Test Specification Report

CoDeAs Team 2

17-Feb-2021 13:01:02

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1. FSM_test

Test File Options

Close open figures	true
Store MATLAB figures	false
Generate report	false

1.1. DEAD

Test Details

Description	This suite contains all the test performed with DEAD as main state. It includes also the transitions from dead to other states.

1.1.1. Dead-Dead
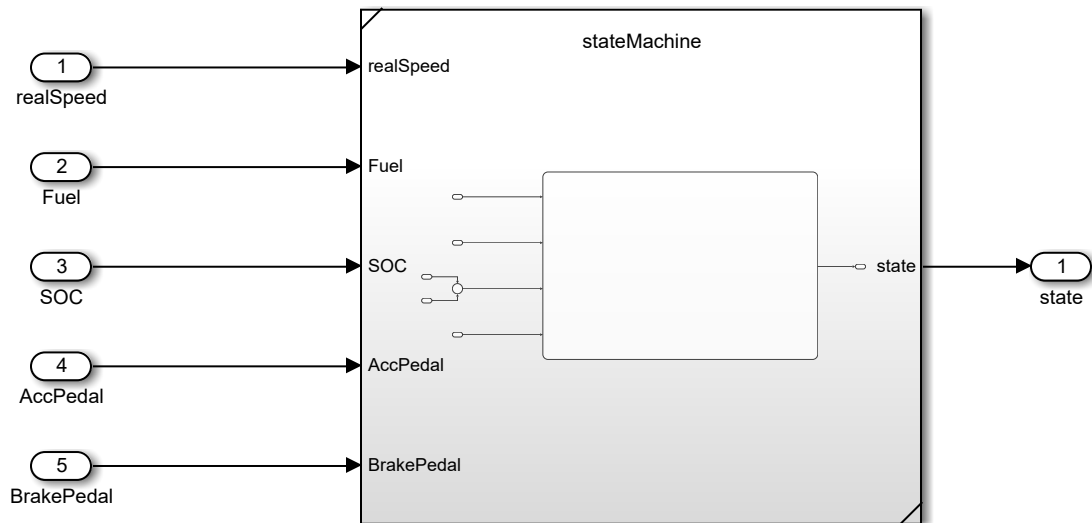
Test Details

Description	DEAD state check: -no SOC -no fuel -Uniformely increasing acceleration request -zero brake request The state should be DEAD for all the testing time.

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Dead1.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Dead1.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

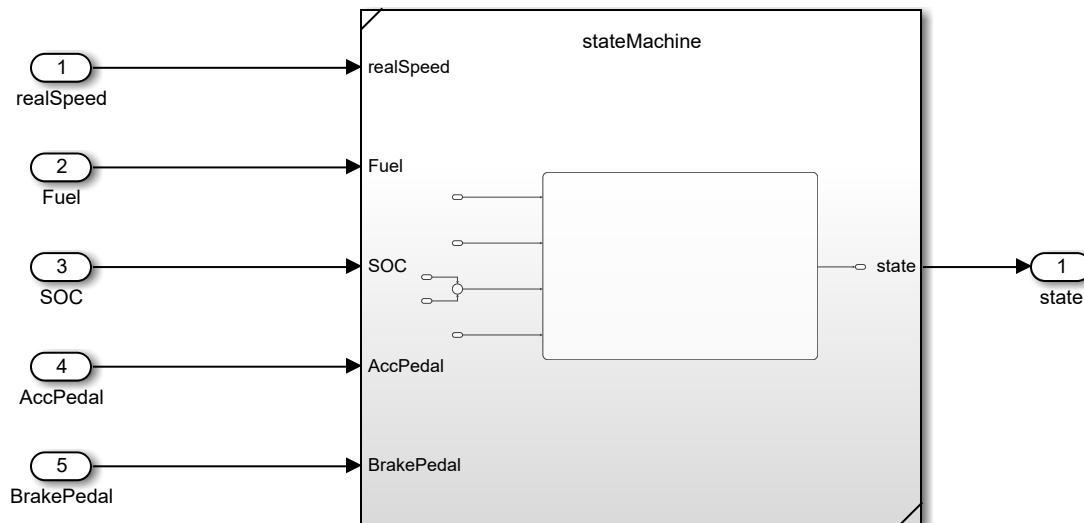| Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Dead_Dead_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.1.2. Dead-Regen

Test Details

Description	DEAD to Regen state transition check: -fuel < fuelMin -SOC< SOCMin -BrakePedal request at 5s

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Dead2.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Dead2.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Dead_Regen_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.1.3. Dead-ED

Test Details

Description	DEAD to ED state transition check:
	-SOC > SOCMin
	-AccPedal < maxAccMGU

	The state should pass from DEAD to Electric Drive

System Under Test
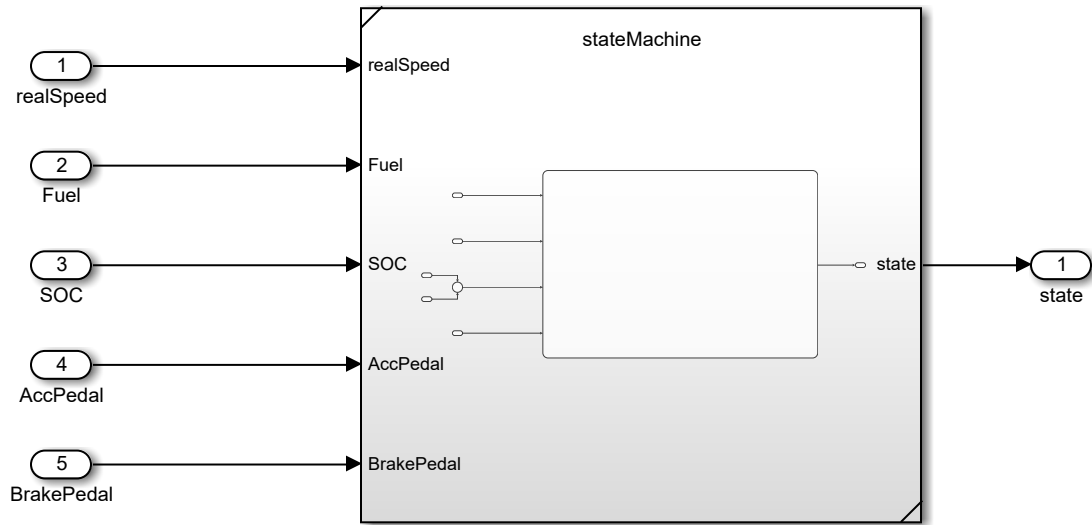
Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Dead3.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Dead3.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Dead_ED_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

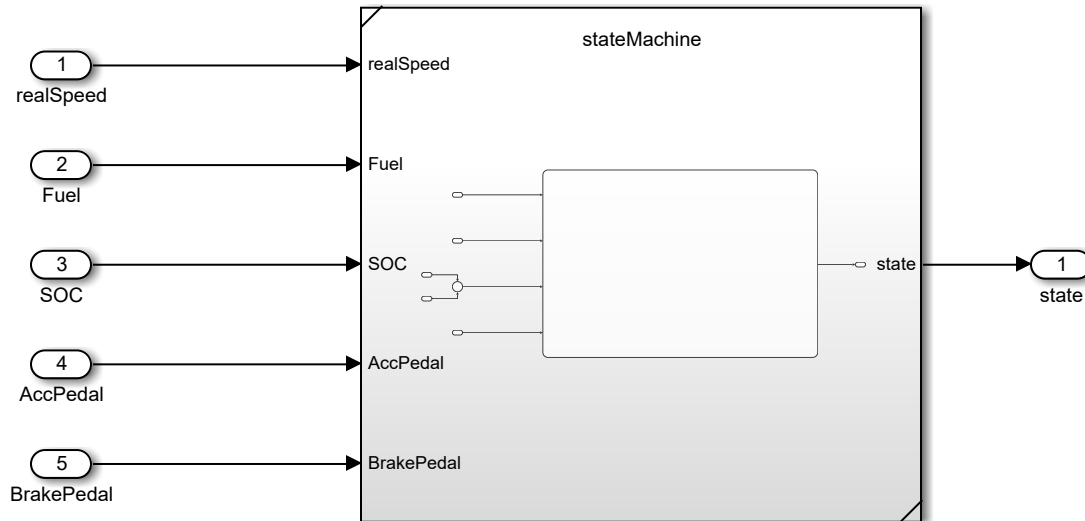## 1.1.4. Dead-NoCharge

Test Details

Description	DEAD to No Charge state transition check: -SOC < SOCMin -fuel > fuelMin -AccPedal < maxAccICE The state should pass from DEAD to No Charge

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Dead4.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Dead4.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

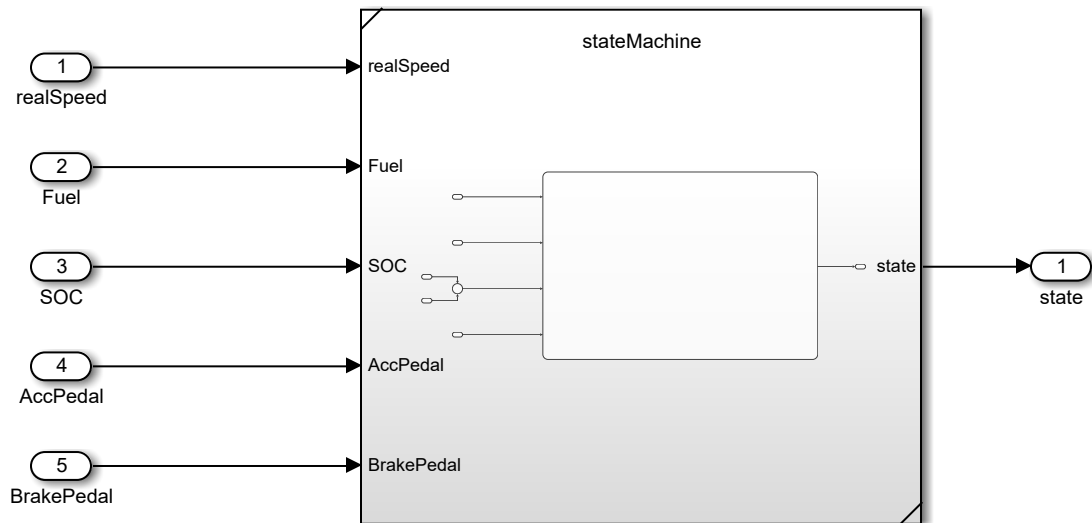| Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Dead_NoCharge_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.1.5. Dead-Combined

Test Details

Description	DEAD to Combined state transition check: -SOC > SOCMin -fuel > fuelMin -AccPedal>maxAccMGU The state should pass from DEAD to Combined

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Dead5.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Dead5.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Dead_Combined_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.2. No Charge

Test Details

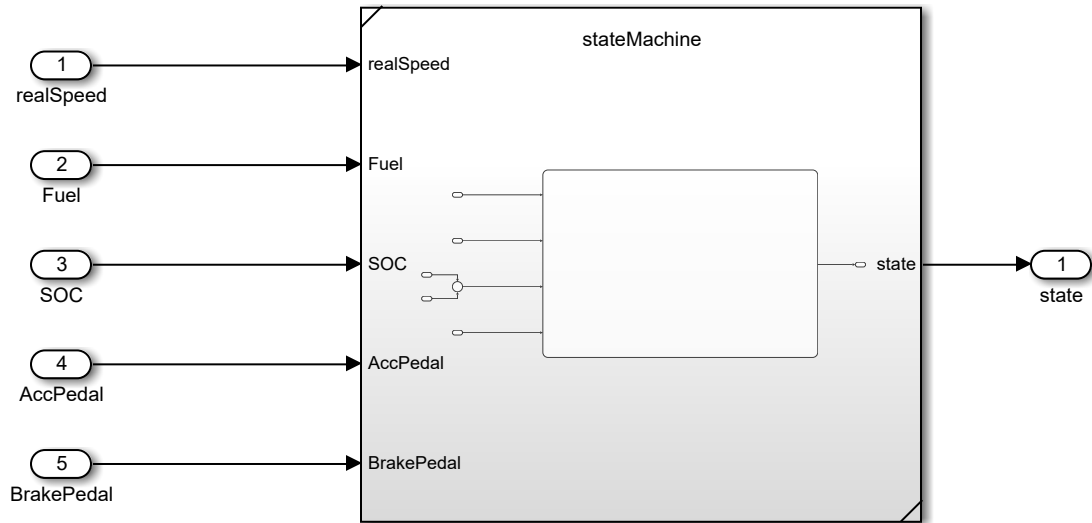| Description	From No Charge to all other states. Initially, the FSM starts from DEAD, but soon enters the No Charge state at the first sampling instant.

1.2.1. NoCharge-DEAD

Test Details

Description	Transition from No Charge to DEAD:
	Fuel < fuelMin
	SOC < SOCmin

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
NoCharge1.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\No-Charge1.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

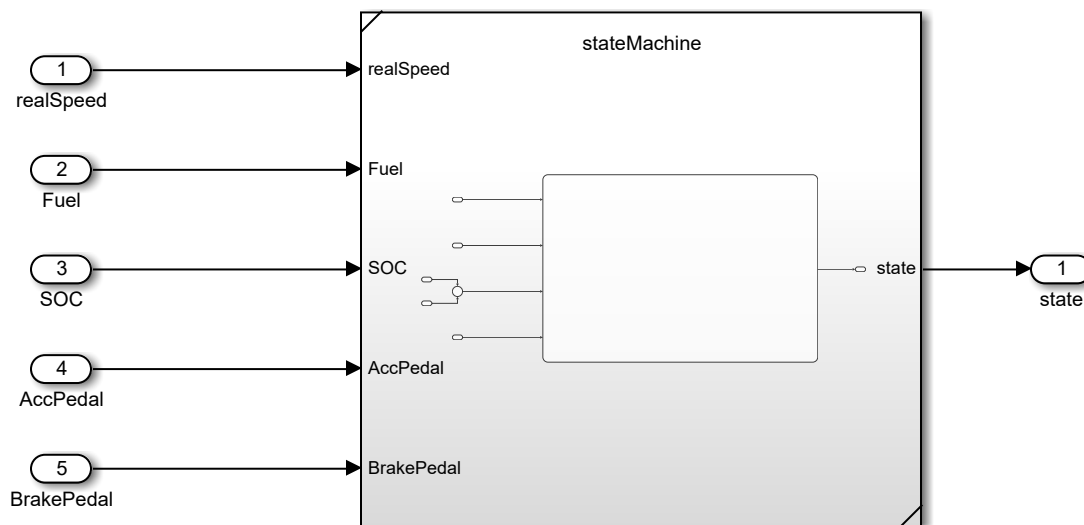| Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
NoChargeToDEAD_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.2.2. NoCharge-Regen

Test Details

Description	Transition from No Charge to Regenerative Braking: Fuel > fuelMin SOC < SOCmin BrakePedal request after 5s

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
NoCharge2.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\NoCharge2.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
NoChargeToRegen_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.2.3. NoCharge-ED

Test Details

Description	Transition from No Charge to Regenerative Braking: Fuel > fuelMin

	SOC < SOCmin for a while, then SOC>SOCmin
	RealSpeed<SpeedEDMax or Fuel<fuelMin after a while
	This check is done in two iterations

System Under Test
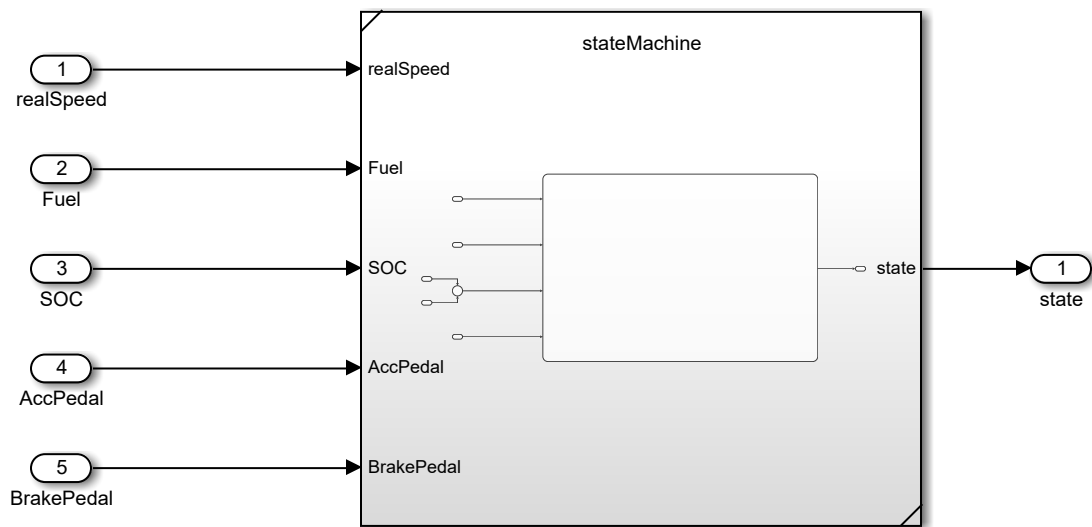
Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
NoCharge3.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-	Successfully mapped inputs.

Name	File Path	Status
	controller\Test\FSM Test\Inputs\No-Charge3.mat	
NoCharge4.mat	C:\Users\mordi\Desktop\Materiale Univer-sità\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\No-Charge4.mat	Successfully mapped in-puts.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
NoCharge_ED_baseline_Itera-tion1.mat	0	0	0	0
• state:1 (Active)	0	0	0	0
NoCharge_ED_baseline_Itera-tion2.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

Iterations

Name	Details
Iteration1	

Parameter Name	Value
External Inputs	NoCharge3.mat

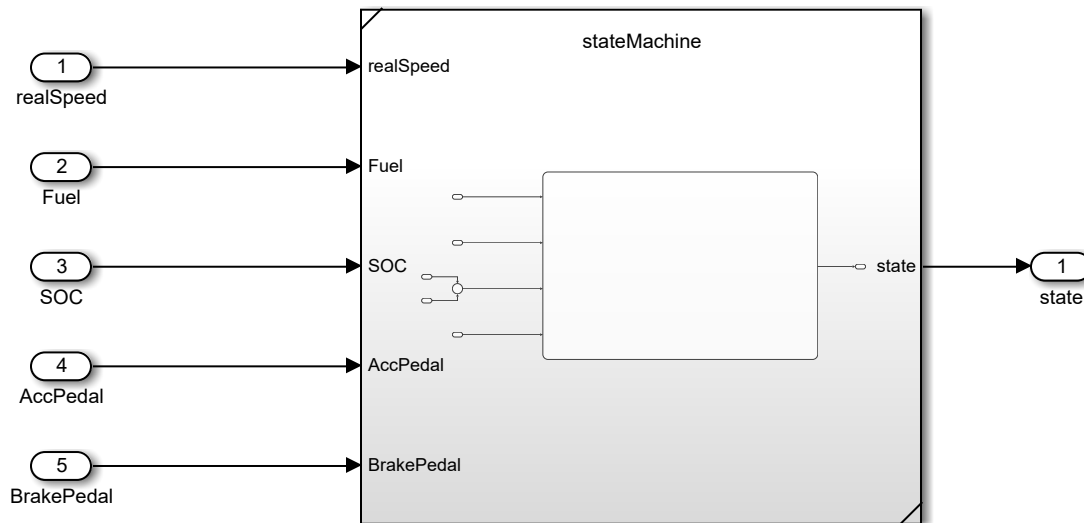| Name	Details
	<table><tr><th>Parameter Name</th><th>Value</th></tr><tr><td>Baseline</td><td>NoCharge_ED_baseline_Iteration1.mat</td></tr></table>
Iteration2	<table><tr><th>Parameter Name</th><th>Value</th></tr><tr><td>External Inputs</td><td>NoCharge4.mat</td></tr><tr><td>Baseline</td><td>NoCharge_ED_baseline_Iteration2.mat</td></tr></table>

1.2.4. NoCharge-Combined

Test Details

Description	Transition from No Charge to Combined:
	Fuel > fuelMin
	SOC > SOCmin
	AccPedal> MaxAccICE

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
NoCharge5.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\No-Charge5.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
NoChargeToCombined_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.2.5. NoCharge-NoCharge
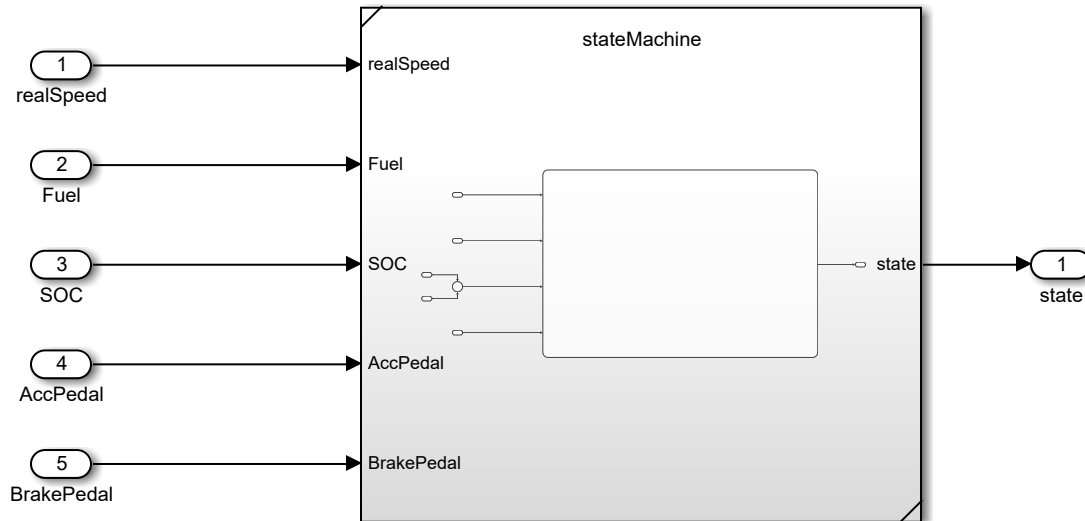
Test Details

Description	No Charge state check: -SOC<SOCMin -Fuel>fuelMin -Uniformely increasing acceleration request The state should be No Charge for all the testing time.

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
NoCharge6.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\NoCharge6.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
NoCharge_NoCharge_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.3. ED

Test Details

Description	From Electrical Drive to all other states. Initially, the FSM starts from DEAD, but soon enters the ED state at the first sampling instant.

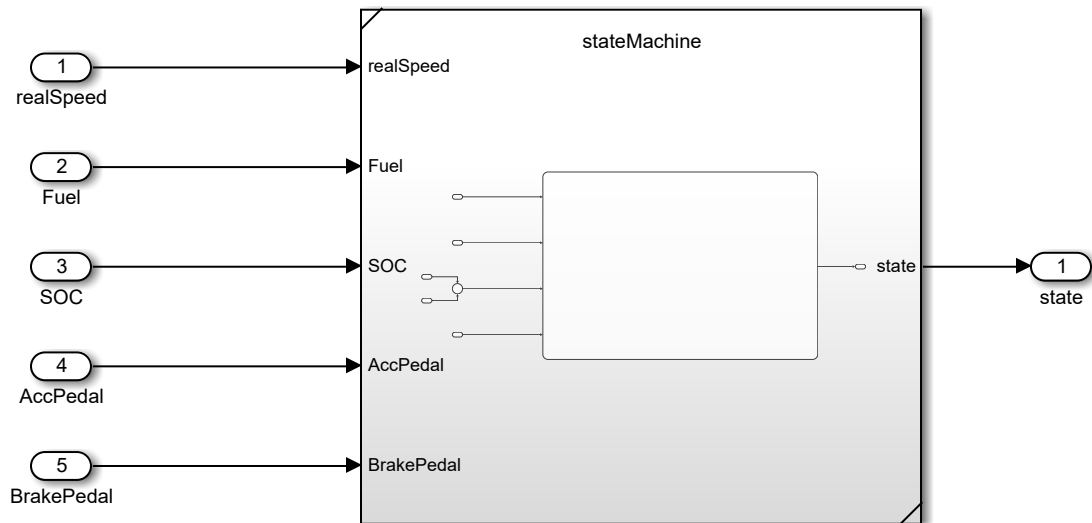## 1.3.1. ED-ED

Test Details

Description	Electrical Drive state check:
	-SOC>SOCMin
	-Fuel>fuelMin
	-RealSpeed<SpeedEDMax
	-AccPedal<MaxAccMGU
	The state should be Electrical Drive for all the testing time.

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
ED1.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\ED1.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
ED_ED_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

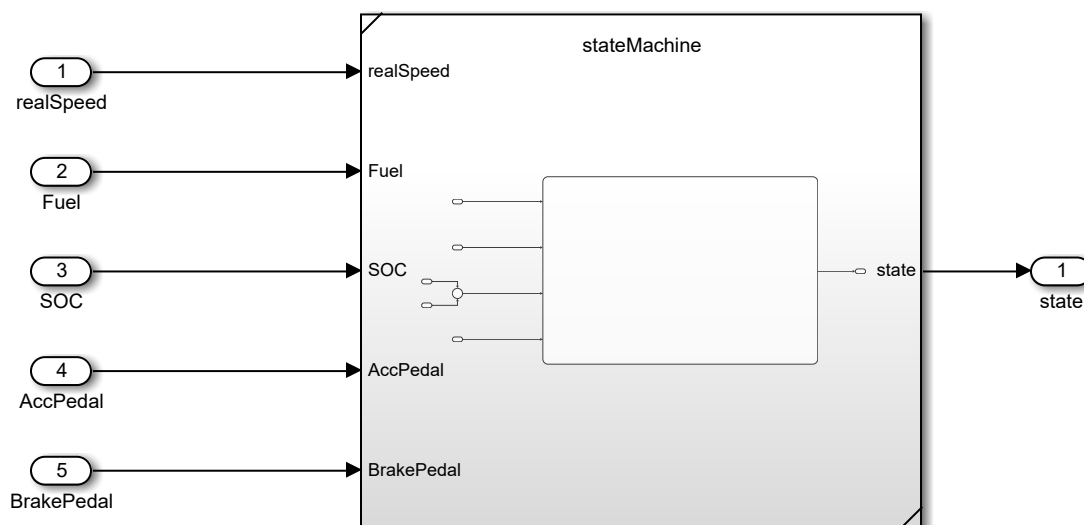## 1.3.2. ED-Regen

Test Details

Description	Transition from Electrical Drive to Regenerative Braking: SOC > SOCmin RealSpeed < SpeedMaxED BrakePedal request after 5s

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
ED2.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\ED2.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
ED_Regen_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.3.3. ED-DEAD

Test Details

Description	Transition from Electrical Drive to DEAD: Fuel < fuelMin
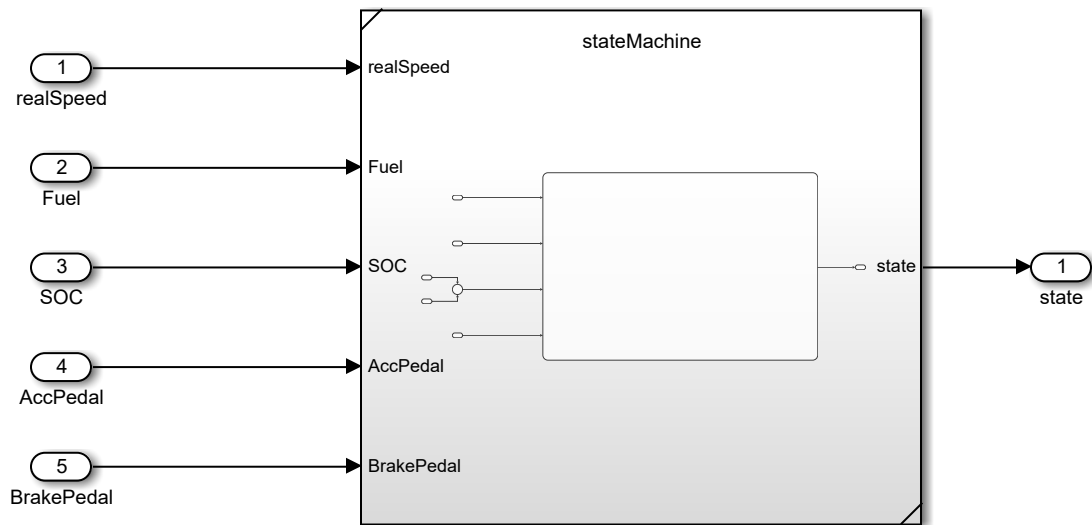
	SOC < SOCmin

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
ED3.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\ED3.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
ED_Dead_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.3.4. ED-NoCharge

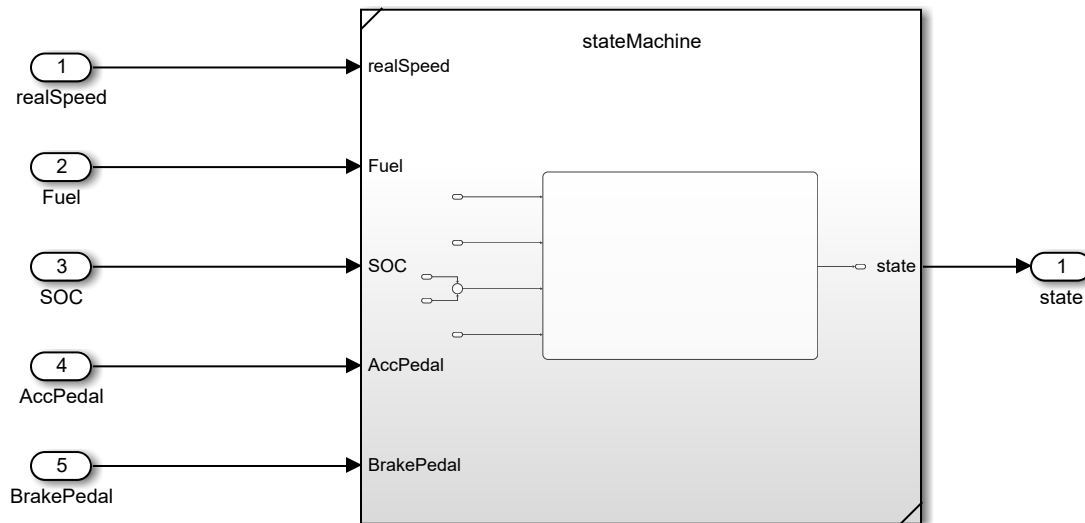### Test Details

Description	Electrical Drive to No Charge state transition check: -SOC < SOCMin -fuel > fuelMin -AccPedal < maxAccICE The state should pass from Electrical Drive to No Charge

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
ED4.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\ED4.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
ED_NoCharge_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.3.5. ED-Combined

Test Details

Description	Transition from Electrical Drive to Combined: Fuel > fuelMin SOC > SOCmin AccPedal> MaxAccMGU or RealSpeed>MaxSpeedMGU

System Under Test
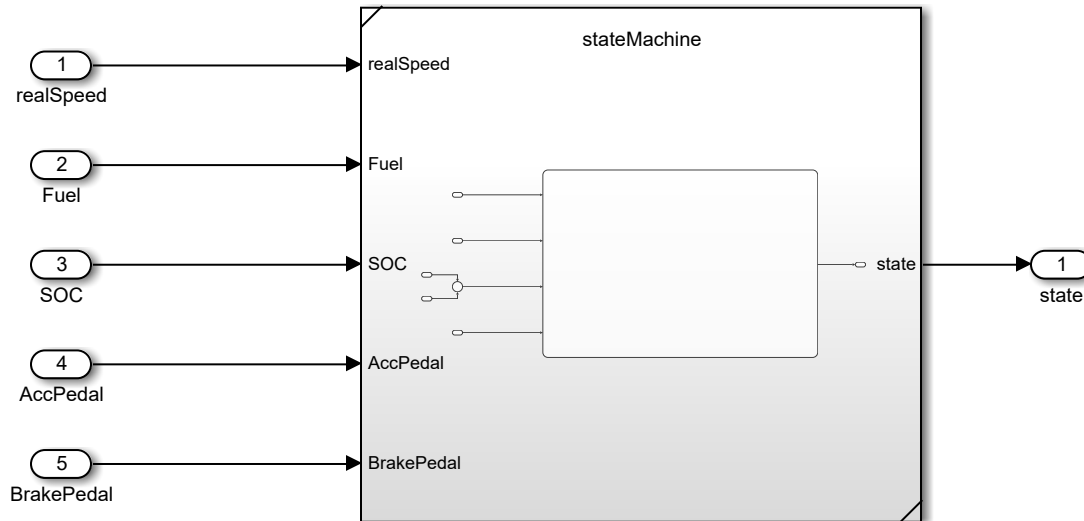
Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
ED5.mat	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\ED5.mat	Successfully mapped inputs.
ED6.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\ED6.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
ED_Comb_baseline1.mat	0	0	0	0
• state:1 (Active)	0	0	0	0
ED_Comb_baseline2.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

Iterations

Name	Details
Iteration1	<table><tr><th>Parameter Name</th><th>Value</th></tr><tr><td>External Inputs</td><td>ED5.mat</td></tr><tr><td>Baseline</td><td>ED_Comb_baseline1.mat</td></tr></table>
Iteration2	<table><tr><th>Parameter Name</th><th>Value</th></tr><tr><td>External Inputs</td><td>ED6.mat</td></tr><tr><td>Baseline</td><td>ED_Comb_baseline2.mat</td></tr></table>

1.4. Combined

Test Details

Description	From Combined to all other states. Initially, the FSM starts from DEAD, but soon enters the Combined state at the first sampling instant.

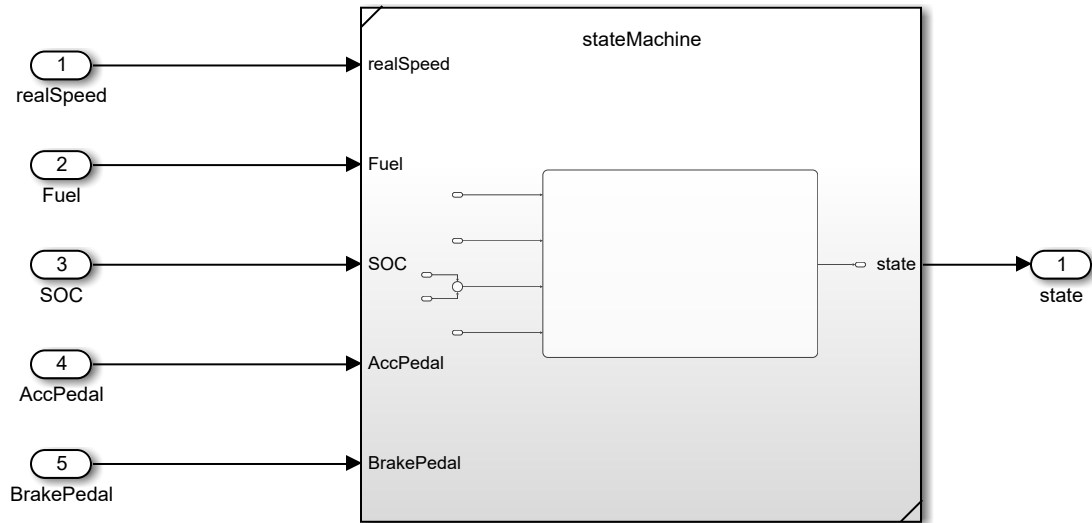## 1.4.1. Combined-Combined

Test Details

Description	Combined state check:
	-SOC>SOCMin
	-Fuel>fuelMin
	-RealSpeed>SpeedEDMax
	The state should be Combined for all the testing time.

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Comb1.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Comb1.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Comb_Comb_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.4.2. Combined-Regen

Test Details

Description	Transition from Combined to Regenerative Braking:
	SOC > SOCmin
	fuel>fuelMin
	RealSpeed > SpeedMaxED
	BrakePedal request after 5s

System Under Test

Model Name: FSM_Model
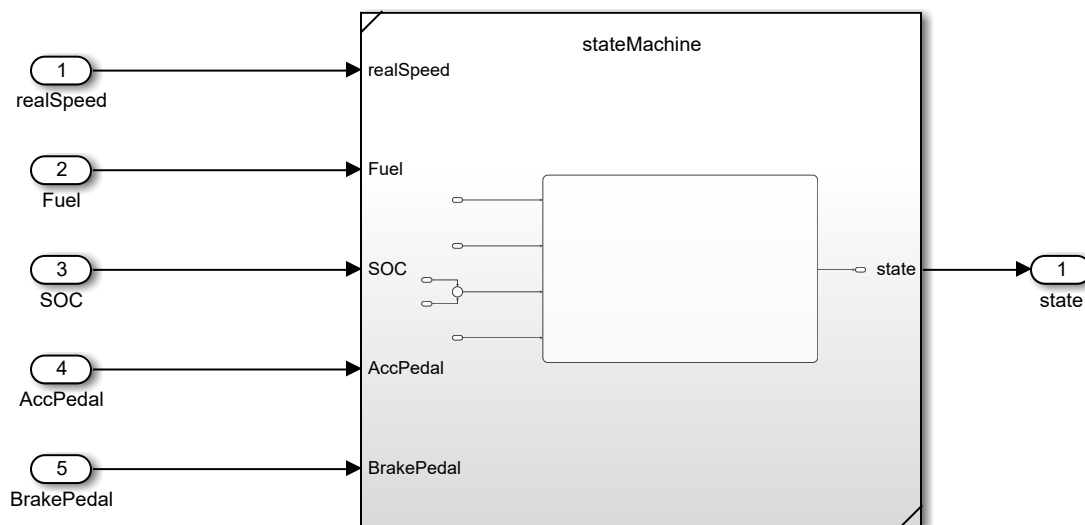
Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Comb2.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Comb2.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Comb_Regen_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.4.3. Combined-DEAD

Test Details

Description	Transition from Combined to DEAD: Fuel < fuelMin
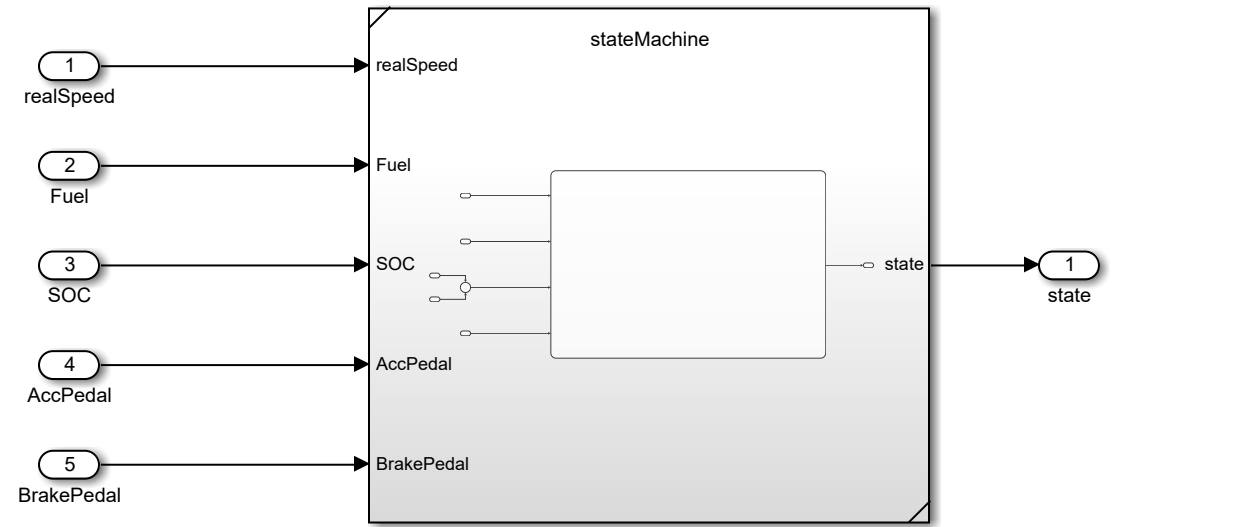
	SOC < SOCmin

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Comb3.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Comb3.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Comb_Dead_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.4.4. Combined-ED

Test Details

Description	Combined to ED transition check: -SOC>SOCMin -RealSpeed < SpeedEDMax after 5s -AccPedal < MaxAccMGU after 5s

System Under Test
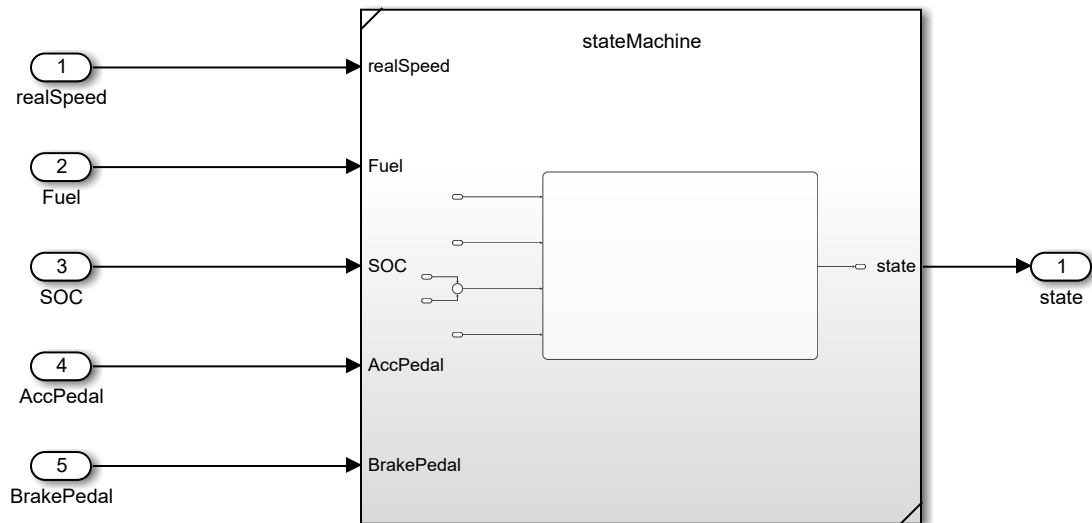
Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Comb4.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Comb4.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Comb_ED_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

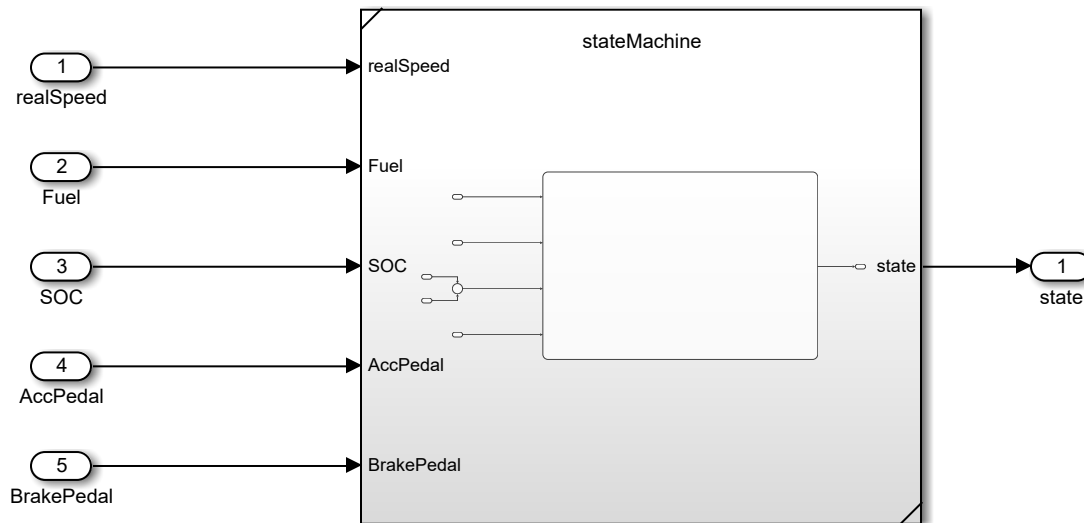## 1.4.5. Combined-NoCharge

Test Details

Description	Combined to No Charge state transition check: -SOC < SOCMin -fuel > fuelMin -AccPedal < maxAccICE The state should pass from Combined to No Charge

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Comb5.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Comb5.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Comb_NoCharge_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.5. Regen

Test Details

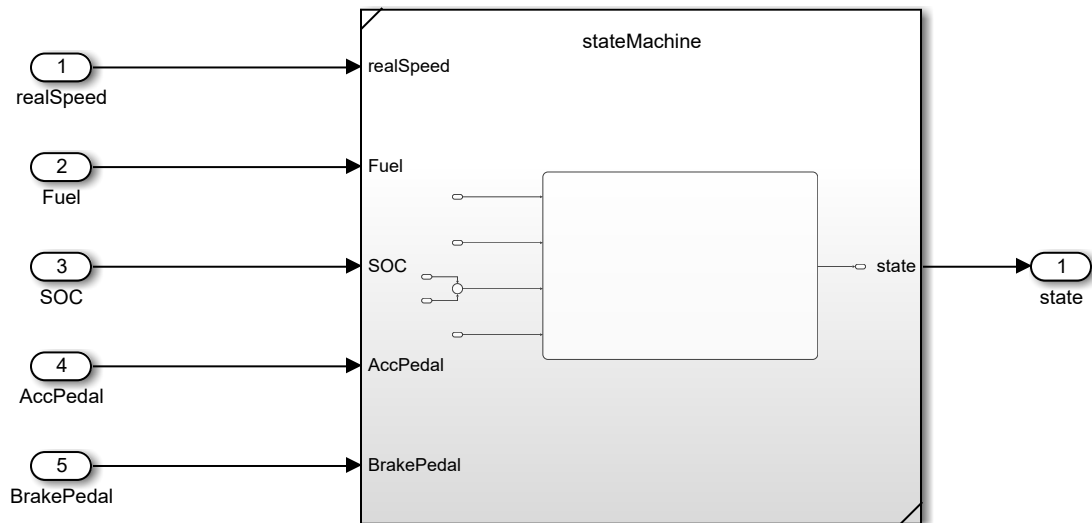| Description	From Regenerative Braking to all other states. Initially, the FSM starts from DEAD, but soon enters the Regen state at the first sampling instant.

1.5.1. Regen-Regen

Test Details

Description	Regenerative Braking state check: -BrakePedal > 0 The state should be Regenerative Braking for all the testing time.

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Regen1.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Regen1.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

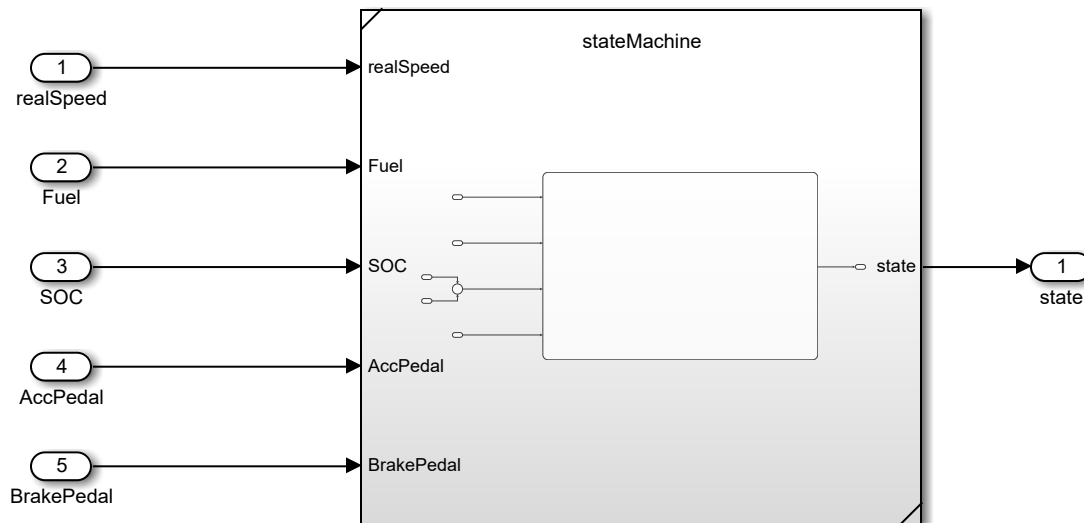| Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Regen_Regen_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.5.2. Regen-DEAD

Test Details

Description	Transition from Regenerative Braking to DEAD: Fuel < fuelMin SOC < SOCmin AccPedal > 0

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Regen2.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Regen2.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Regen_Dead_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.5.3. Regen-ED

Test Details

Description	Transition from Regenerative Braking to ED
	SOC < SOCmin for a while, then SOC>SOCmin

RealSpeed<SpeedEDMax

System Under Test
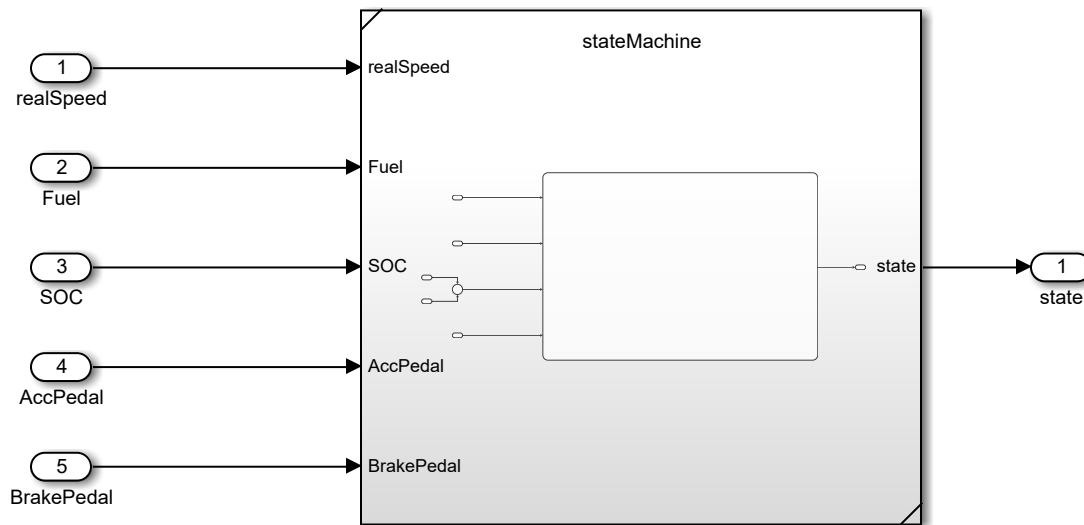
Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Regen3.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Regen3.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

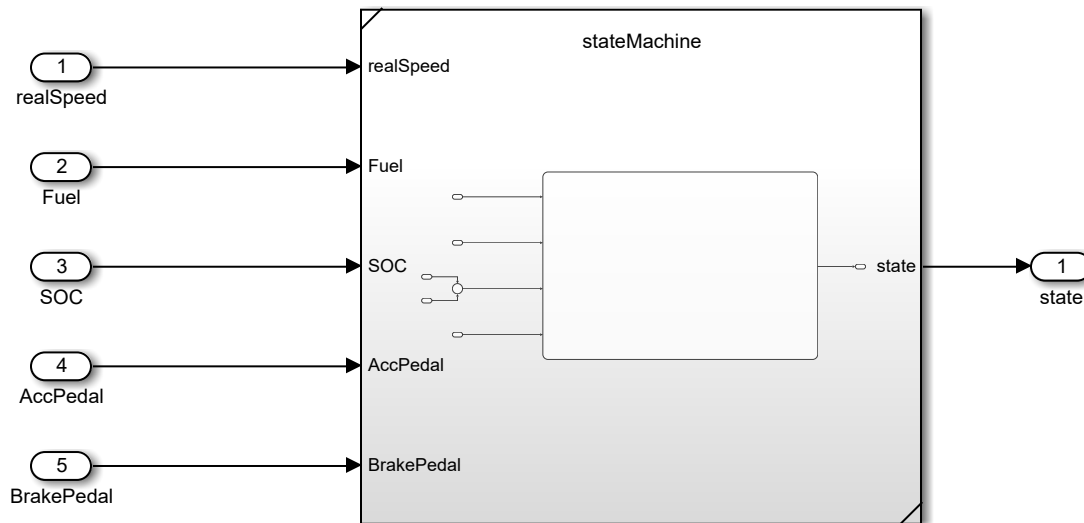| Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Regen_ED_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.5.4. Regen-NoCharge

Test Details

Description	Transition check from Regenerative Braking to No Charge state: -BrakePedal > 0 until 5s -AccPedal > 0 after 5s -fuel>fuelMin -SOC<SOCMin

System Under Test

Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Regen4.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Regen4.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Regen_NoCharge_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0

1.5.5. Regen-Combined

Test Details

Description	Transition from Regen to Combined state:
	-SOC > SOCMin
	-Fuel> fuelMin
	-RealSpeed > SpeedMaxMGU
	-BrakePedal = 0 after 5s
	-AccPedal > 0 after 5s

System Under Test
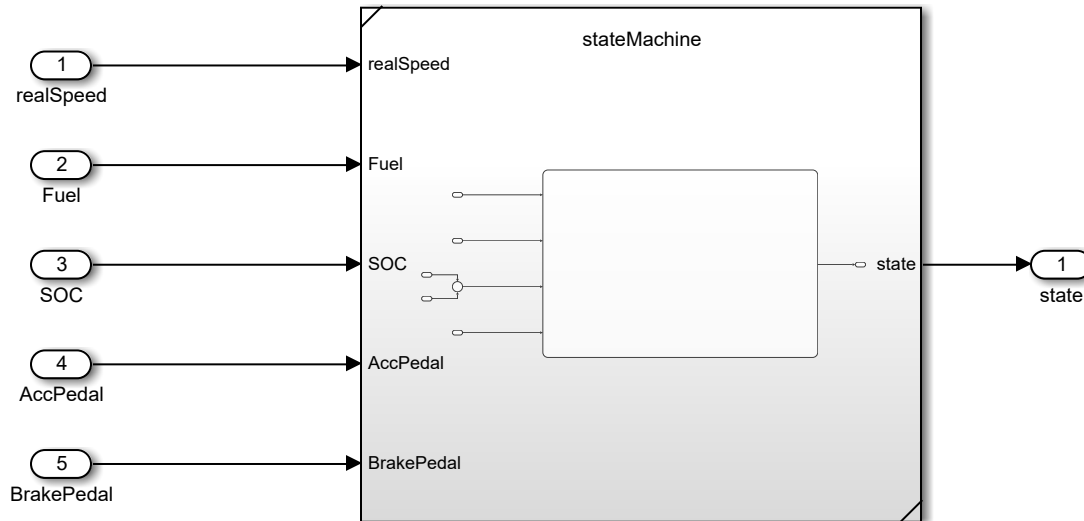
Model Name: FSM_Model

Simulation Settings Overrides

Simulation Mode	Model Settings
Releases	Current

External Inputs

Name	File Path	Status
Regen5.mat (Active)	C:\Users\mordi\Desktop\Materiale Università\Compliance\hybrid-controller\Hybrid-controller\Test\FSM Test\Inputs\Regen5.mat	Successfully mapped inputs.

Configuration Settings Overrides

Configuration settings	Do not override model settings

Baseline Criteria

Signal Name	Abs Tol	Rel Tol	Leading Tol	Lagging Tol
Regen_Combined_baseline.mat (Active)	0	0	0	0
• state:1 (Active)	0	0	0	0