Forced Induction Type:** A dropdown menu set to 'Turbocharger'.
- Power Gain Multiplier:** A slider set to 1.5.
- Spool Up Time:** A slider set to 0.1 s.
- Linearity:** A slider set to 1.
- Boost:** A slider set to 0.

Events Section:

- On Start ():** A list containing 'List is Empty' with '+' and '-' buttons.
- On Stop ():** A list containing 'List is Empty' with '+' and '-' buttons.
- On Rev Limiter ():** A list containing 'List is Empty' with '+' and '-' buttons.

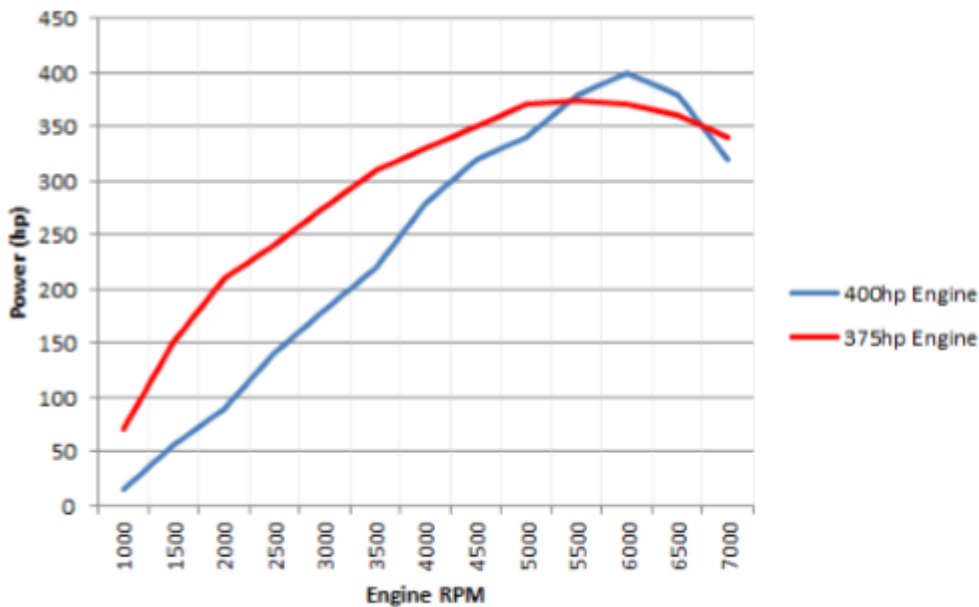
EngineComponent is a mandatory Powertrain component. It is always first in the Components list.

Inertia

Higher engine inertia results in an engine that is harder to stall. Such engine will also take longer to spin up.

Power Curve

Power curve represents engine power across its RPM range. Both X and Y values are normalized where X (0 to 1) represents RPM as a percentage of Rev Limiter RPM and Y (0 to 1) represents power as a percentage of Max Power.



Similar power output, different power curves.

Idler Circuit

Idler circuit tries to keep RPM at Idle RPM when there is no user input.

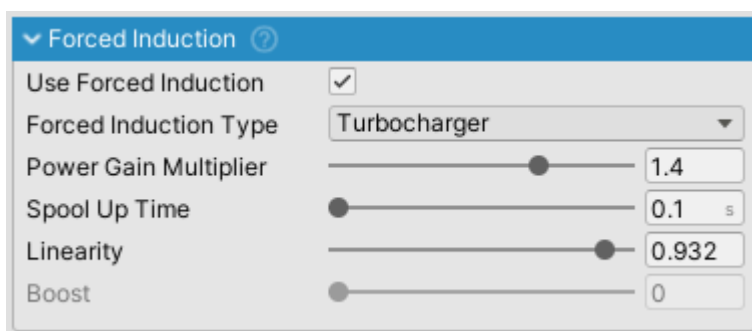
Starter

Starter spins up the engine to try and reach the RPM at which the power generated by the engine is enough for it to spin by itself. If too low Starter Torque is used or Starter RPM Limit is lower than Stall RPM of the engine, the engine will fail to start.

Rev Limiter

Cuts throttle to the engine when RPM reaches Rev Limiter RPM for a duration of Rev Limiter Cutoff Duration.

Forced Induction



ForcedInduction inspector.

- ForcedInduction is a part of EngineComponent. It can be used for both turbocharging and supercharging the vehicle.

- Power Gain Multiplier adds power on top of the existing Max Power so the vehicle with 100kW and Power Gain Multiplier of 1.5 will actually produce 150kW.
- Boost value affects sound components TurboWhistleComponent and TurboFlutterComponent. If forced induction is to be used just for the sound effects Power Gain Multiplier should be set to 1.

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Power Modifiers

Power modifiers can be used through scripting to modify the power of the engine. These are functions that return a float which denotes an engine power coefficient. Example:

```
public float AddBoost()
{
    if(boostIsActive)
    {
        return 1.5f; // Increases power for 50%.
    }
}
...
myVehicleController.powertrain.engine.powerModifiers.Add(AddBoost);
```

This is a fictional example. A concrete example can be found inside TCS module which uses this mechanic to limit power when there is wheel spin.

From: <http://nwhvehiclephysics.com/> - **NWH Vehicle Physics 2 Documentation**

Permanent link: <http://nwhvehiclephysics.com/doku.php/NWH/VehiclePhysics2/Powertrain/EngineComponent>

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