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| Course name | Numerical Modeling & Simulation in Scilab Xcos |
| **Lesson name** | **Numerical Modelling Formula 1 Vehicle Resistive Forces in Scilab-Xcos** |
| **Lesson objective** | **Practice blocks &** **acquaint to use GUI of Scilab-Xcos** |
| Created by | Bharath Kumar P |

**Problem statement:** Model the Formula 1 Vehicle Resistive Force in Scilab-Xcos to plot the vehicle resistive force.

**Track Drive Cycle Graph:**

**Model Inputs:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl No** | **Parameter** | **Value** | **Units** |
|  | **Chassis** |  |  |
|  | 1. Coefficient of rolling resistance |  |  |
|  | 1. Gross Vehicle Mass |  | Kg |
|  | 1. Gravity constant |  | m/s |
|  | 1. Grade Angle |  | degree |
|  | 1. Area |  | m^2 |
|  | 1. Air Density |  | Kg/m^3 |
|  | 1. Drag Coefficient |  |  |
|  | 1. Radius of wheel |  | m |

**Program:**

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| --- | --- |
| 1. **To Import Track Data:** | 1. **To define all input parameters:** |
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**Results:**

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| **Vehicle Resistive Forces** |
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| --- |
| **Wheel** |
|  |

**Conclusion:**

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| **Sl No** | **Parameters** | **Values** | **Units** |
|  | **Chassis** |  |  |
|  | * Rolling Force |  | N |
|  | * Gradeability Force |  | N |
|  | * Maximum Aerodynamic Force |  | N |
|  | * Maximum Acceleration Force |  | N |
|  | * Maximum Wheel Speed |  | Rpm |
|  | * Maximum Wheel Torque |  | Nm |