Report Generated by Test Manager

Title: Controller Test: Results report
Author: Team 2 (CoDeAS 20/21)
Date: 26-Feb-2021 09:25:13

Test Environment

Platform: PCWIN64
MATLAB: (R2020b)

Summary

Name	Outcome	Duration (Seconds)
Results: 2021-Feb-26 09:22:13	11 ✓	30.345
controllerTest	11 ✓	30.345
No Charge	✓	8.049
No Charge - 1	✓	8.05
Dead	✓	3.462
Dead - 1	✓	3.463
Combined	4 ✓	8.292
Combined 1	✓	1.927
Combined 2	✓	1.828
Combined 3	✓	2.206
Combined 4	✓	2.106
Regenerative Braking	4 ✓	7.875
Regen 1	✓	1.961
Regen 2	✓	1.823
Regen 3	✓	2.199
Regen 4	✓	1.825
Electrical Drive	✓	2.432
ED 1	✓	2.432

Results: 2021-Feb-26 09:22:13

Result Type:	Result Set
Parent:	None
Start Time:	26-Feb-2021 09:22:23
End Time:	26-Feb-2021 09:22:53
Outcome:	Total: 11, Passed: 11

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controllerTest

Test Result Information

Result Type:	Test File Result
Parent:	Results: 2021-Feb-26 09:22:13
Start Time:	26-Feb-2021 09:22:23
End Time:	26-Feb-2021 09:22:53
Outcome:	Total: 11, Passed: 11

Test Suite Information

Name: controllerTest

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No Charge

Test Result Information

Result Type:	Test Suite Result
Parent:	controllerTest
Start Time:	26-Feb-2021 09:22:23
End Time:	26-Feb-2021 09:22:31
Outcome:	Total: 1, Passed: 1

Test Suite Information

Name: No Charge

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No Charge - 1

Test Result Information

Result Type:	Test Case Result
Parent:	No Charge
Start Time:	26-Feb-2021 09:22:23
End Time:	26-Feb-2021 09:22:31
Outcome:	Passed
Description:	

State under test: NO_CHARGE (1)

INPUTS:

- AccPedal: exponential growth and decay over time

- BrakePedal: 0

- SOC: between 0 and 0.1

EXPECTED OUTPUT:

Only the IC engine shall be commanded.

Test Case Information

Name:	No Charge - 1
Type:	Baseline Test

Logical and Temporal Assessments

Name	Assessment
Assessment1	At any point of time, ((ICreq <= AccPedal) | (ICreq <= 1)) must be true
Assessment2	At any point of time, (MGUreq == 0) must be true

Input Data

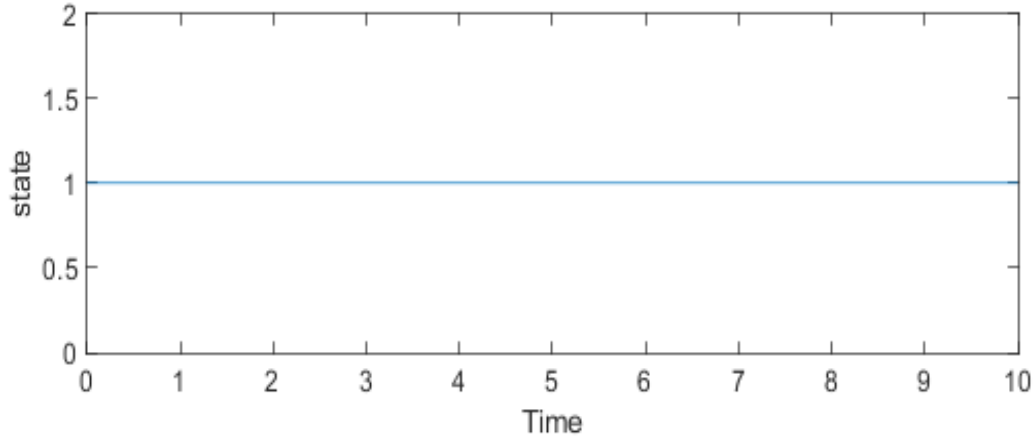
Input Information

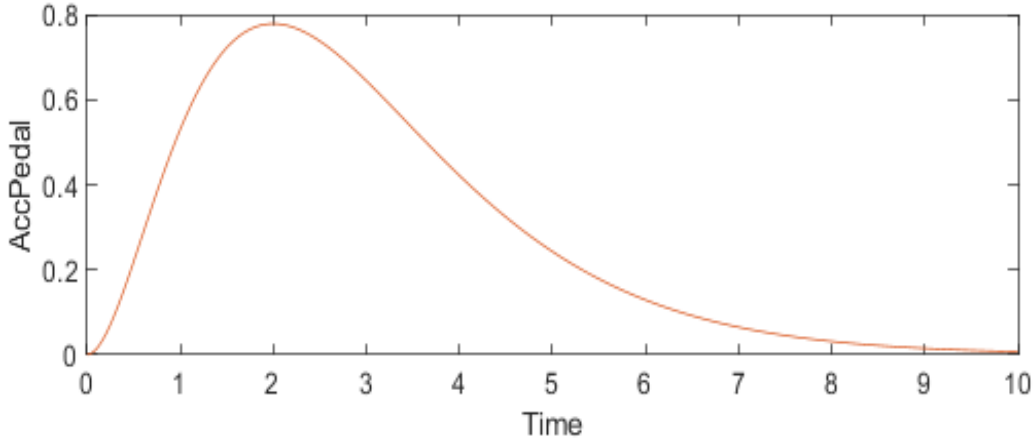
External Input Name: controllerInputs10.mat

External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs10.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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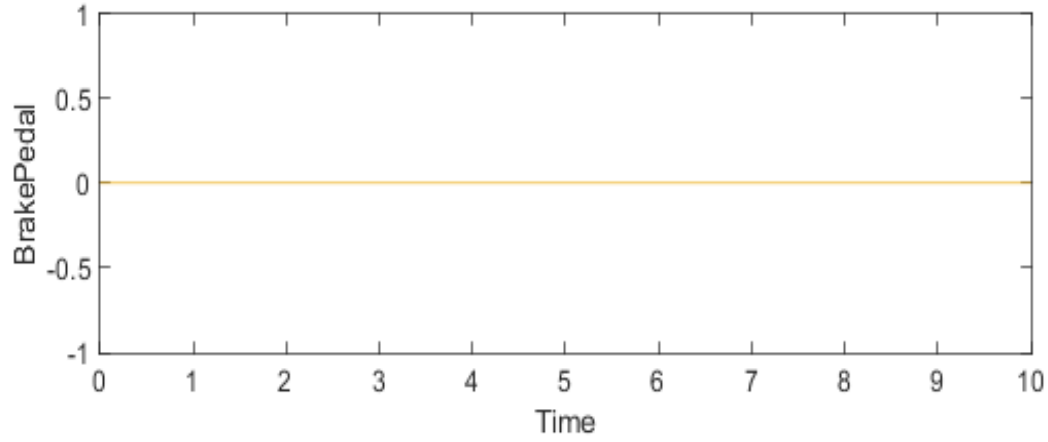
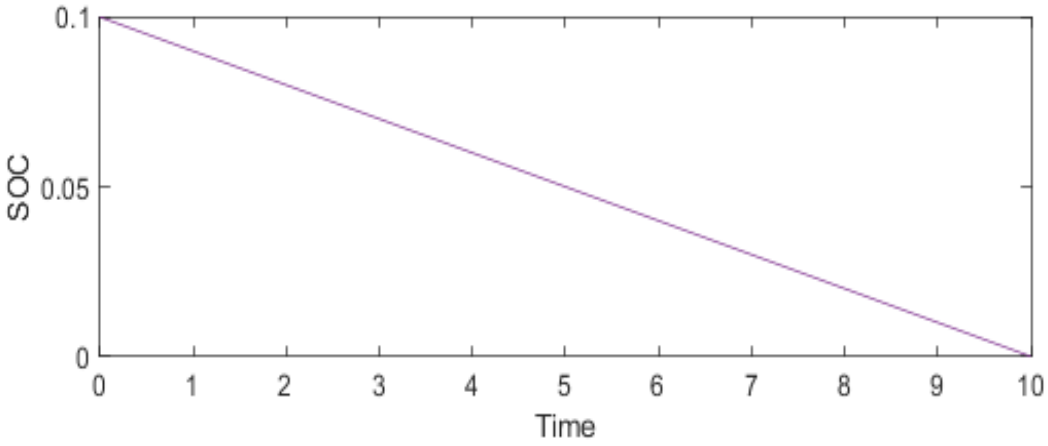
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

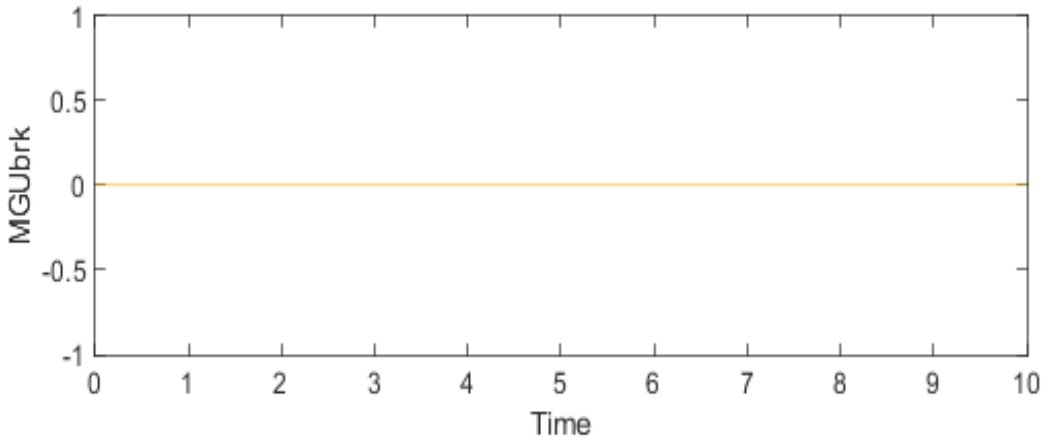
Configuration Set:	Configuration
External Input Name:	controllerInputs10.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs10.mat
Start Time:	0
Stop Time:	10
Checksum:	3112307058 112067308 1029251104 597414014
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:23
Simulation Stop Time:	2021-02-26 09:22:27
Platform:	PCWIN64

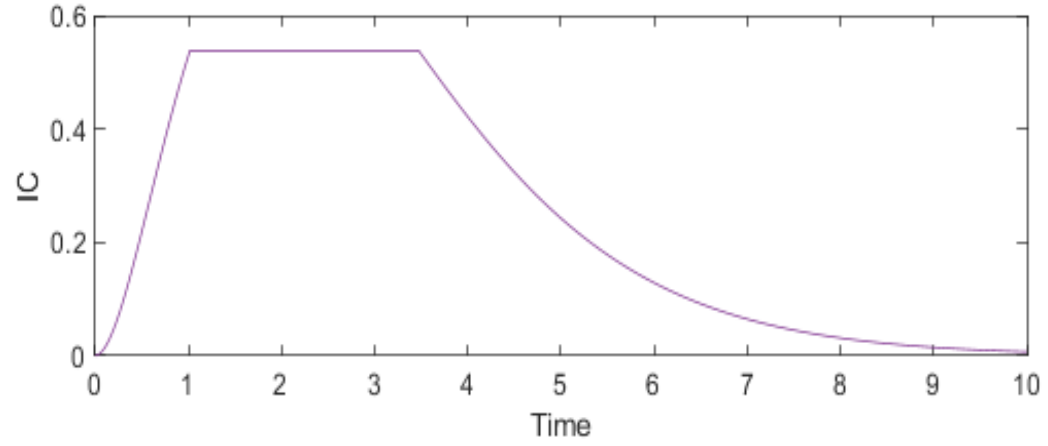
Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link

MGUreq	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union





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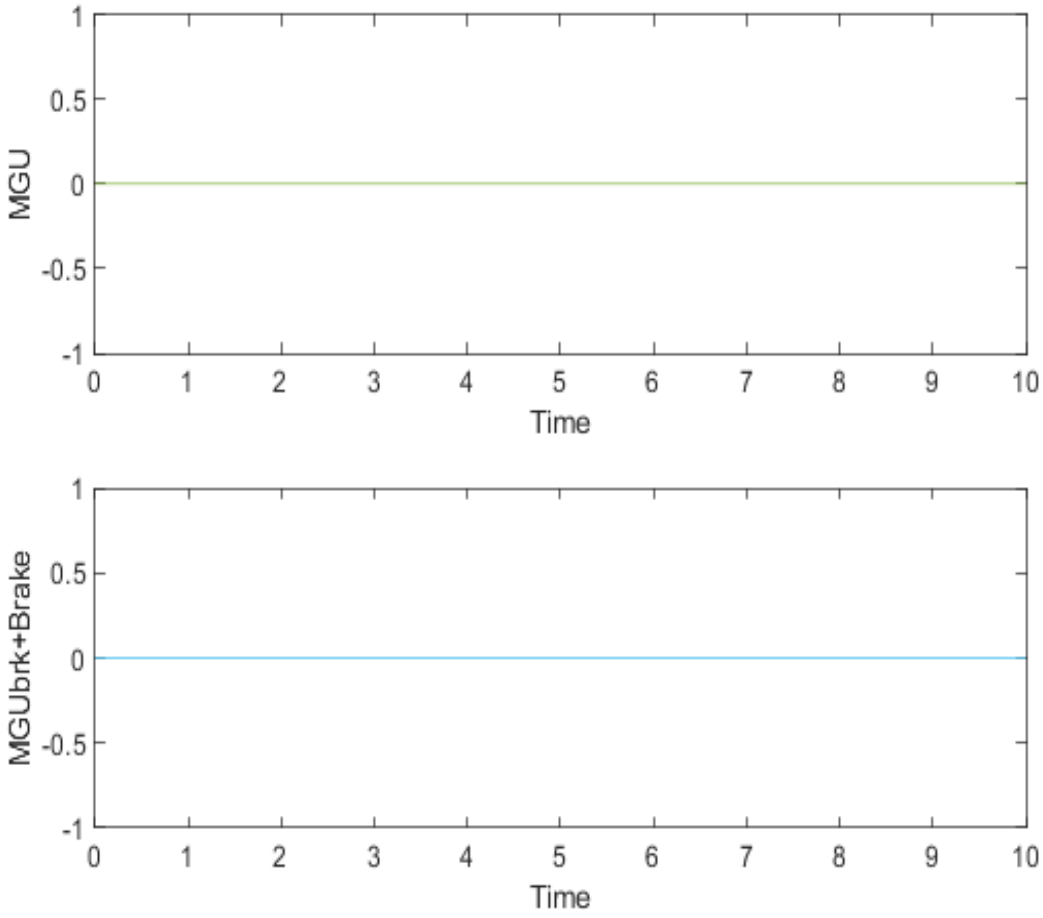
Name	Data Type	Units	Sample Time	Interp	Sync

MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union



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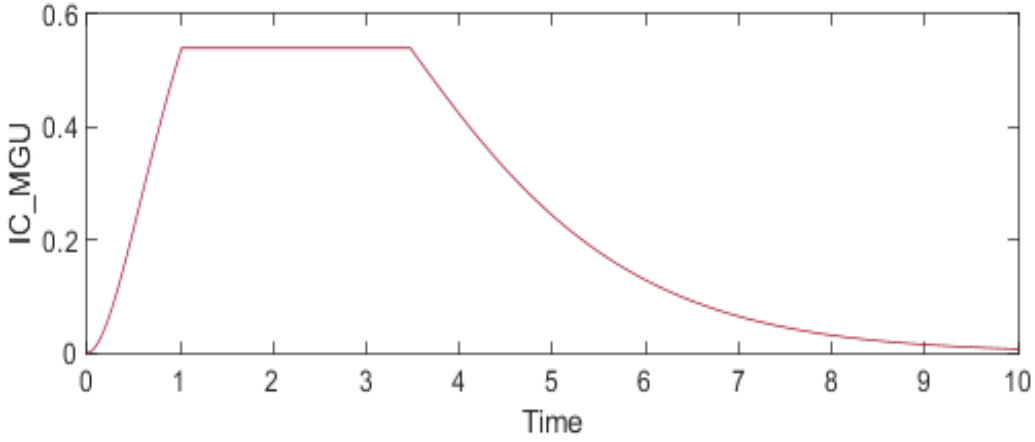
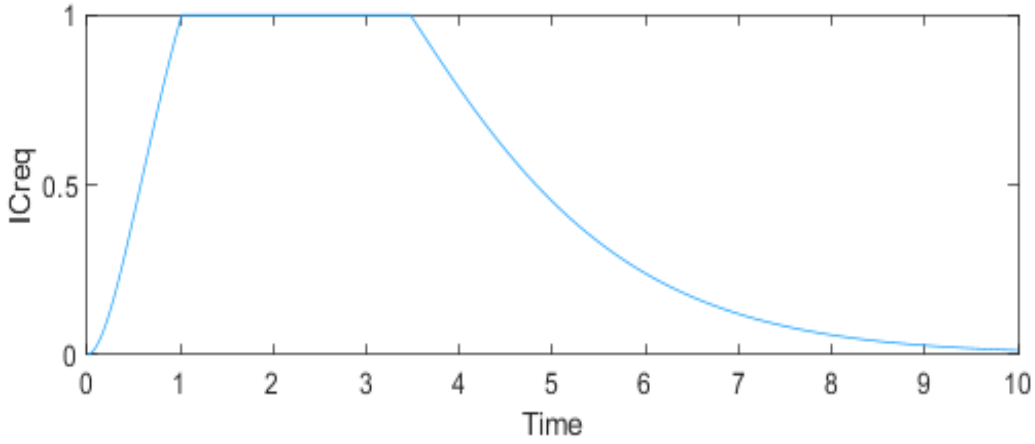
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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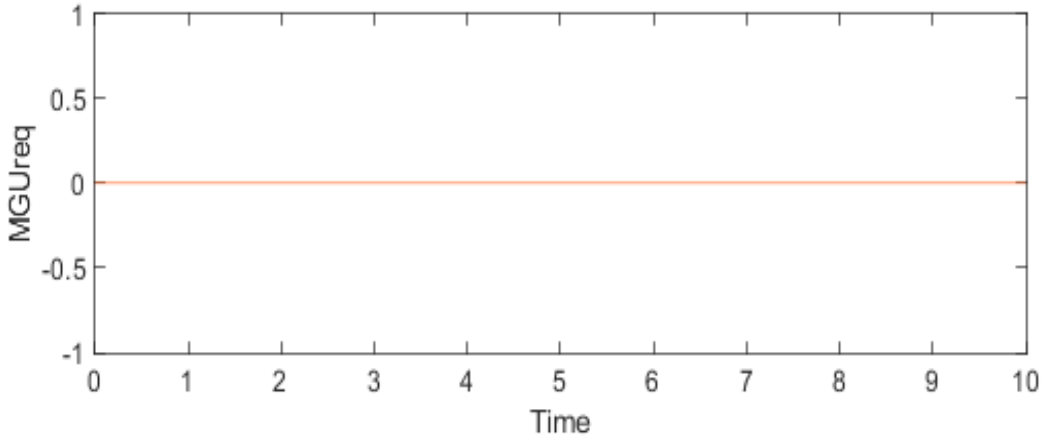
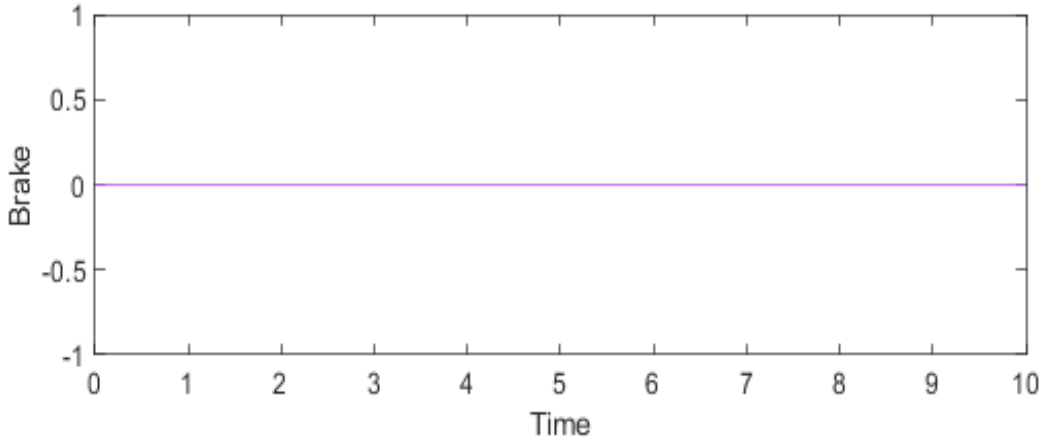
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union





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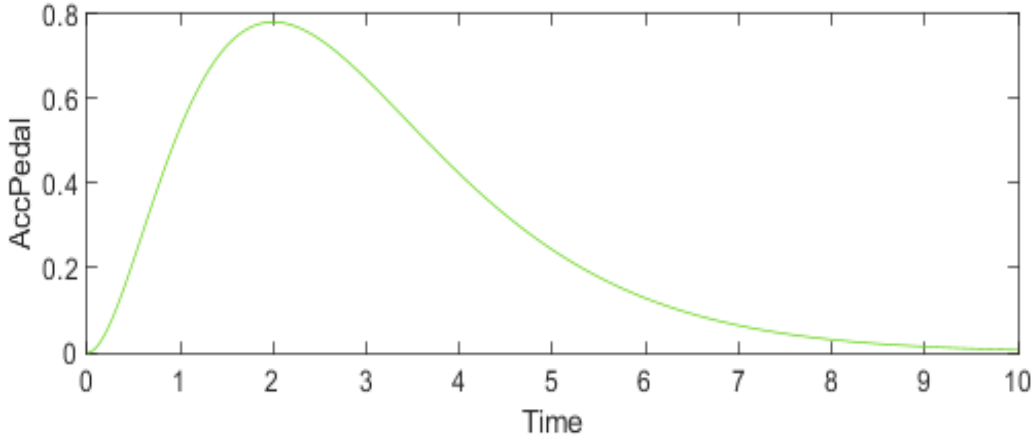
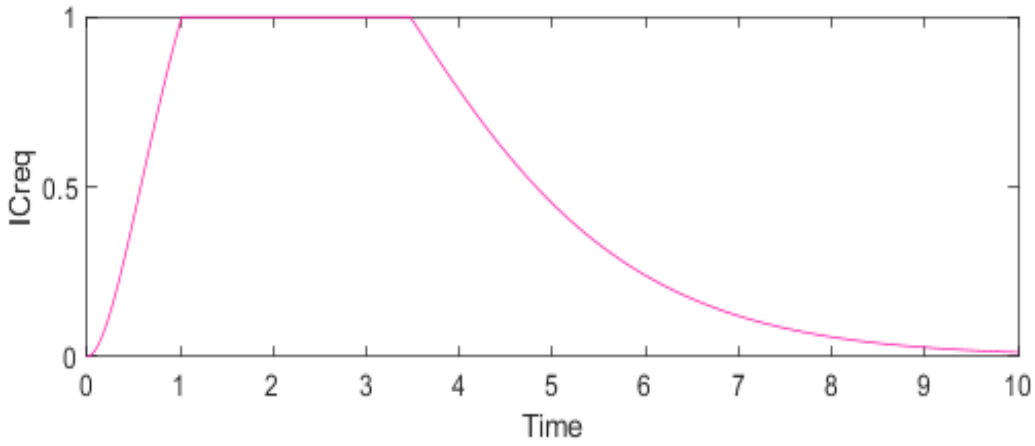
Name	Data Type	Units	Sample Time	Interp	Sync
AccPedal	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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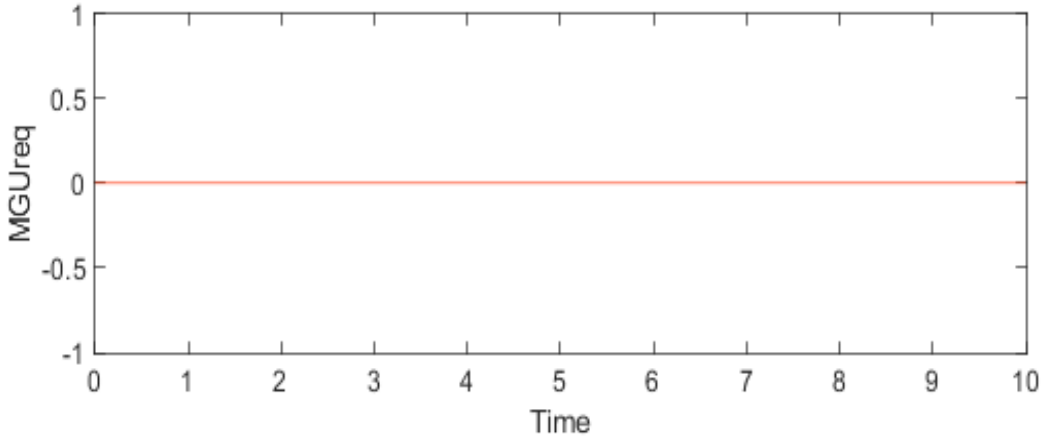
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Test Logs:
No baseline criteria evaluation performed as no baseline data is available for this test.

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Dead

Test Result Information

Result Type:	Test Suite Result
Parent:	controllerTest
Start Time:	26-Feb-2021 09:22:31
End Time:	26-Feb-2021 09:22:35
Outcome:	Total: 1, Passed: 1
Description:	

Dead case suite of tests

Test Suite Information

Name:	Dead

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Dead - 1

Test Result Information

Result Type:	Test Case Result
Parent:	Dead
Start Time:	26-Feb-2021 09:22:31
End Time:	26-Feb-2021 09:22:35
Outcome:	Passed
Description:	

State under test: DEAD (0)

INPUTS:

- AccPedal: exponential growth and decay over time

- BrakePedal: 0

- SOC: from 0.1 to 0

EXPECTED OUTPUT:

Both ICreq and MGUreq shall be zero.

Test Case Information

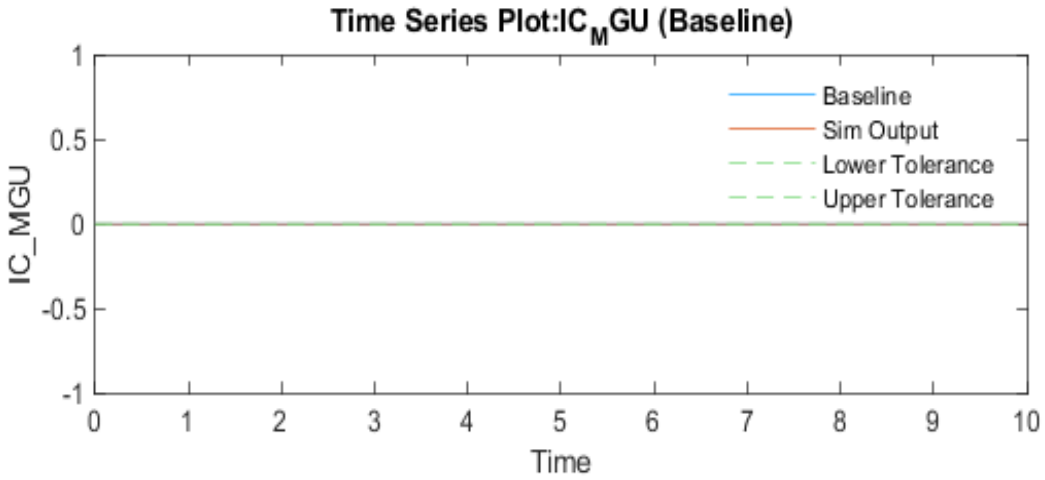
Name:	Dead - 1
Type:	Baseline Test
Baseline Name:	Dead_baseline.mat
Baseline File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\Baselines\Dead_baseline.mat

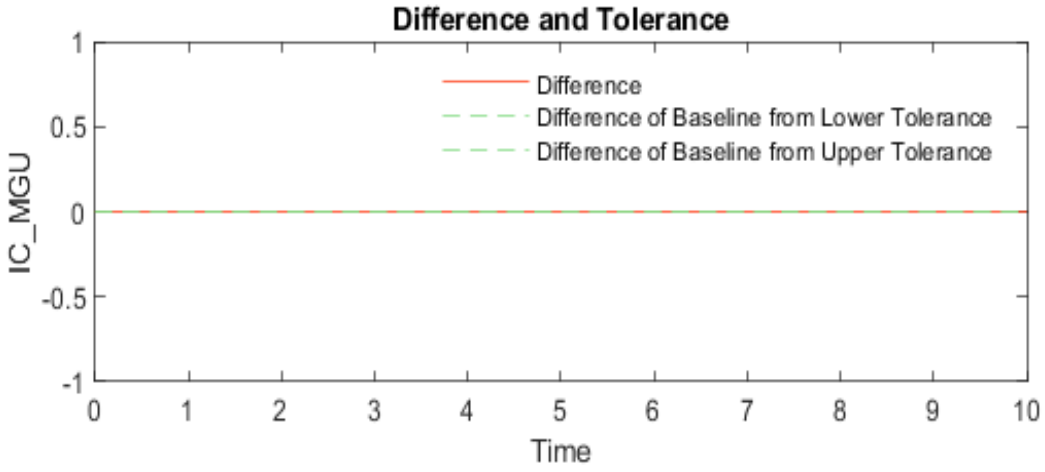
Baseline Comparison

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync	Link to Plot
IC_MGU	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link
ICreq	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link
MGUreq	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link
ICreq	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link
IC	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link
MGU	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link
MGUreq	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link
MGUbrk	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link
Brake	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link

MGUbrk+ Brake	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link
IC_MGU	0	0	0	0	0	double		Continuous	double		Continuous	linear	union	Link

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
IC_MGU	0	0	0	0	0	double		Continuous	double		Continuous	linear	union





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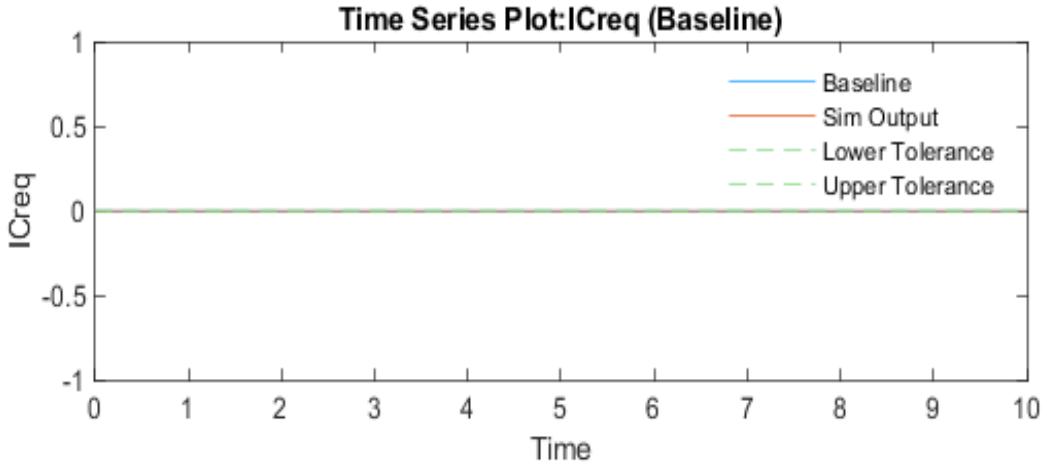
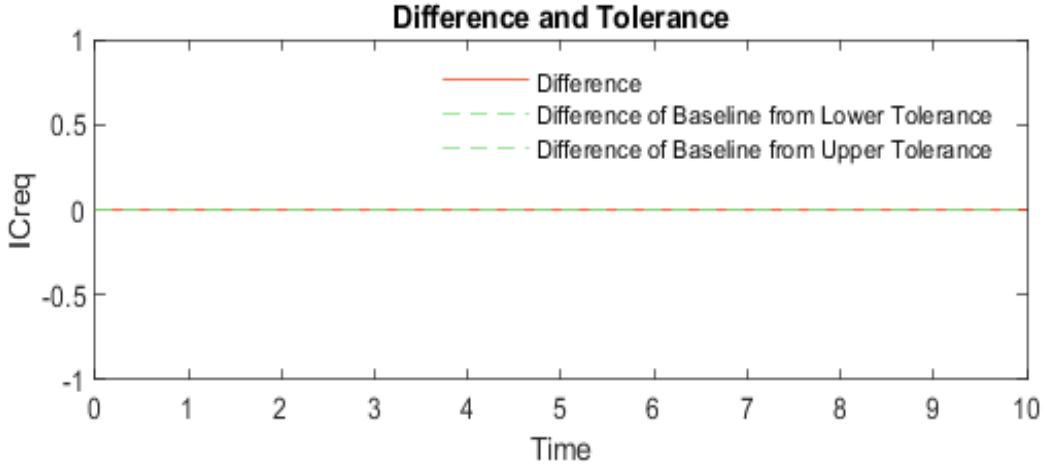
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
ICreq	0	0	0	0	0	double		Continuous	double		Continuous	linear	union





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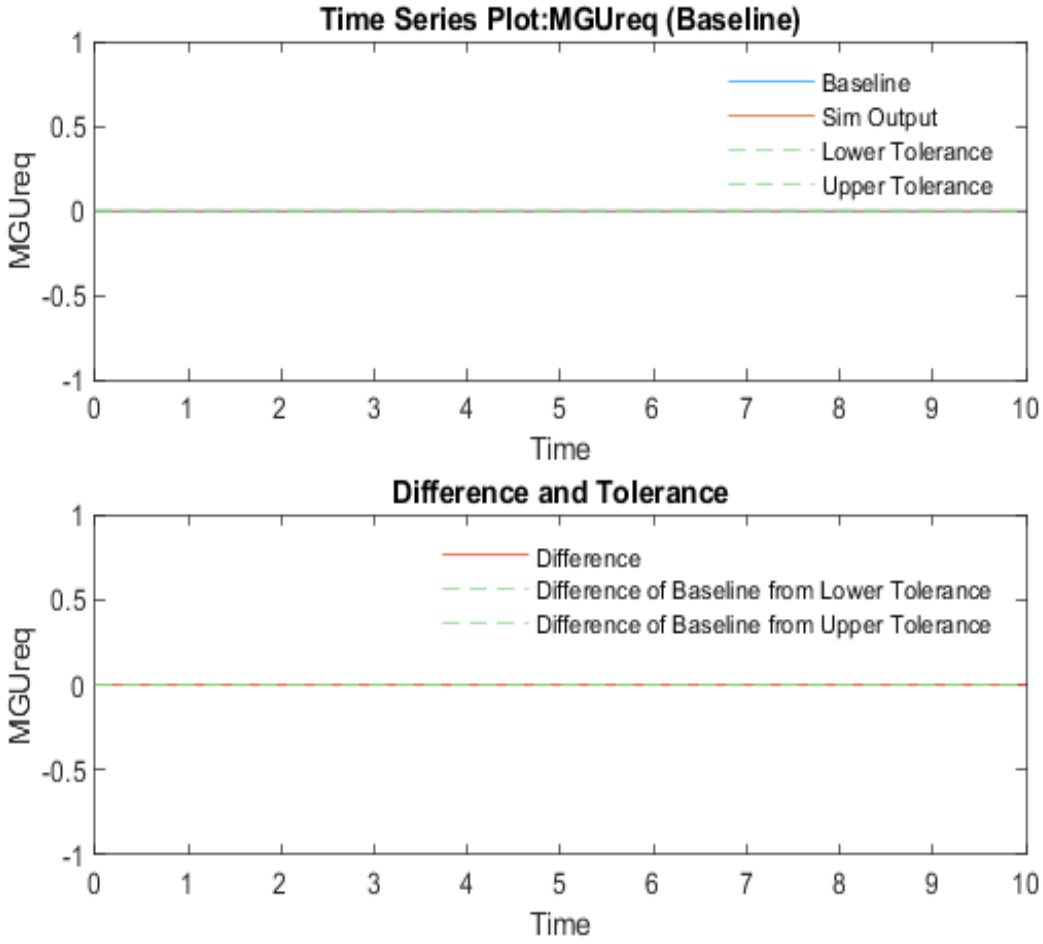
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
MGUreq	0	0	0	0	0	double		Continuous	double		Continuous	linear	union



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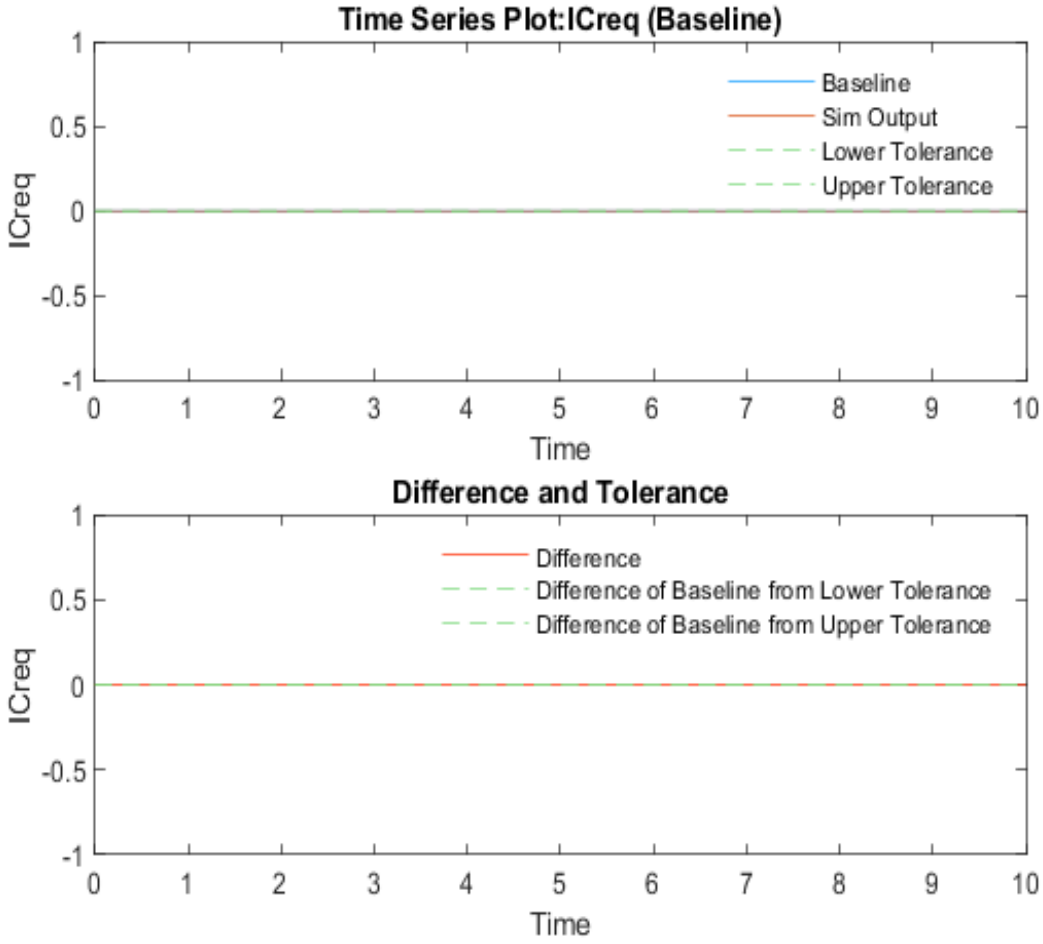
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
ICreq	0	0	0	0	0	double		Continuous	double		Continuous	linear	union



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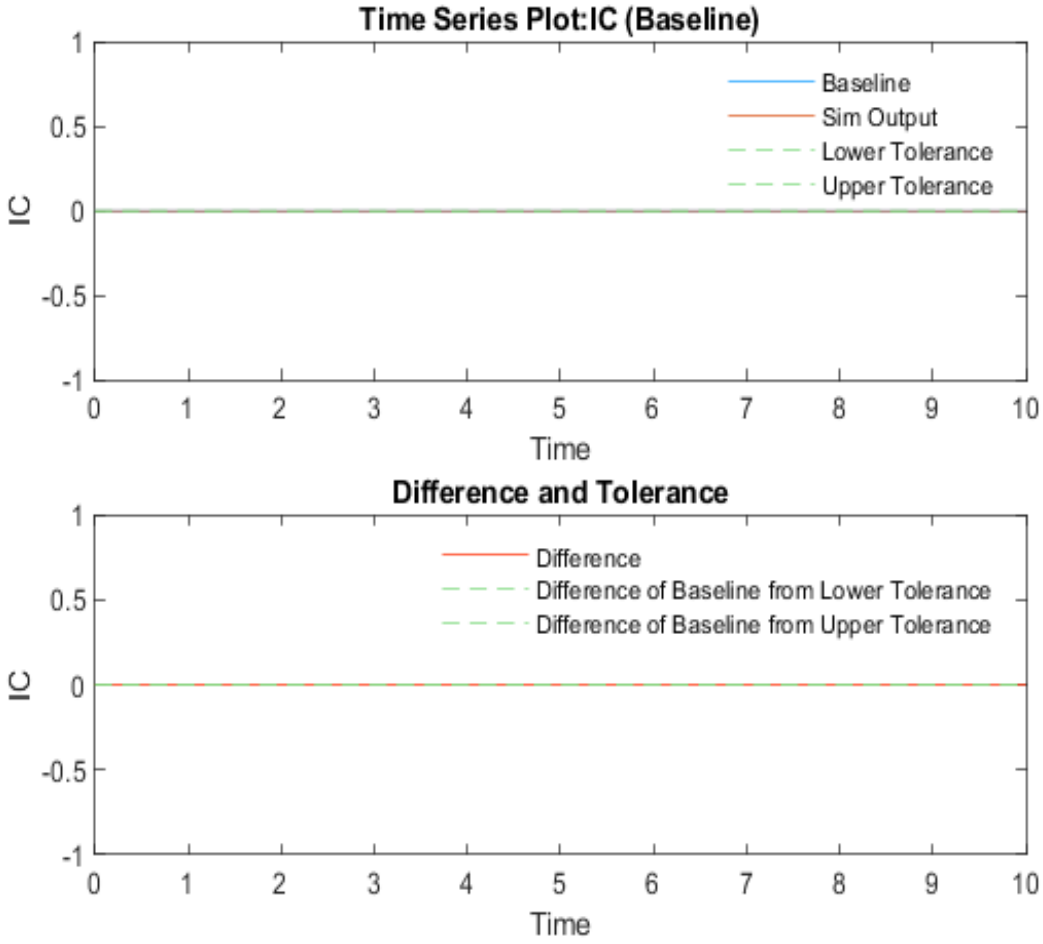
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
IC	0	0	0	0	0	double		Continuous	double		Continuous	linear	union



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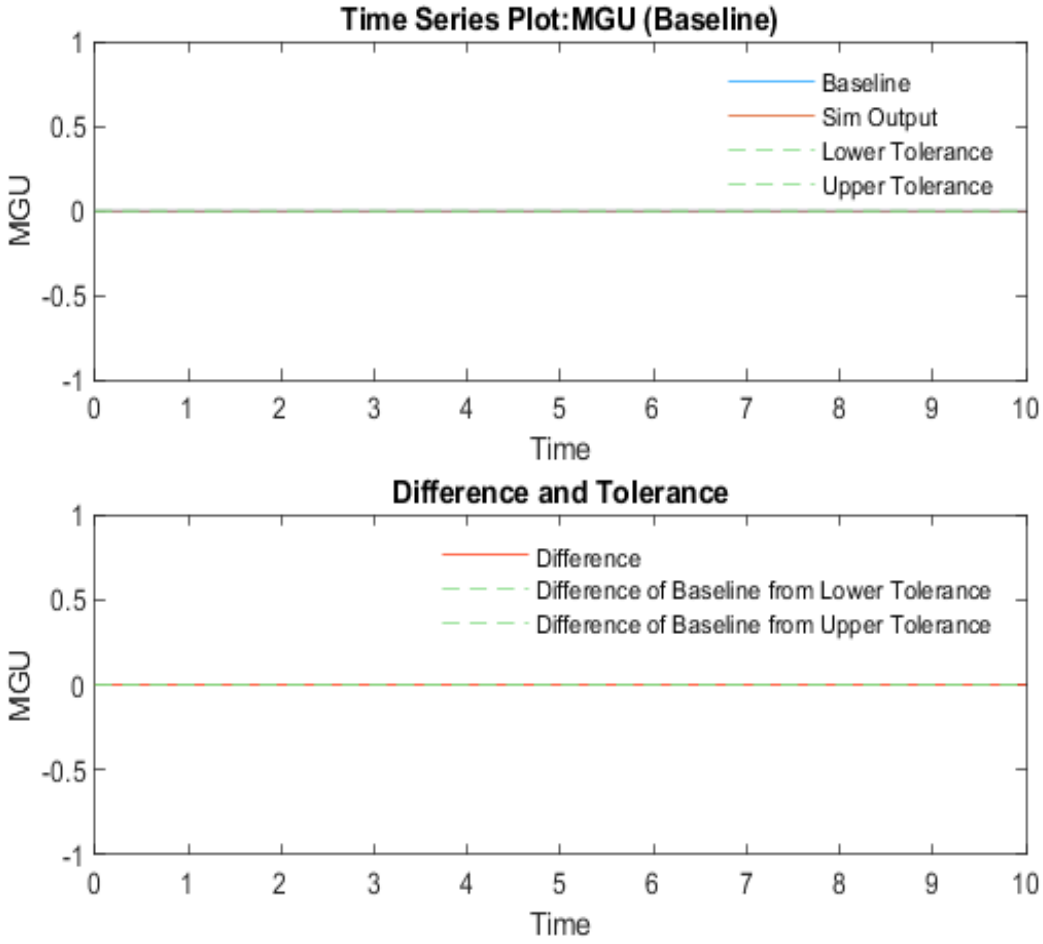
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
MGU	0	0	0	0	0	double		Continuous	double		Continuous	linear	union



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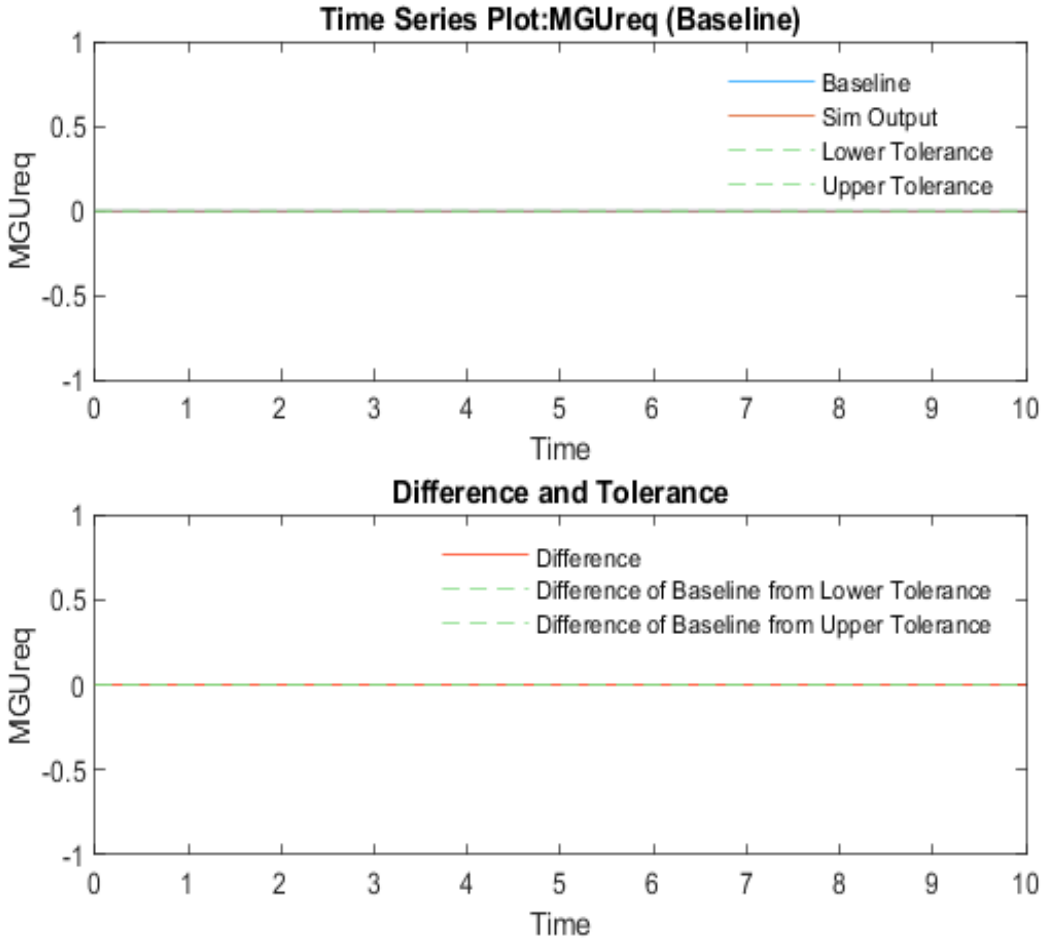
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
MGUreq	0	0	0	0	0	double		Continuous	double		Continuous	linear	union



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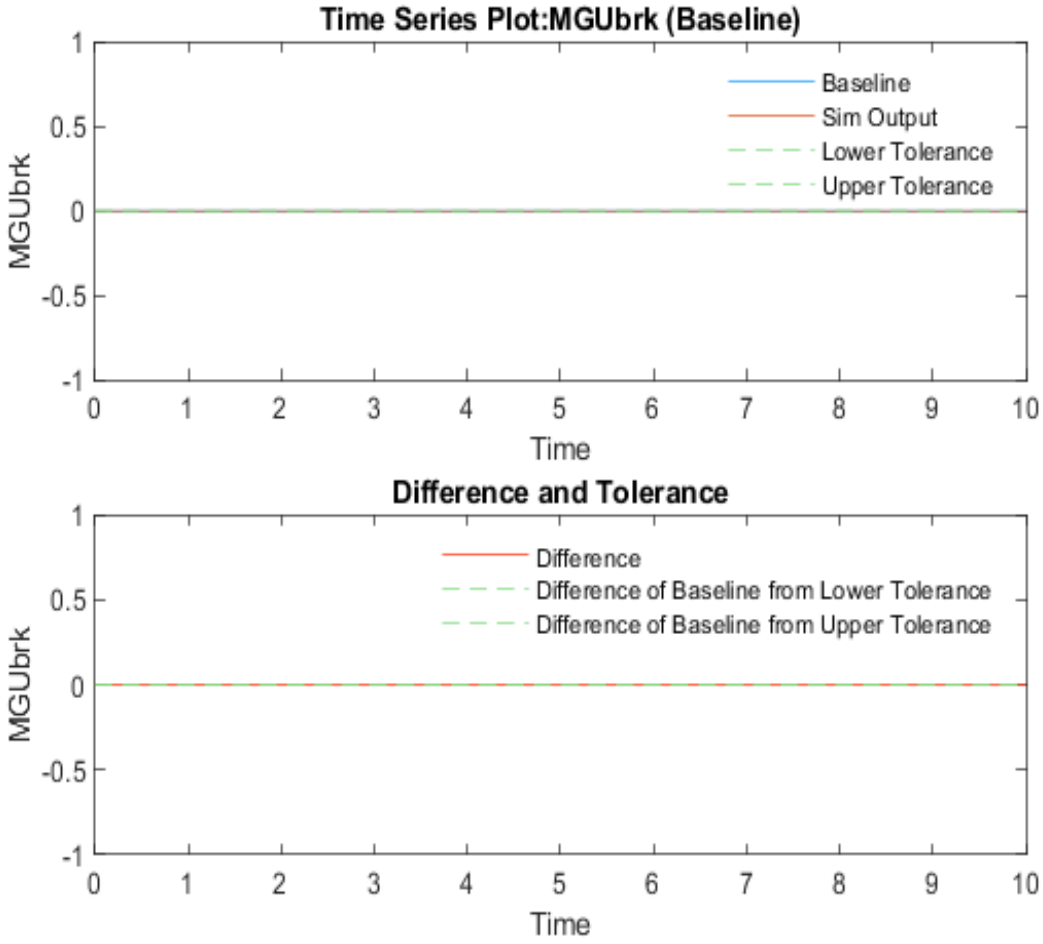
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
MGUbrk	0	0	0	0	0	double		Continuous	double		Continuous	linear	union



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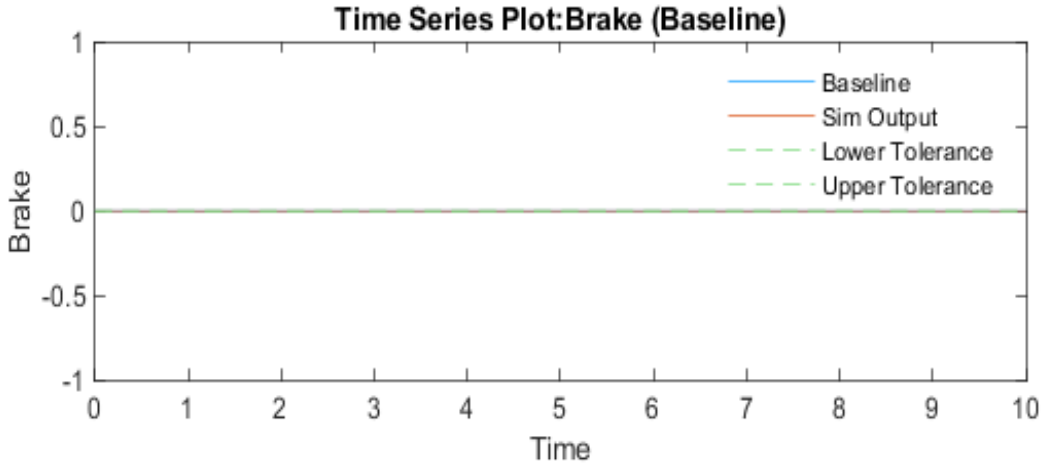
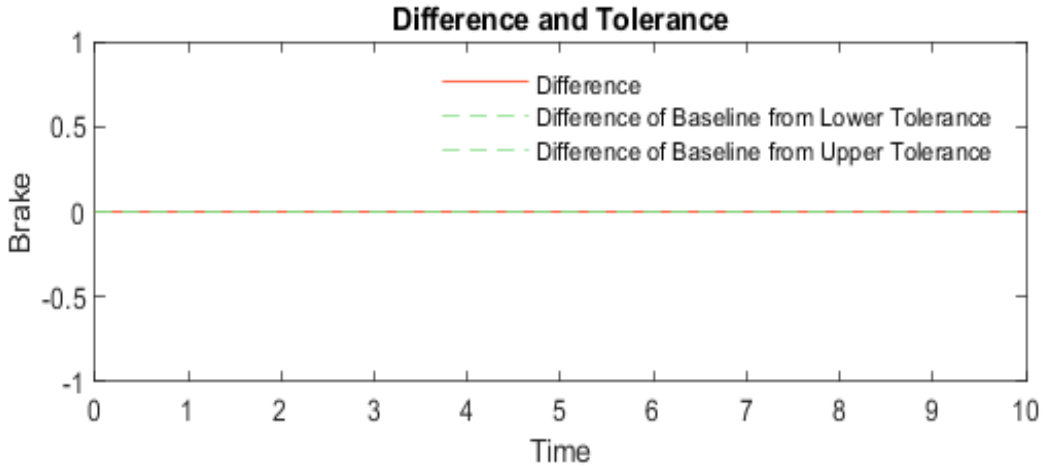
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
Brake	0	0	0	0	0	double		Continuous	double		Continuous	linear	union





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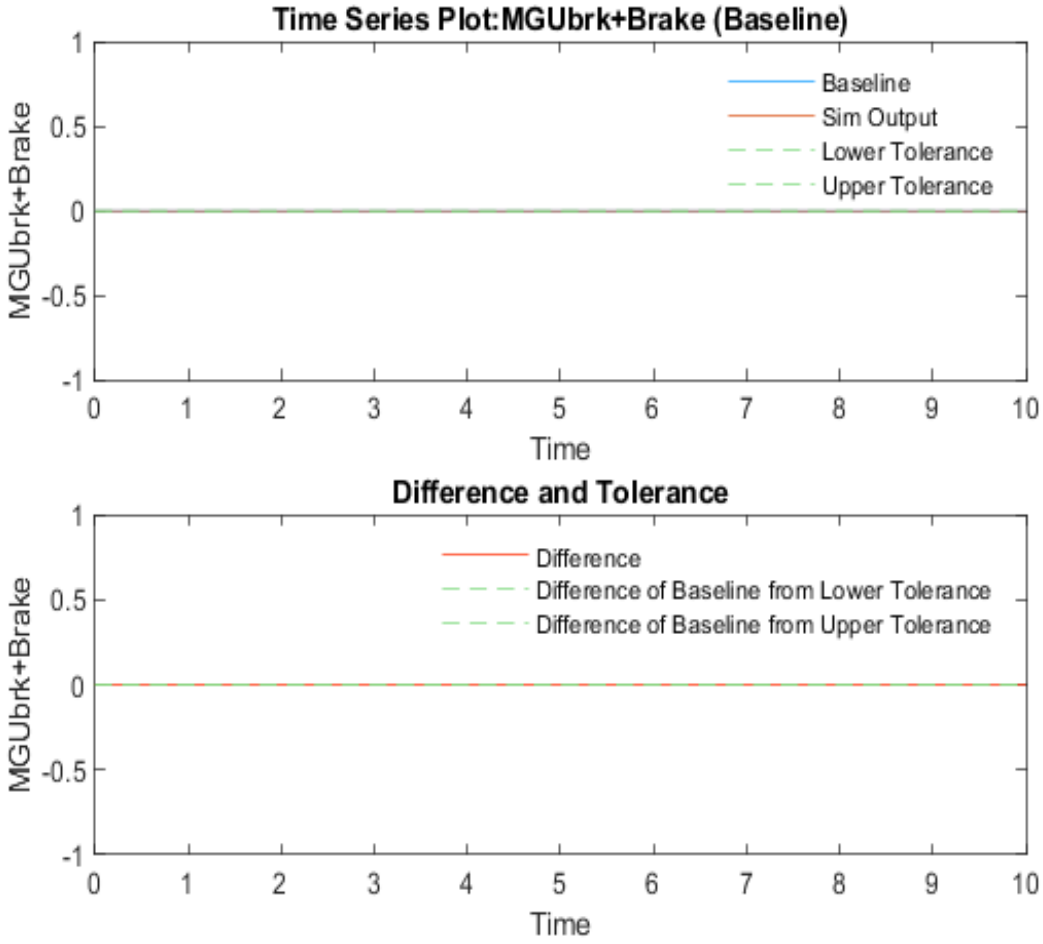
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
MGUbrk+ Brake	0	0	0	0	0	double		Continuous	double		Continuous	linear	union



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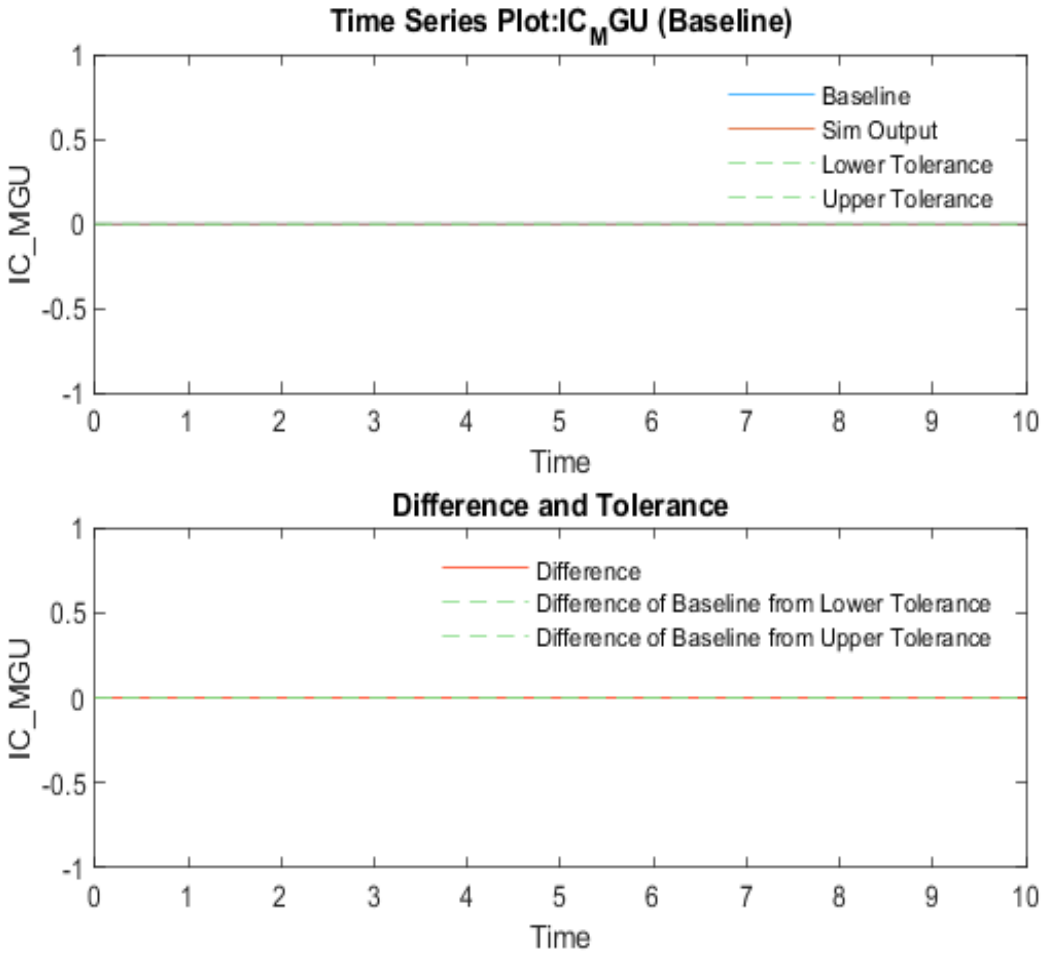
Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
IC_MGU	0	0	0	0	0	double		Continuous	double		Continuous	linear	union



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Input Data

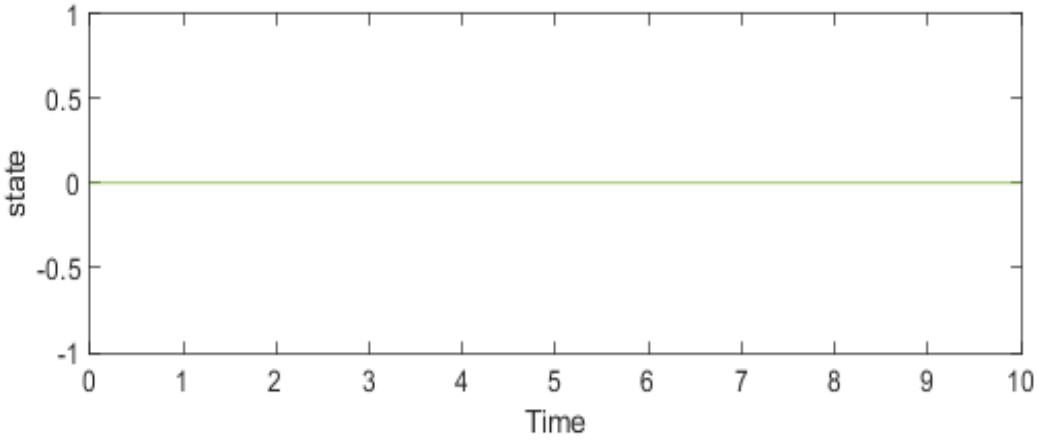
Input Information

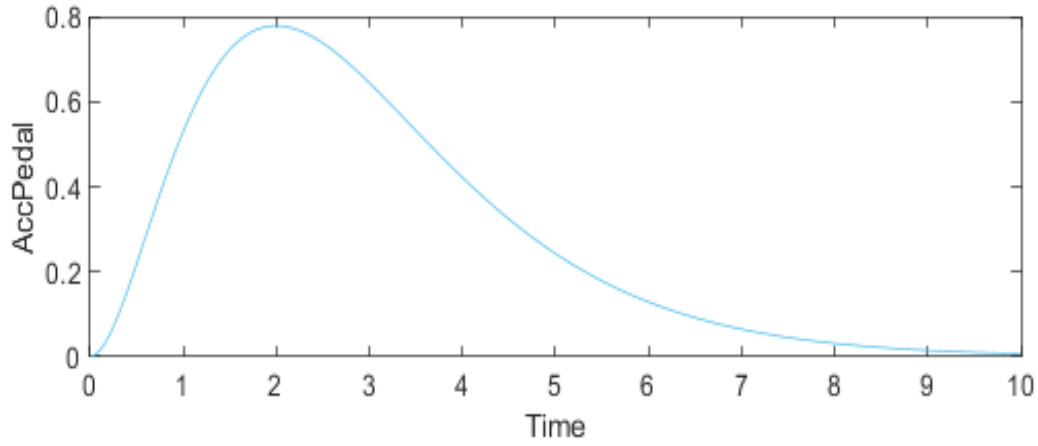
External Input Name: controllerInputs9.mat
External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-

controller\Test\ControllerTest\testScenarios\controllerInputs9.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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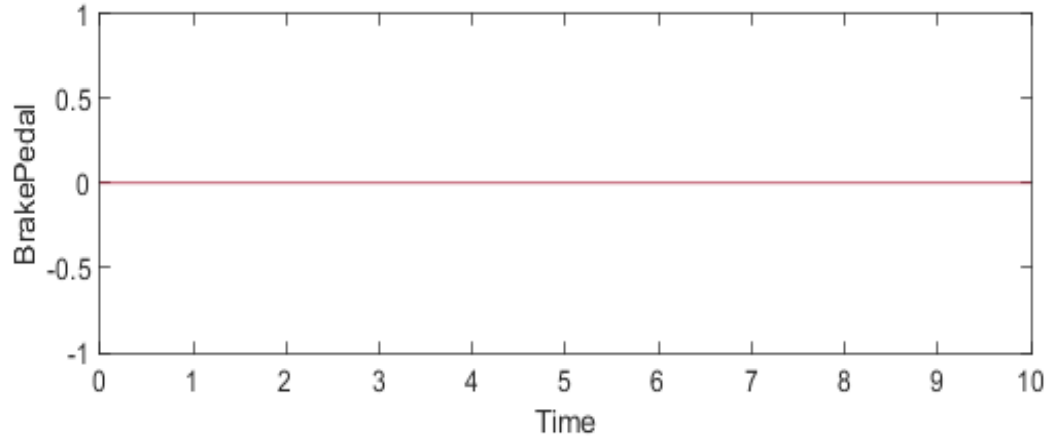
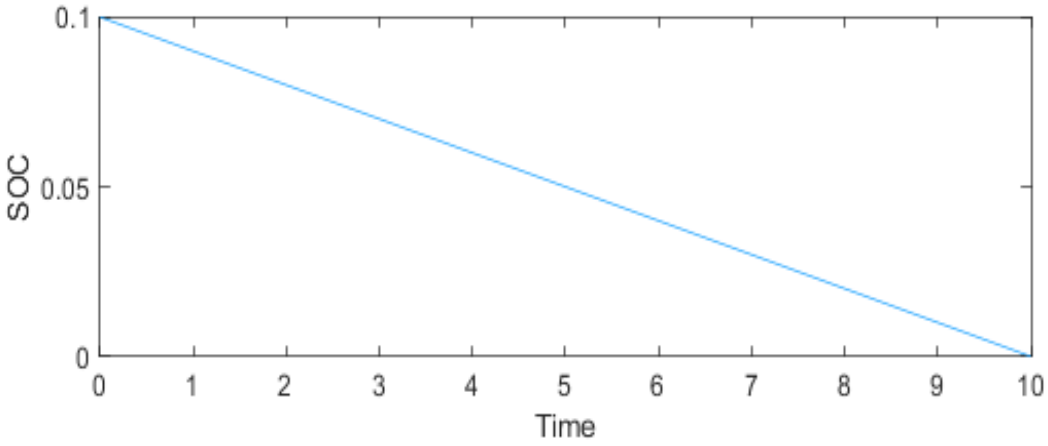
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

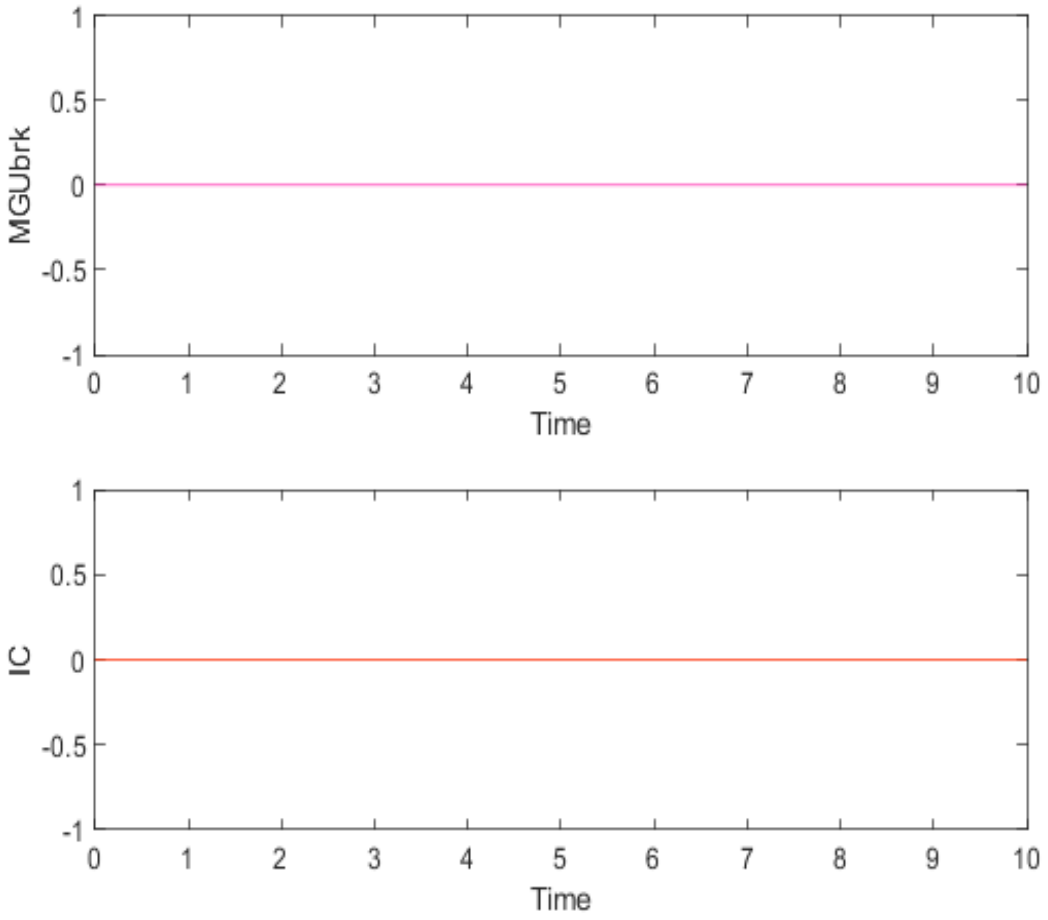
Configuration Set:	Configuration
External Input Name:	controllerInputs9.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs9.mat
Start Time:	0
Stop Time:	10
Checksum:	1143790070 1761490180 2181749561 3562723838
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:31
Simulation Stop Time:	2021-02-26 09:22:32
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link

MGUreq	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union



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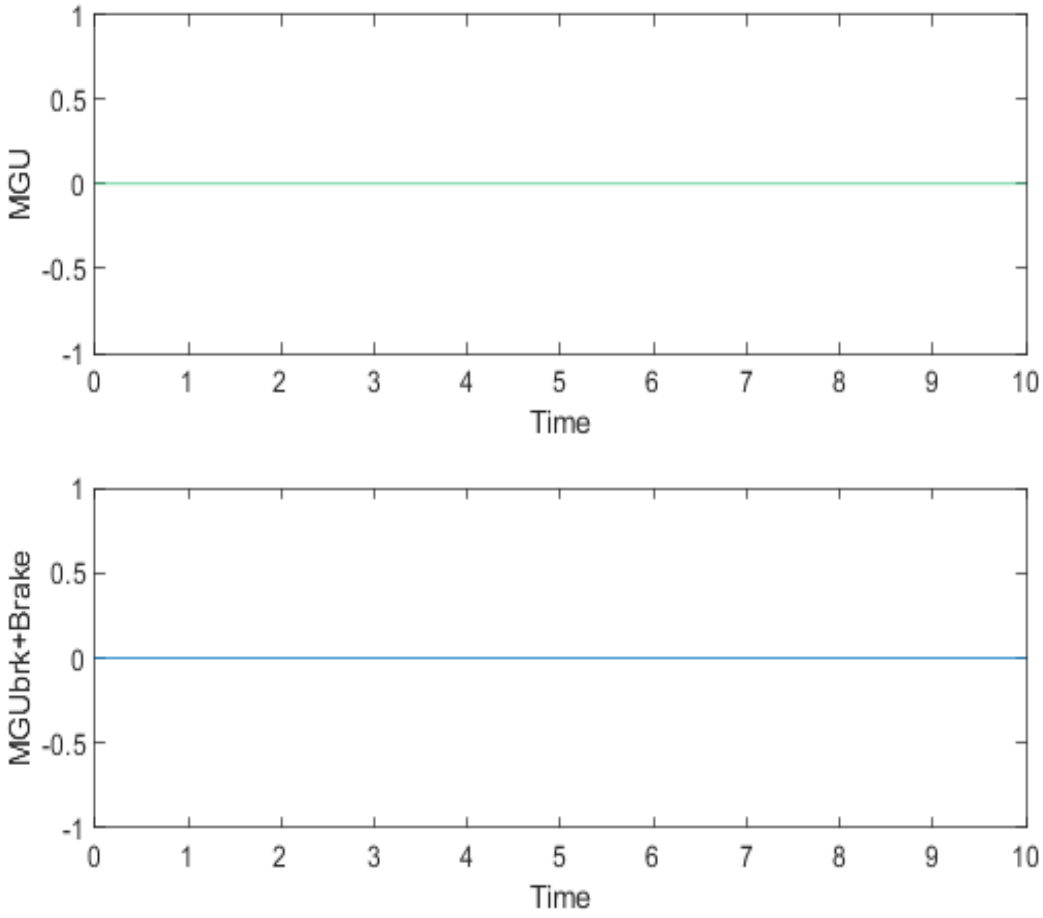
Name	Data Type	Units	Sample Time	Interp	Sync

MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union



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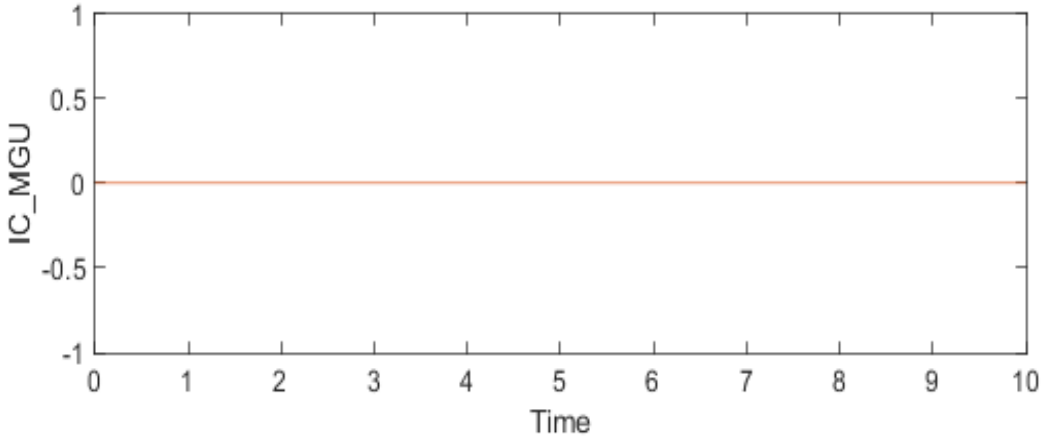
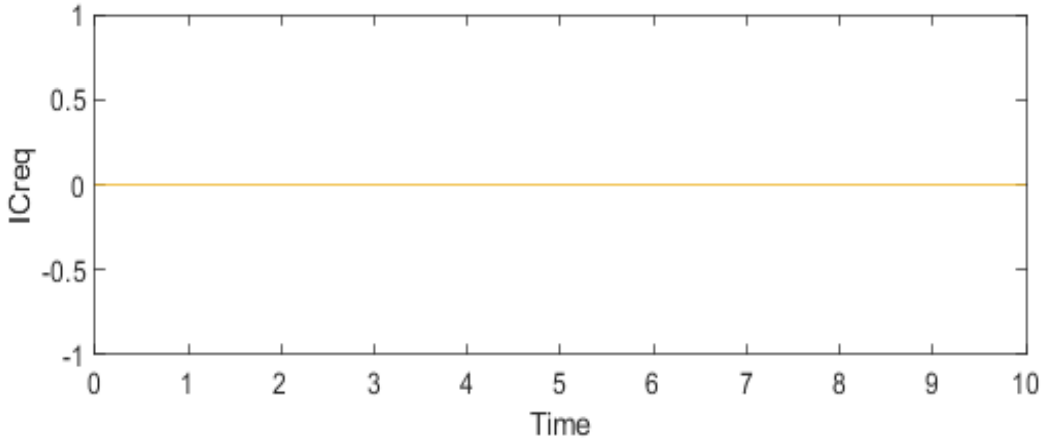
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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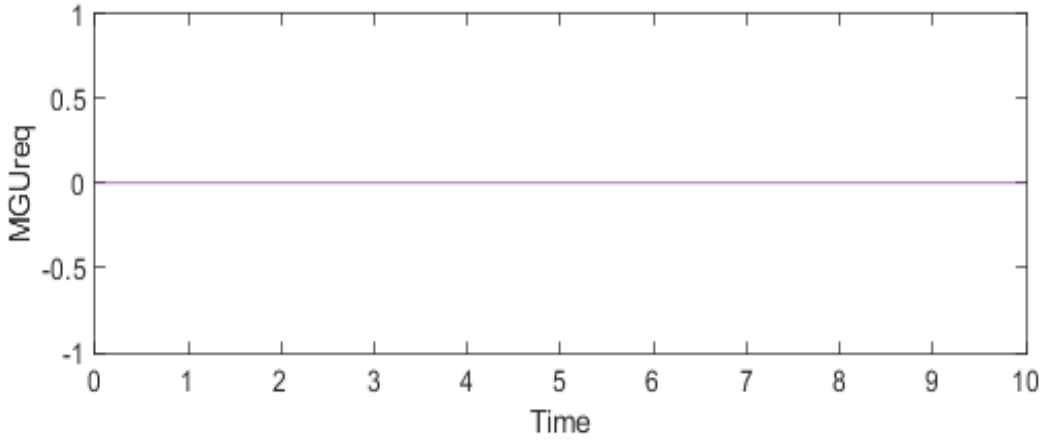
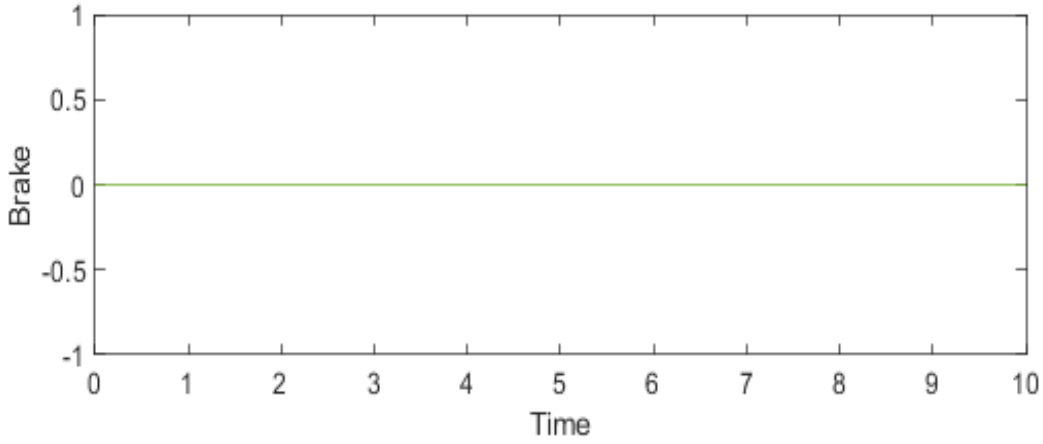
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union





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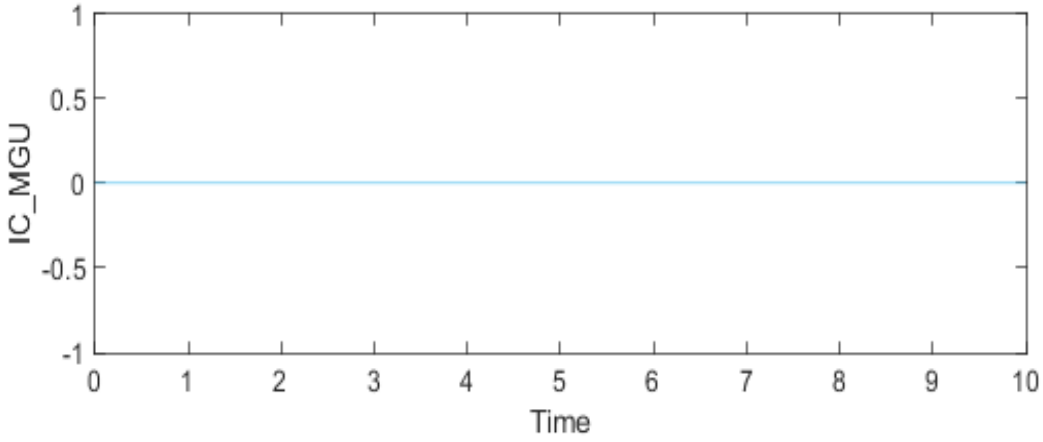
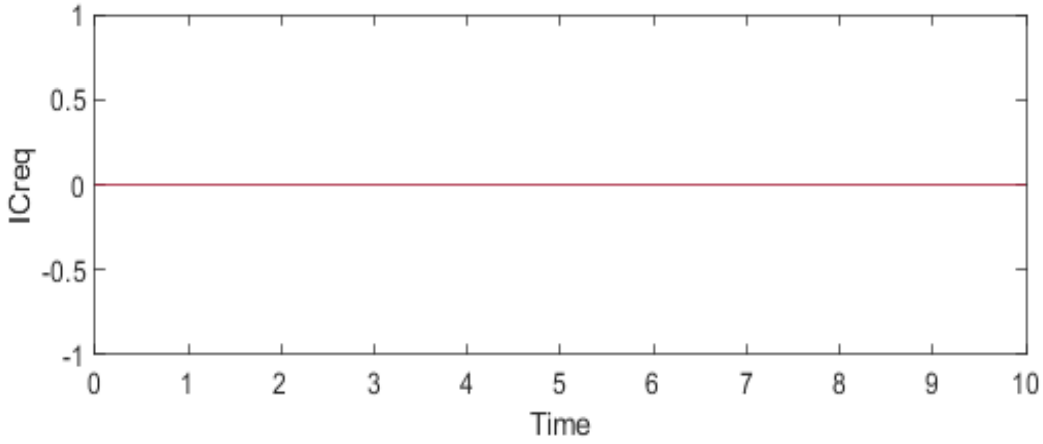
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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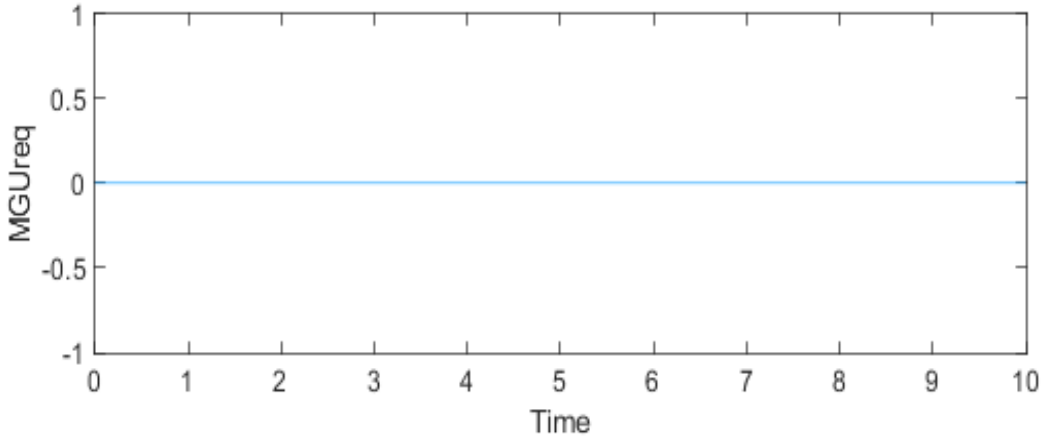
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Combined

Test Result Information

Result Type:	Test Suite Result
Parent:	controllerTest
Start Time:	26-Feb-2021 09:22:35
End Time:	26-Feb-2021 09:22:43
Outcome:	Total: 4, Passed: 4
Description:	

Combined case suite of tests

Test Suite Information

Name:	Combined

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Combined 1

Test Result Information

Result Type:	Test Case Result
Parent:	Combined
Start Time:	26-Feb-2021 09:22:35
End Time:	26-Feb-2021 09:22:37
Outcome:	Passed
Description:	

State under test: COMBINED (3), Scenario 1

INPUTS:

- AccPedal: pulse signal

  - Amplitude: 0.5

- Width: 0.5

- Period: 10 seconds

- BrakePedal: 0

- SOC: 50%

EXPECTED OUTPUT:

Both ICreq and MGUreq shall be activated. Both the signals should not saturate.

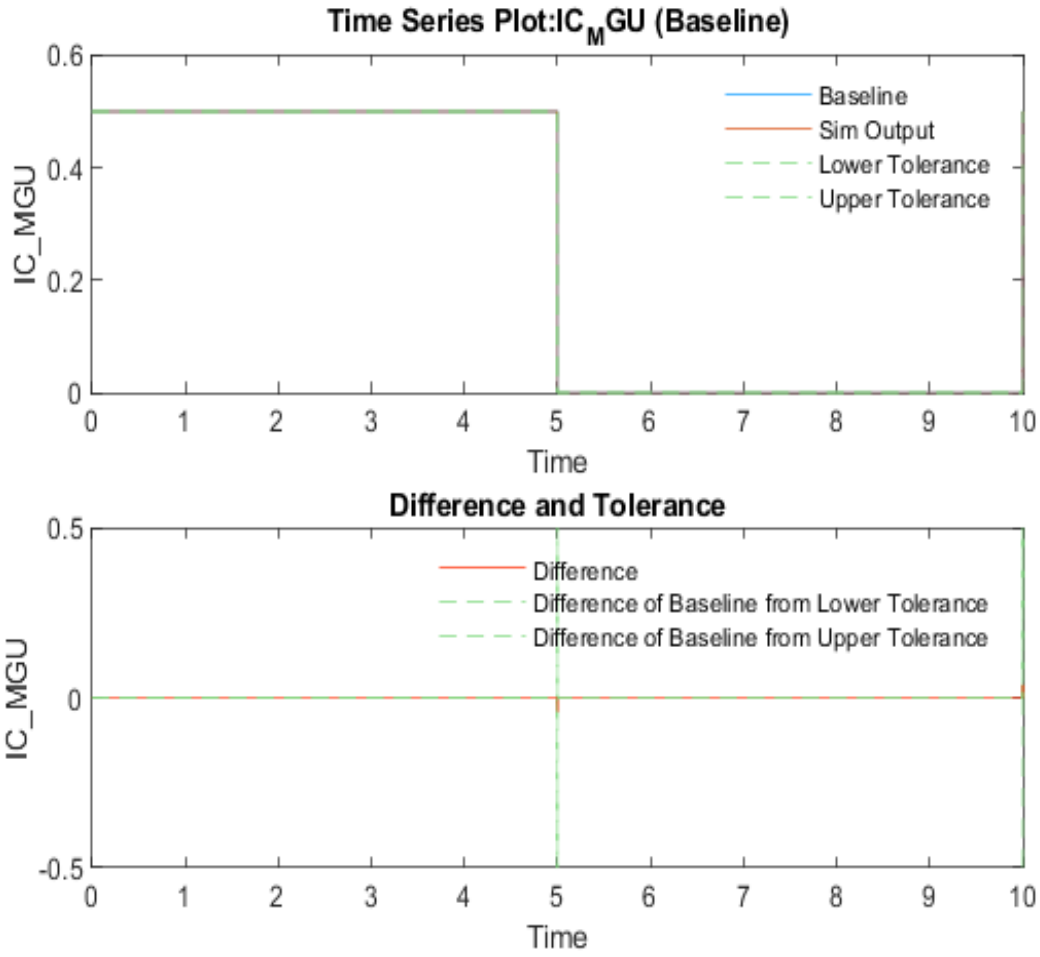
Test Case Information

Name:	Combined 1
Type:	Baseline Test
Baseline Name:	Combined_Baseline1.mat
Baseline File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\Baselines\Combined_Baseline1.mat

Baseline Comparison

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync	Link to Plot
IC_MGU	1e-05	0.001	0.001	0.001	0.041	double		Continuous	double		Continuous	linear	union	Link

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
IC_MGU	1e-05	0.001	0.001	0.001	0.041	double		Continuous	double		Continuous	linear	union



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Input Data

Input Information

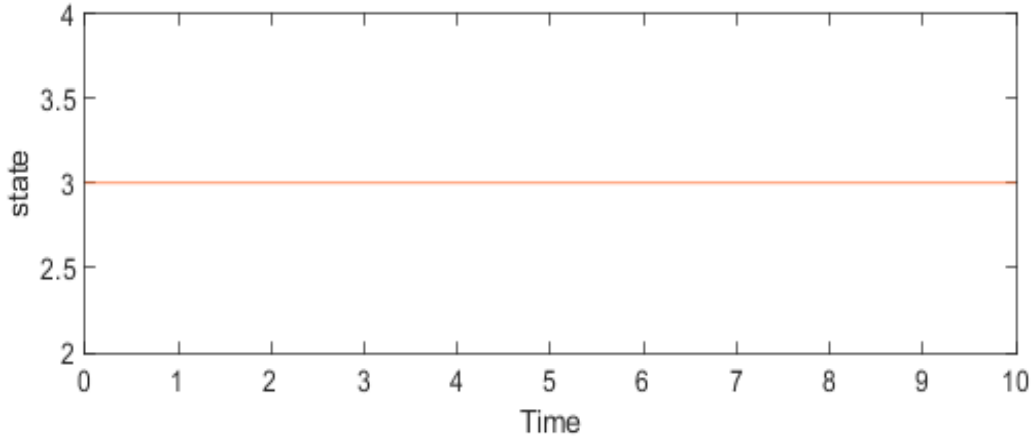
External Input Name: controllerInputs1.mat

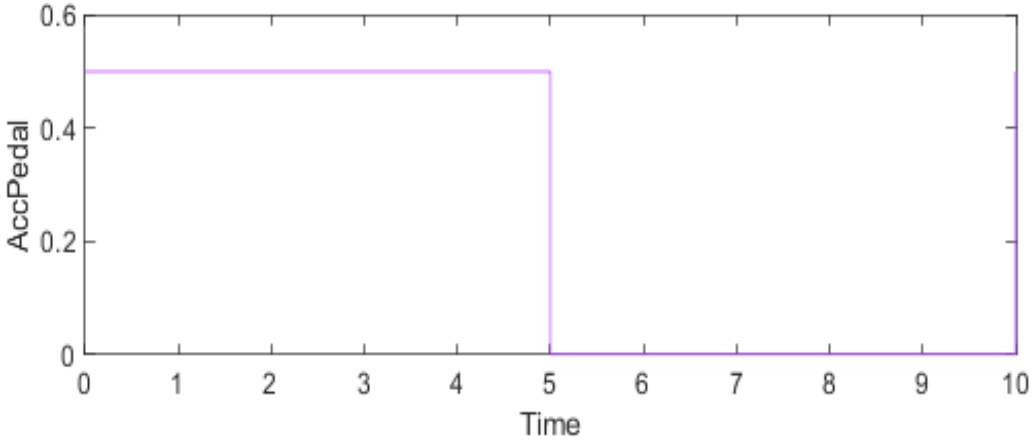
External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-

controller\Test\ControllerTest\testScenarios\controllerInputs1.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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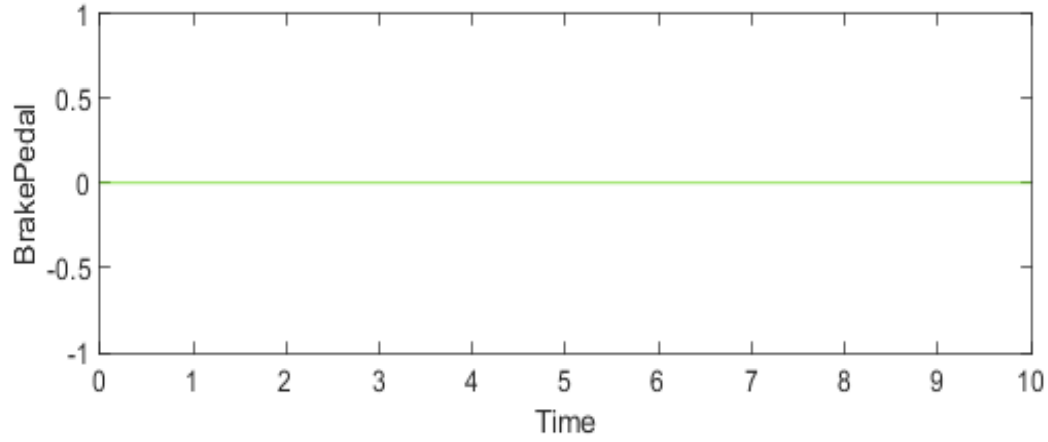
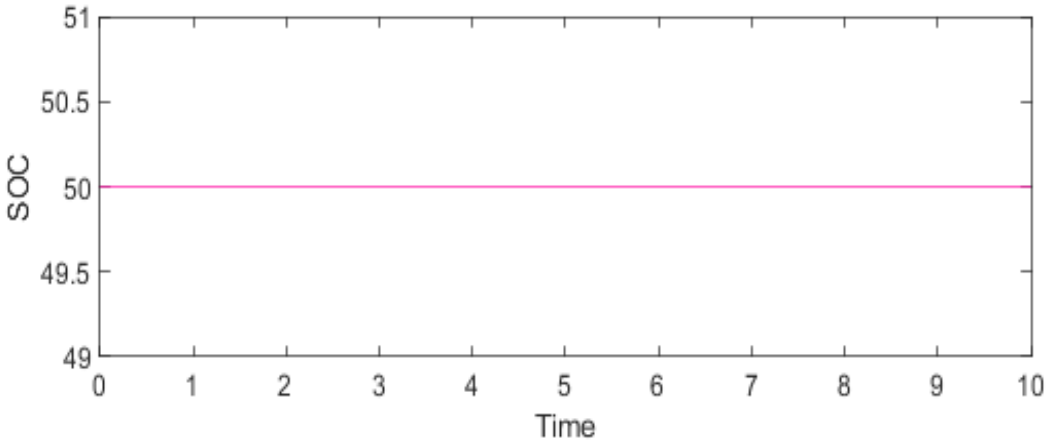
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

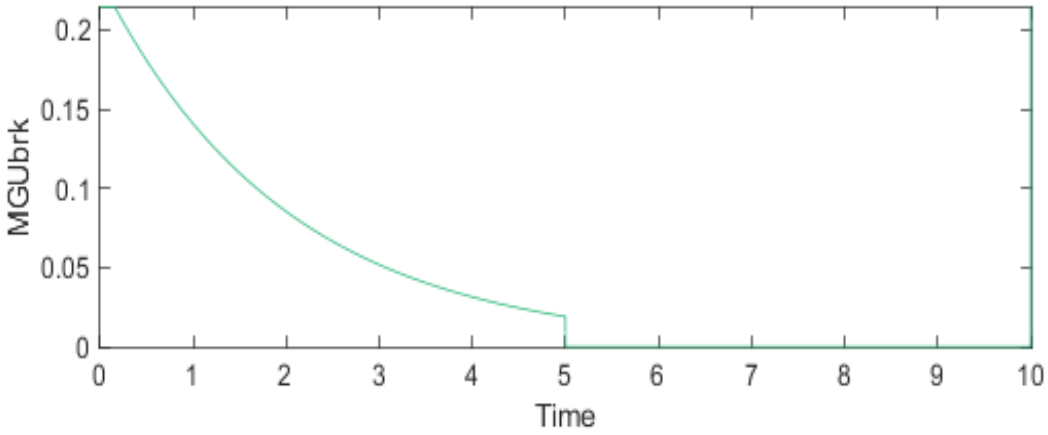
Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

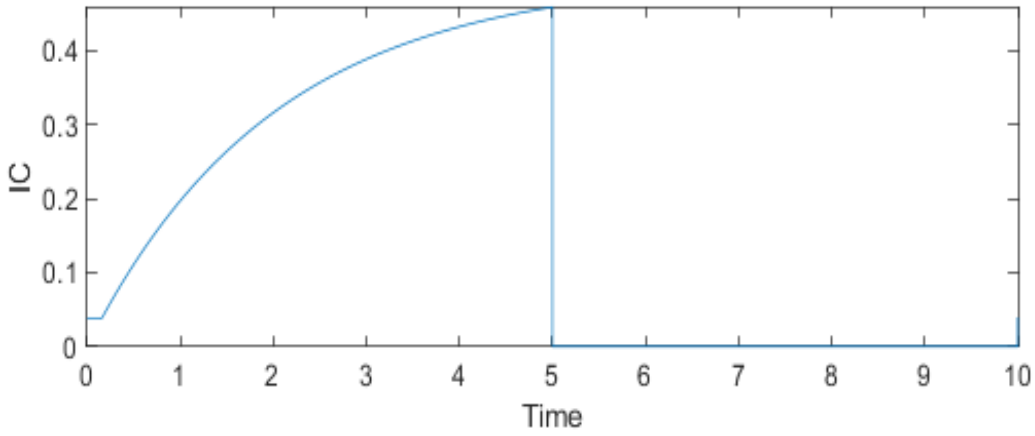
Configuration Set:	Configuration
External Input Name:	controllerInputs1.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs1.mat
Start Time:	0
Stop Time:	10
Checksum:	2446187602 1458968240 3058115607 2553426457
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:35
Simulation Stop Time:	2021-02-26 09:22:36
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union





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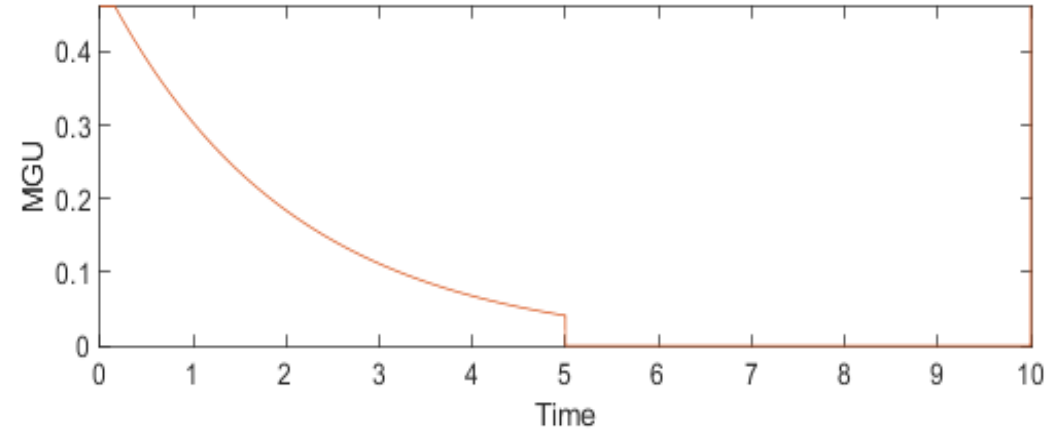
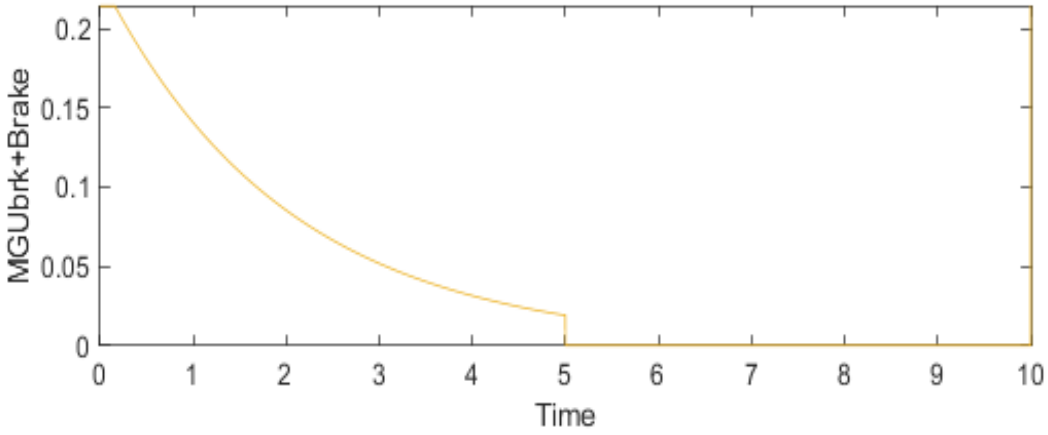
Name	Data Type	Units	Sample Time	Interp	Sync
MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union





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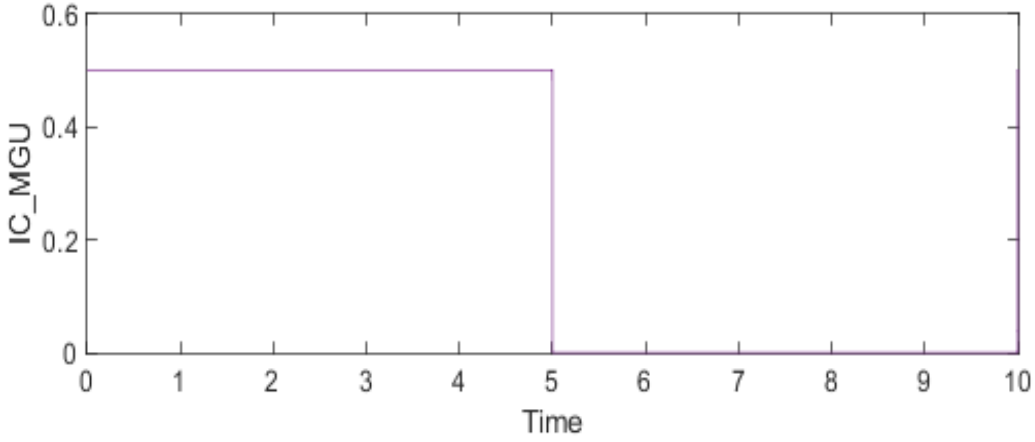
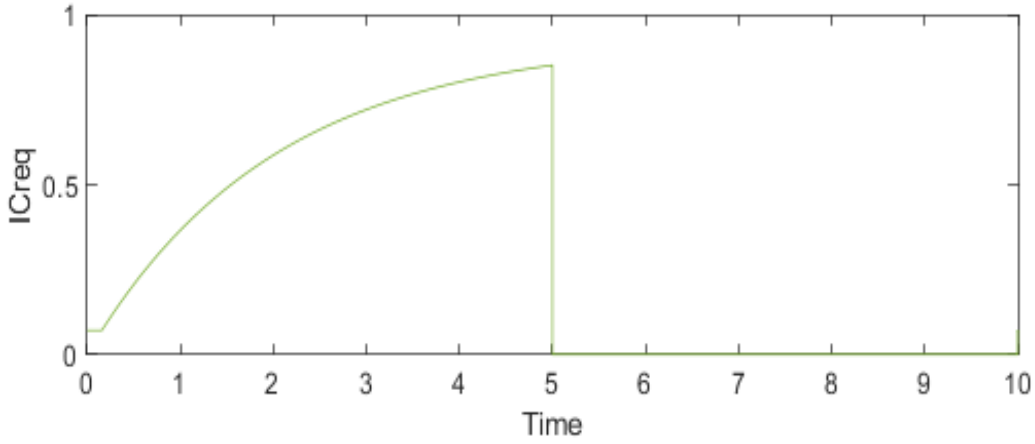
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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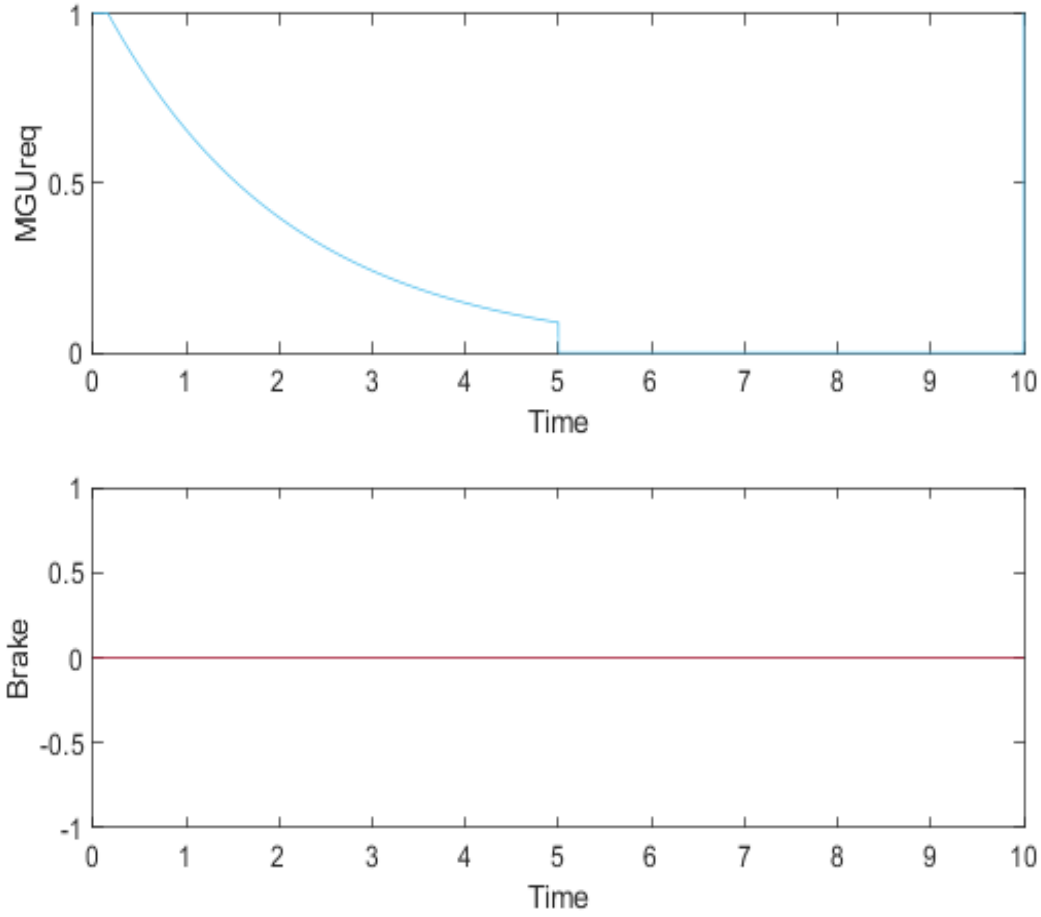
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union



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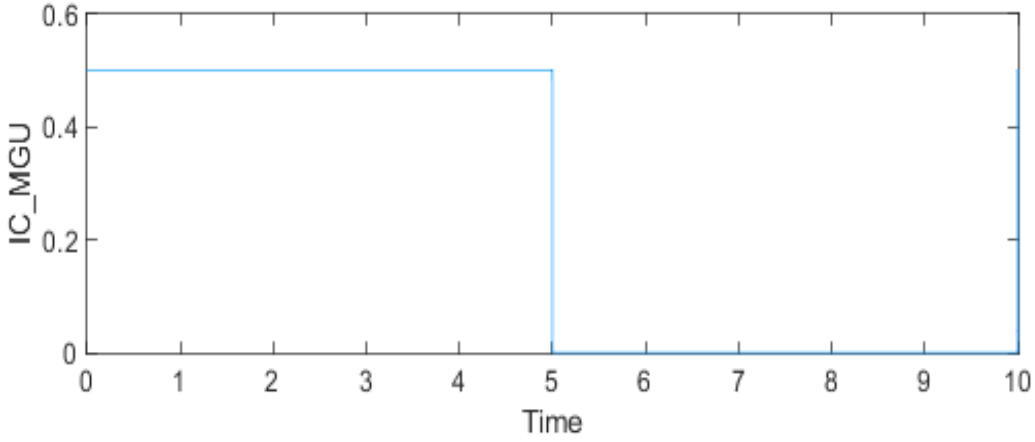
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Combined 2

Test Result Information

Result Type:	Test Case Result
Parent:	Combined
Start Time:	26-Feb-2021 09:22:37
End Time:	26-Feb-2021 09:22:38
Outcome:	Passed
Description:	

State under test: COMBINED (3), Scenario 2

INPUTS:

- AccPedal: pulse signal

  - Amplitude: 0.1

  - Width: 0.5

  - Period: 10 seconds

- BrakePedal: 0

- SOC: 50%

EXPECTED OUTPUT:

Both ICreq and MGUreq shall be activated.

Test Case Information

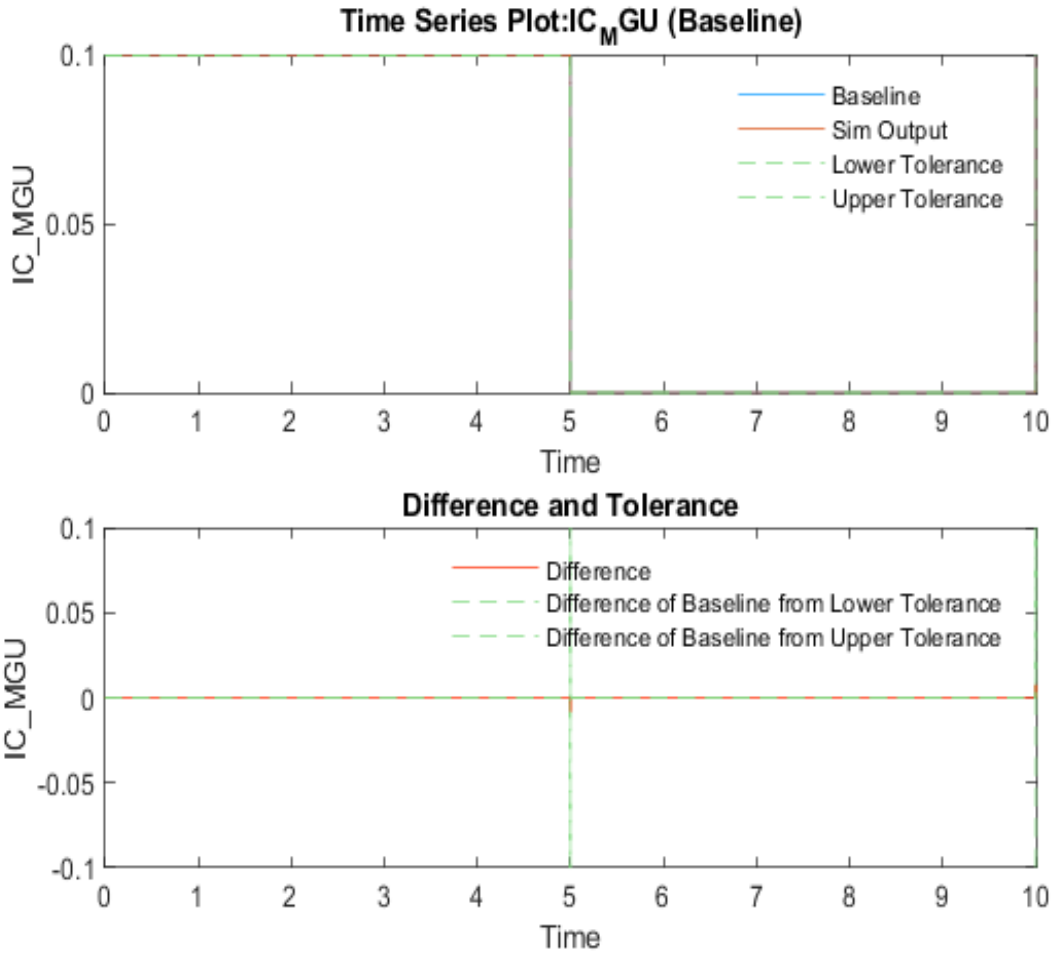
Name:	Combined 2
Type:	Baseline Test
Baseline Name:	Combined_Baseline2.mat

Baseline File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\Baselines\Combined_Baseline2.mat

Baseline Comparison

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync	Link to Plot
IC_MGU	1e-05	0	0.001	0.001	0.0082	double		Continuous	double		Continuous	linear	union	Link

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
IC_MGU	1e-05	0	0.001	0.001	0.0082	double		Continuous	double		Continuous	linear	union



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Input Data

Input Information

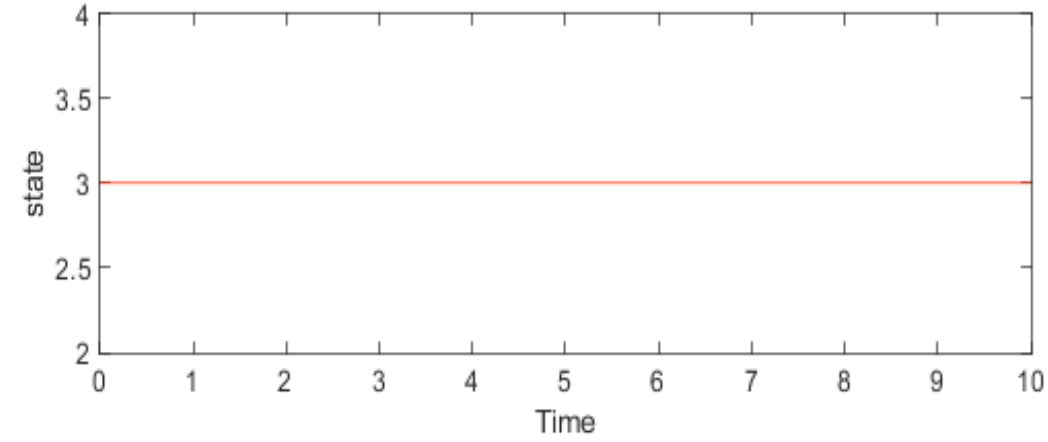
External Input Name: controllerInputs2.mat

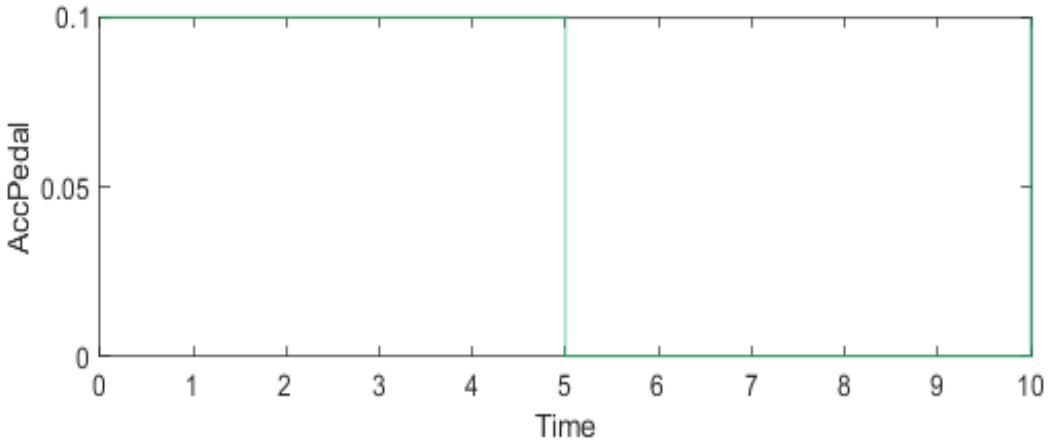
External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-

controller\Test\ControllerTest\testScenarios\controllerInputs2.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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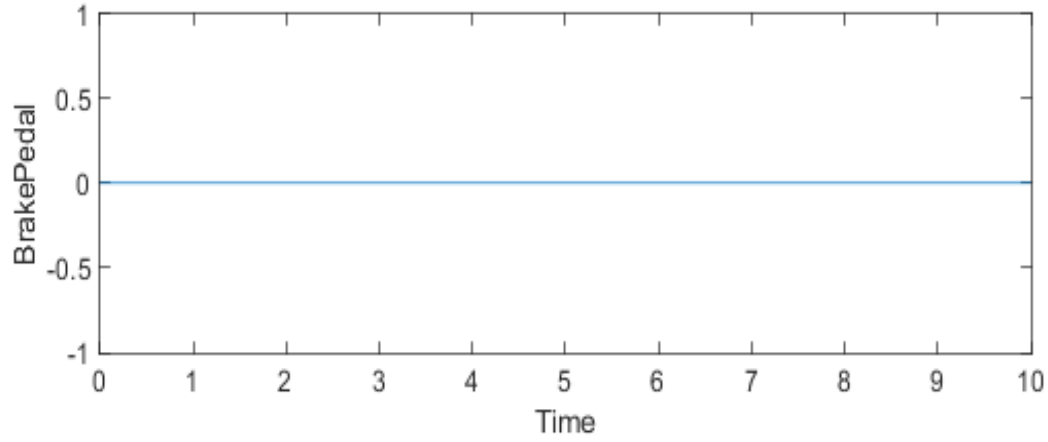
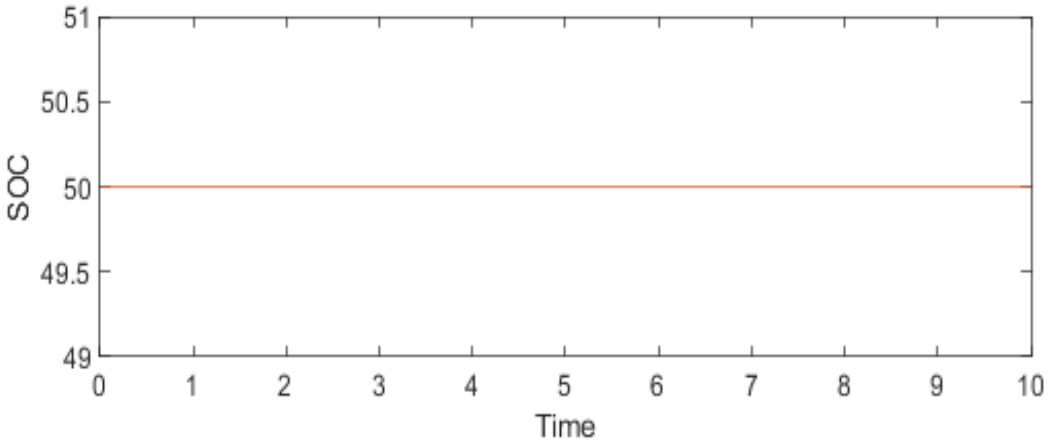
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

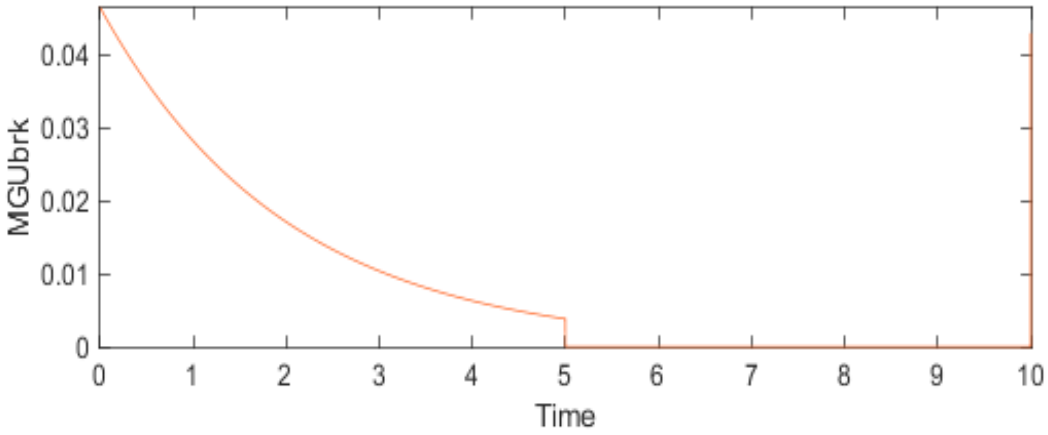
Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

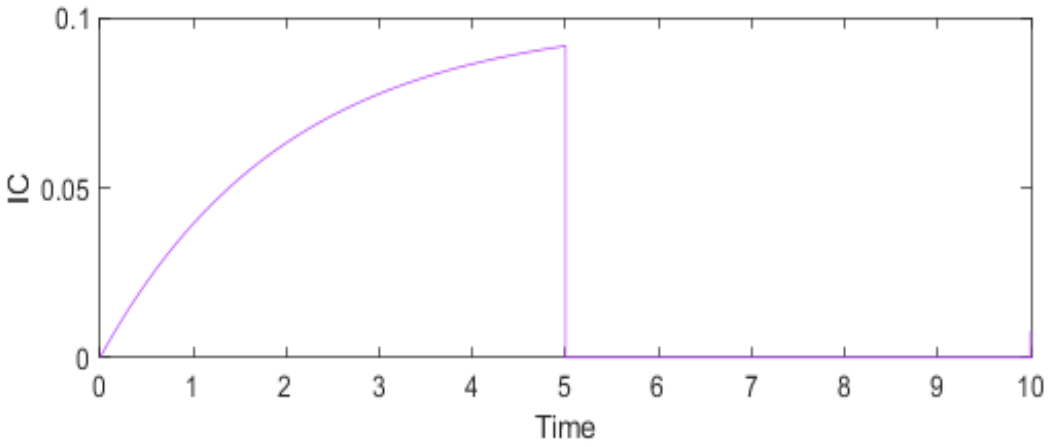
Configuration Set:	Configuration
External Input Name:	controllerInputs2.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs2.mat
Start Time:	0
Stop Time:	10
Checksum:	2446187602 1458968240 3058115607 2553426457
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:37
Simulation Stop Time:	2021-02-26 09:22:38
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union





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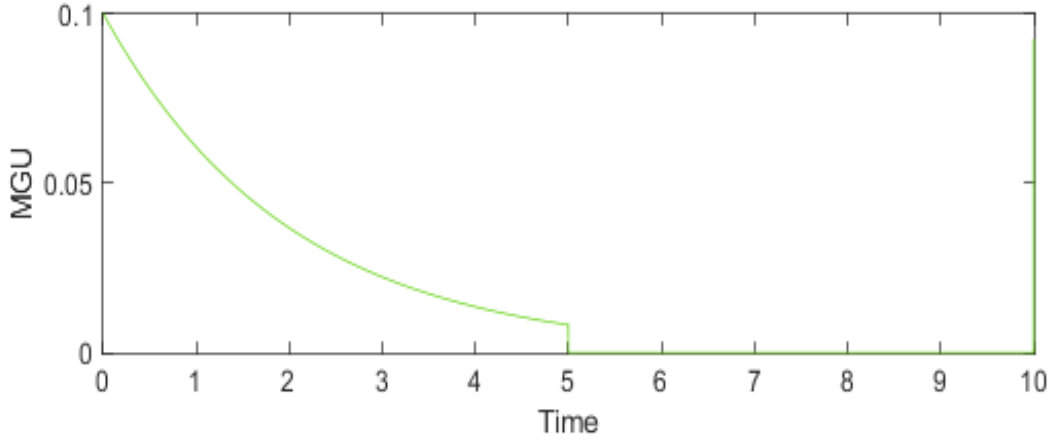
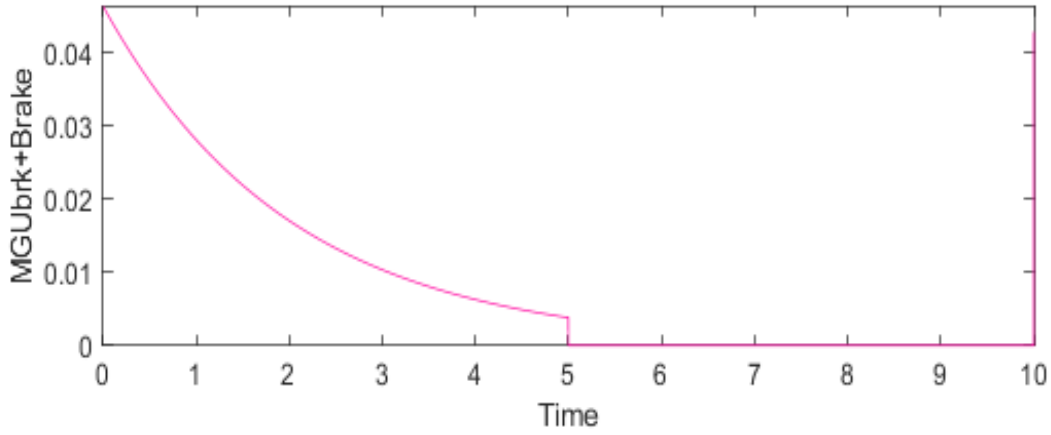
Name	Data Type	Units	Sample Time	Interp	Sync
MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union





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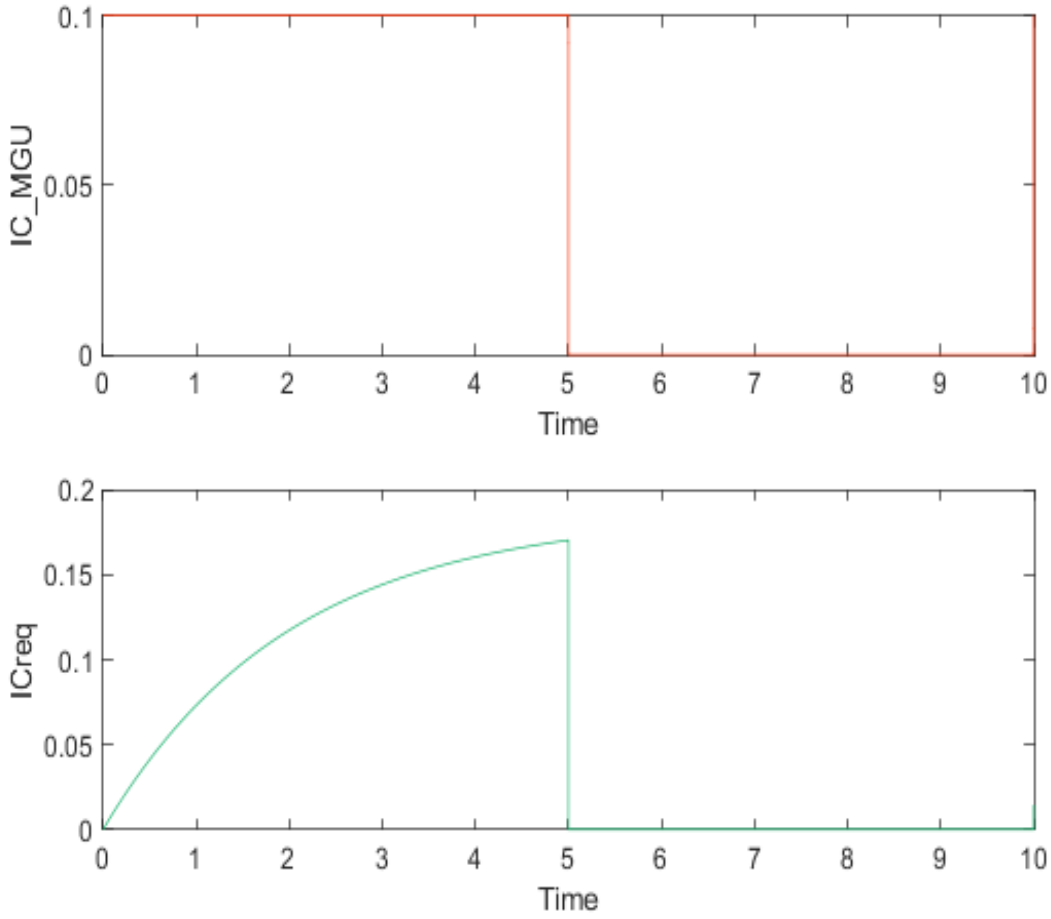
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union



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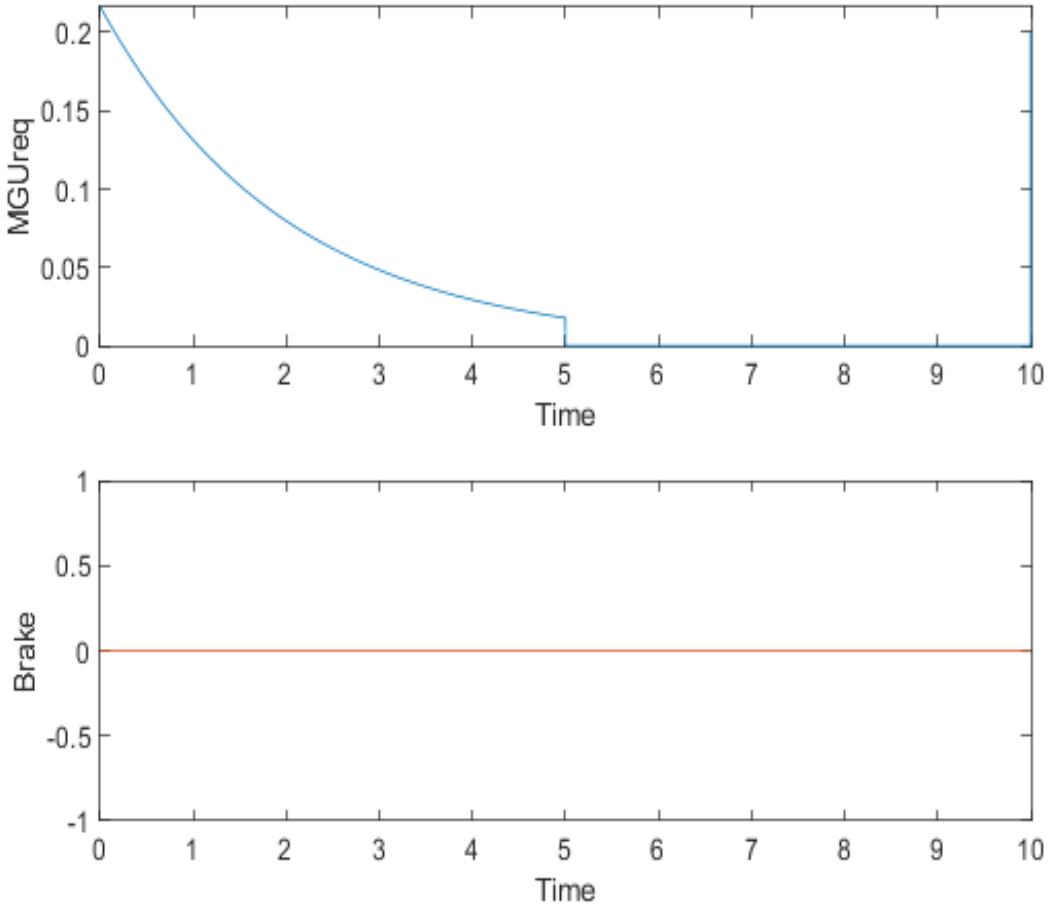
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union



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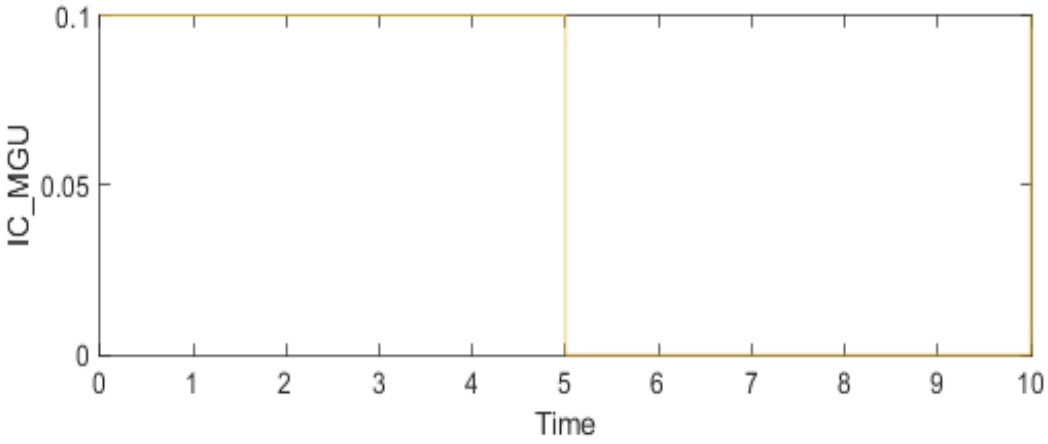
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Combined 3

Test Result Information

Result Type:	Test Case Result
Parent:	Combined
Start Time:	26-Feb-2021 09:22:39
End Time:	26-Feb-2021 09:22:41
Outcome:	Passed
Description:	

State under test: COMBINED (3), Scenario 3

INPUTS:

- AccPedal: pulse signal

  - Amplitude: 0.9

  - Width: 0.5

  - Period: 10 seconds

- BrakePedal: 0

- SOC: 50%

EXPECTED OUTPUT:

Both ICreq and MGUreq shall be activated.

Test Case Information

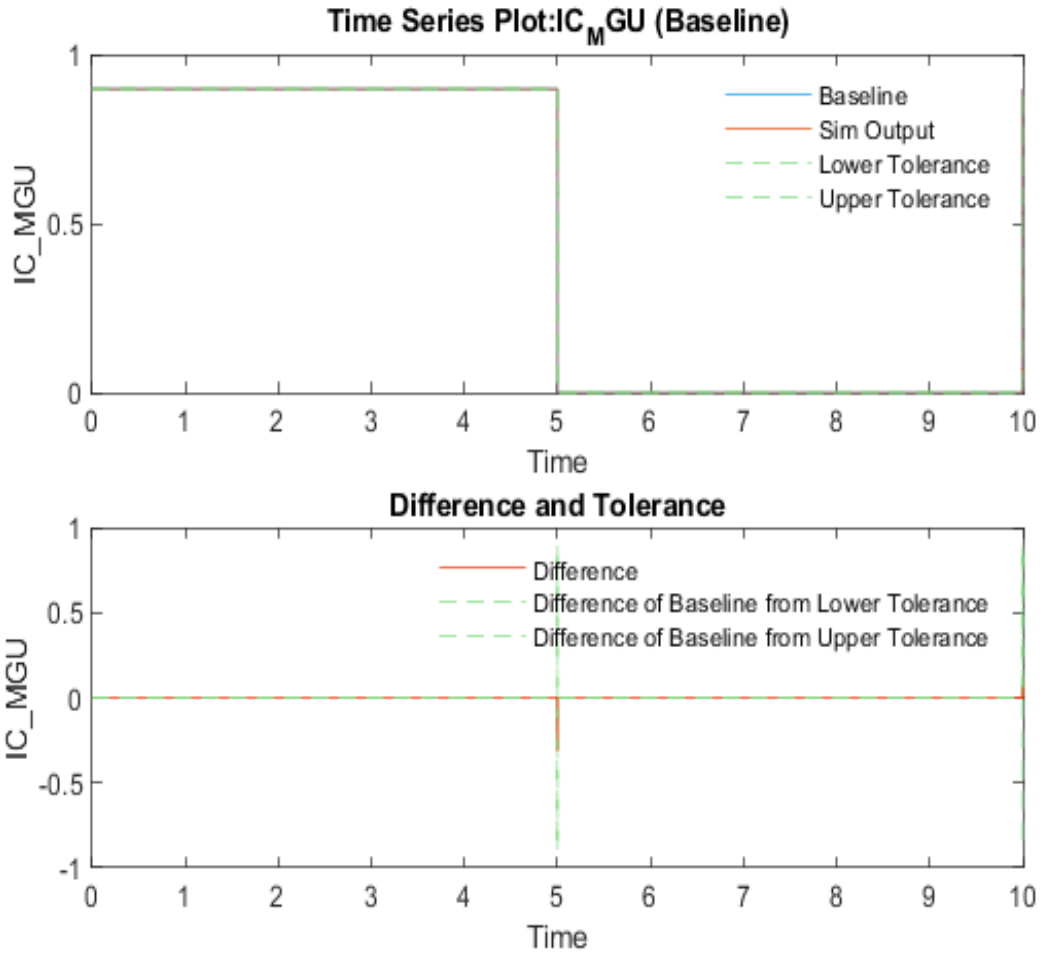
Name:	Combined 3
Type:	Baseline Test
Baseline Name:	Combined_Baseline3.mat

Baseline File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\Baselines\Combined_Baseline3.mat

Baseline Comparison

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync	Link to Plot
IC_MGU	1e-05	0	0.001	0.001	0.309	double		Continuous	double		Continuous	linear	union	Link

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
IC_MGU	1e-05	0	0.001	0.001	0.309	double		Continuous	double		Continuous	linear	union



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Input Data

Input Information

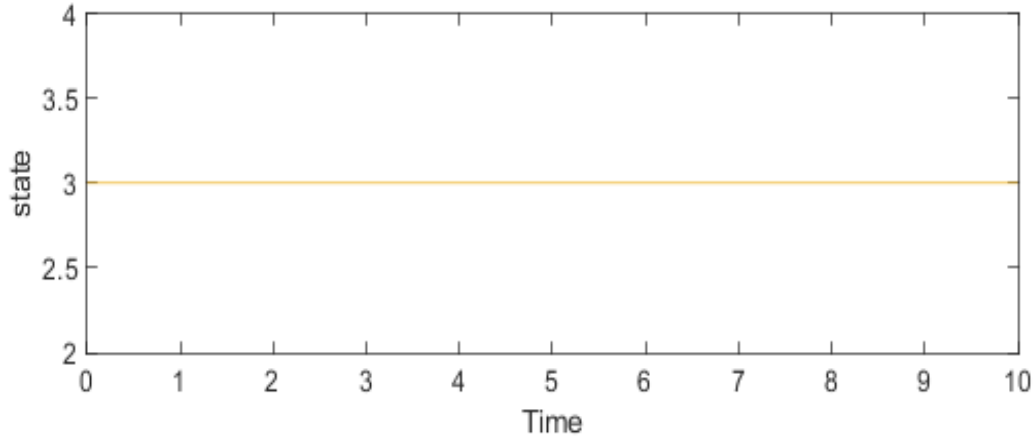
External Input Name: controllerInputs3.mat

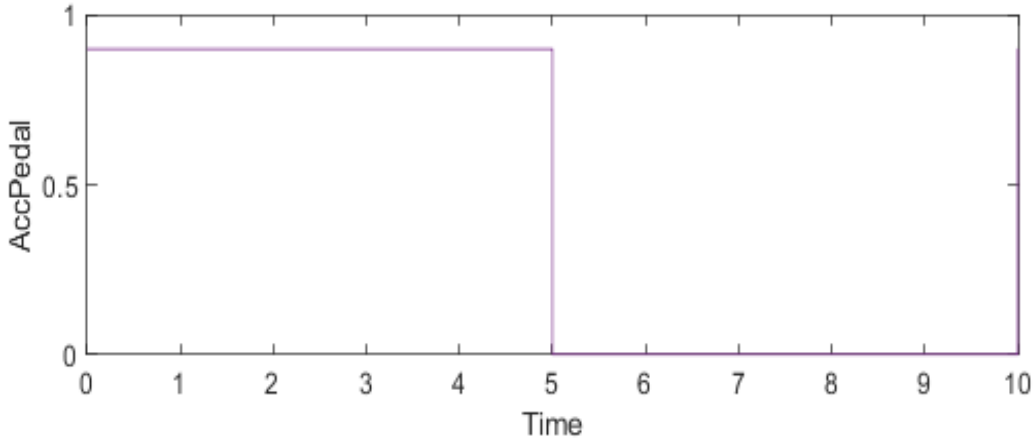
External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-

controller\Test\ControllerTest\testScenarios\controllerInputs3.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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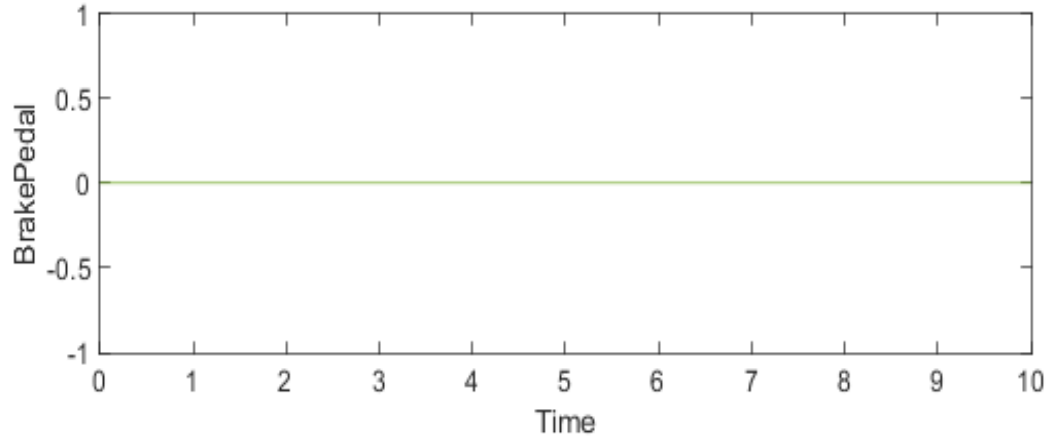
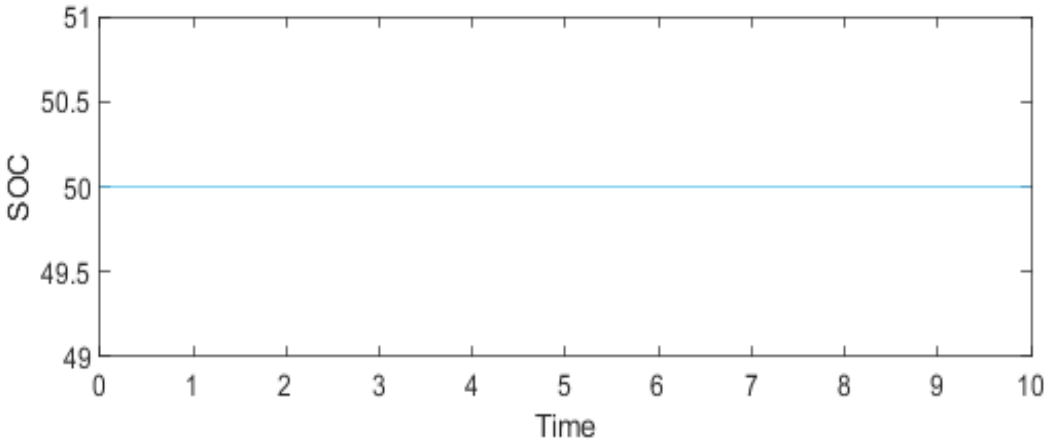
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

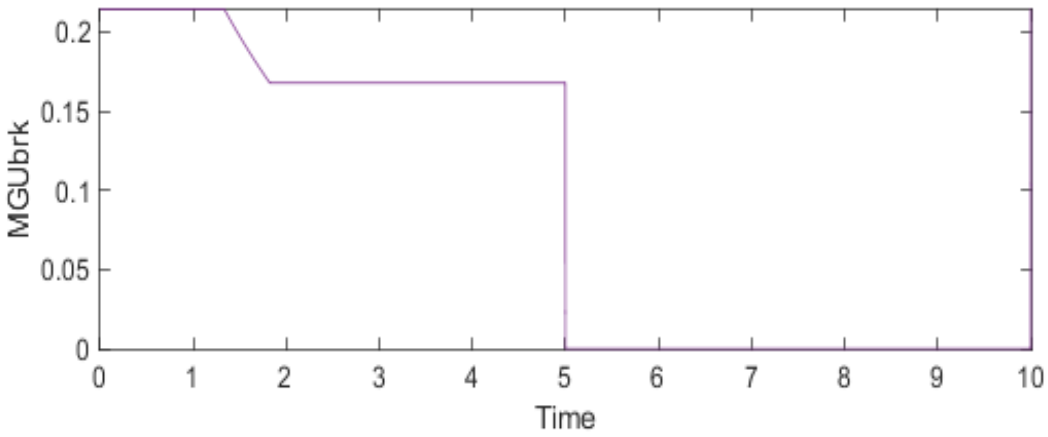
Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

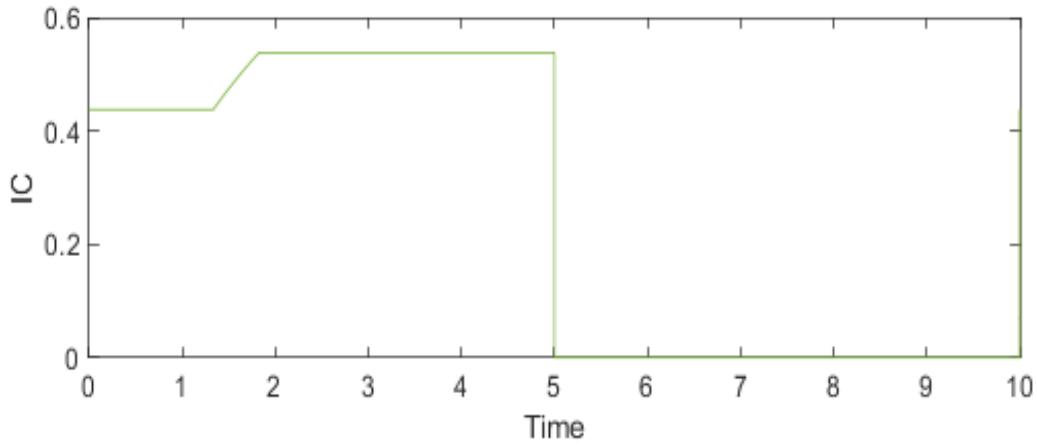
Configuration Set:	Configuration
External Input Name:	controllerInputs3.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs3.mat
Start Time:	0
Stop Time:	10
Checksum:	2446187602 1458968240 3058115607 2553426457
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:39
Simulation Stop Time:	2021-02-26 09:22:40
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union





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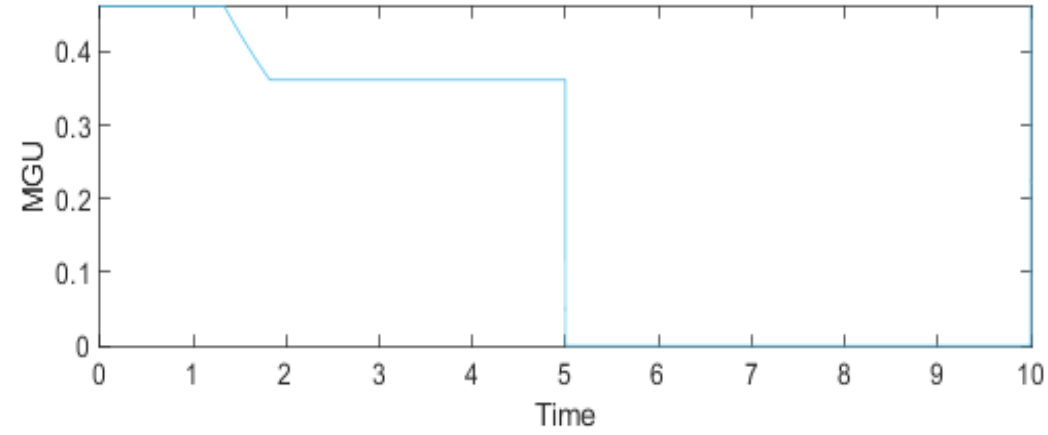
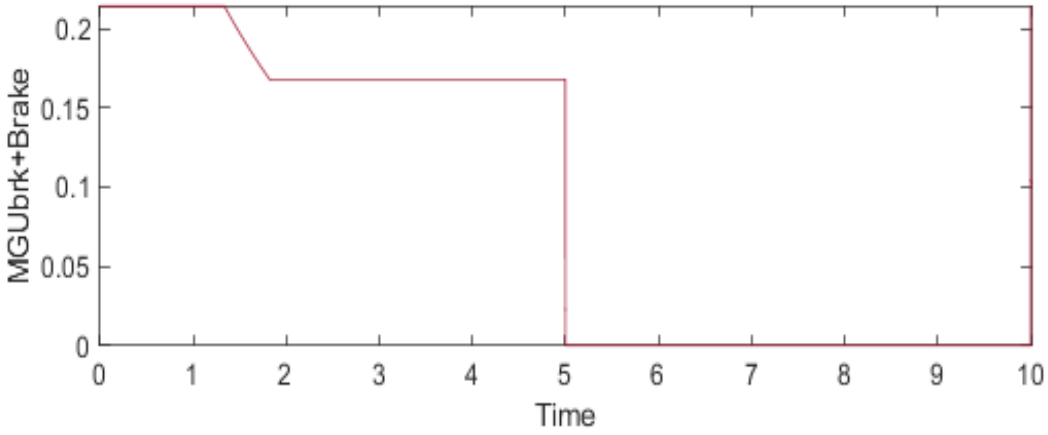
Name	Data Type	Units	Sample Time	Interp	Sync
MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union





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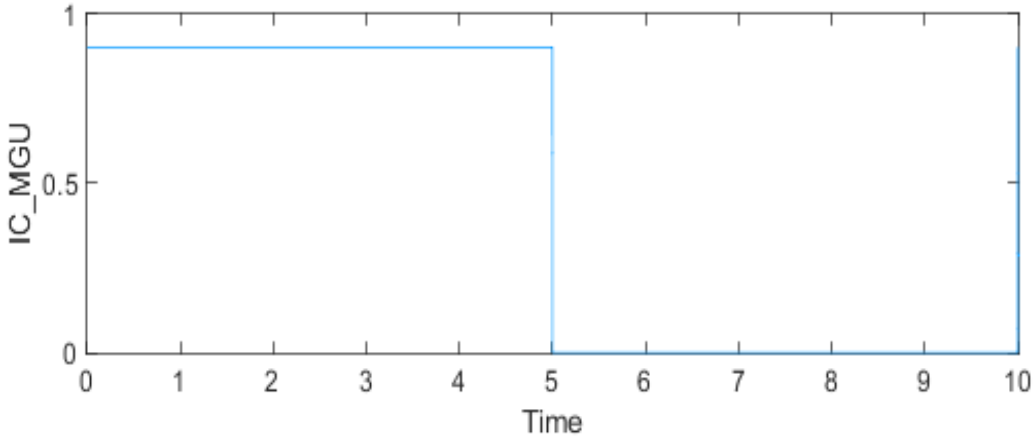
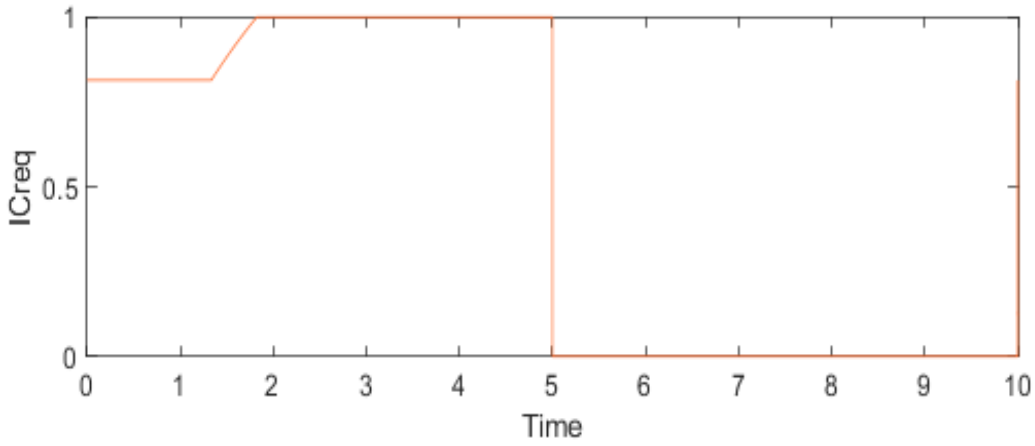
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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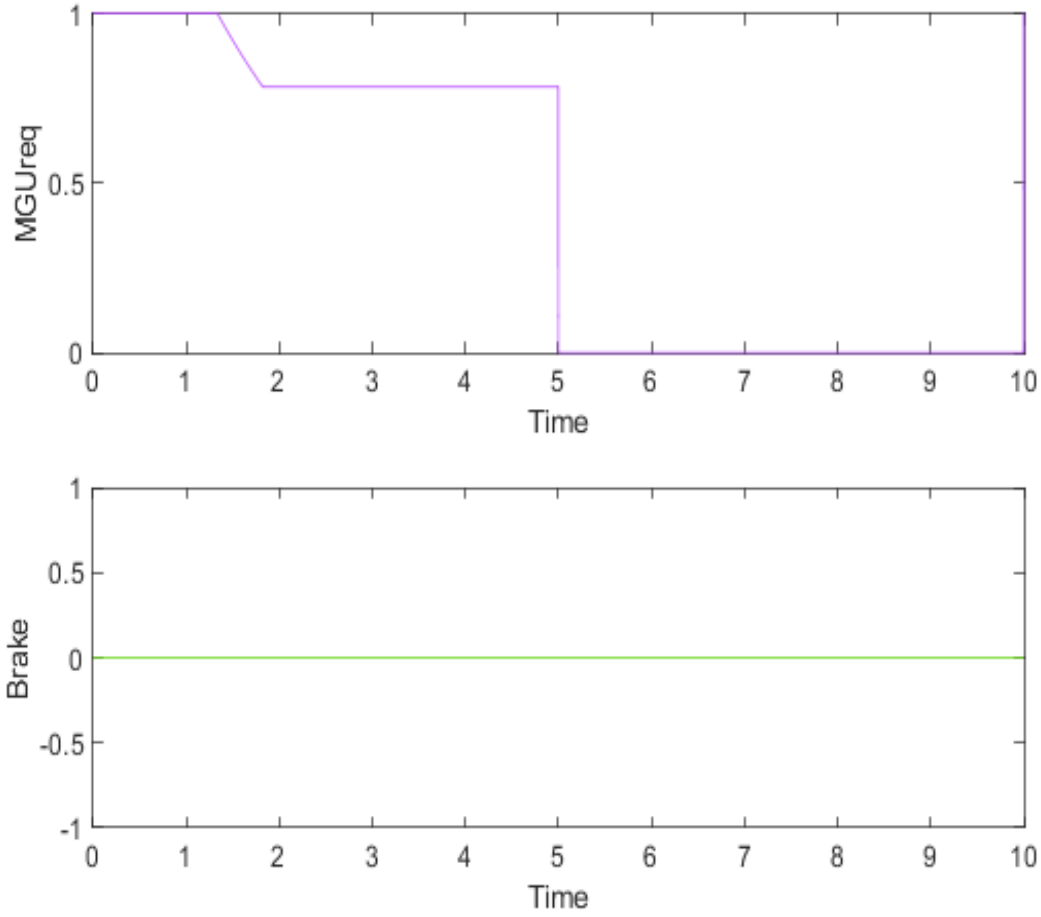
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union



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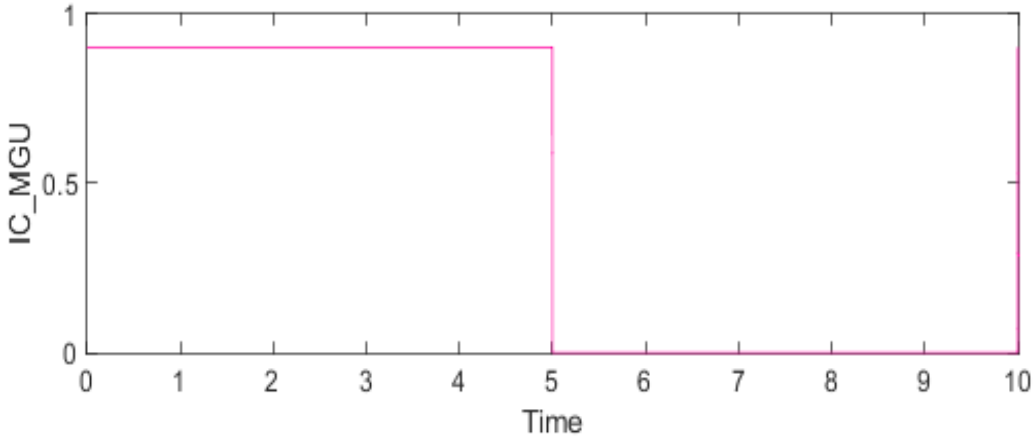
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Combined 4

Test Result Information

Result Type:	Test Case Result
Parent:	Combined
Start Time:	26-Feb-2021 09:22:41
End Time:	26-Feb-2021 09:22:43
Outcome:	Passed
Description:	

State under test: COMBINED (3), Scenario 4

INPUTS:

- AccPedal: exponential growth and decay over time

- BrakePedal: 0

- SOC: 50%

EXPECTED OUTPUT:

Both ICreq and MGUreq shall be activated.

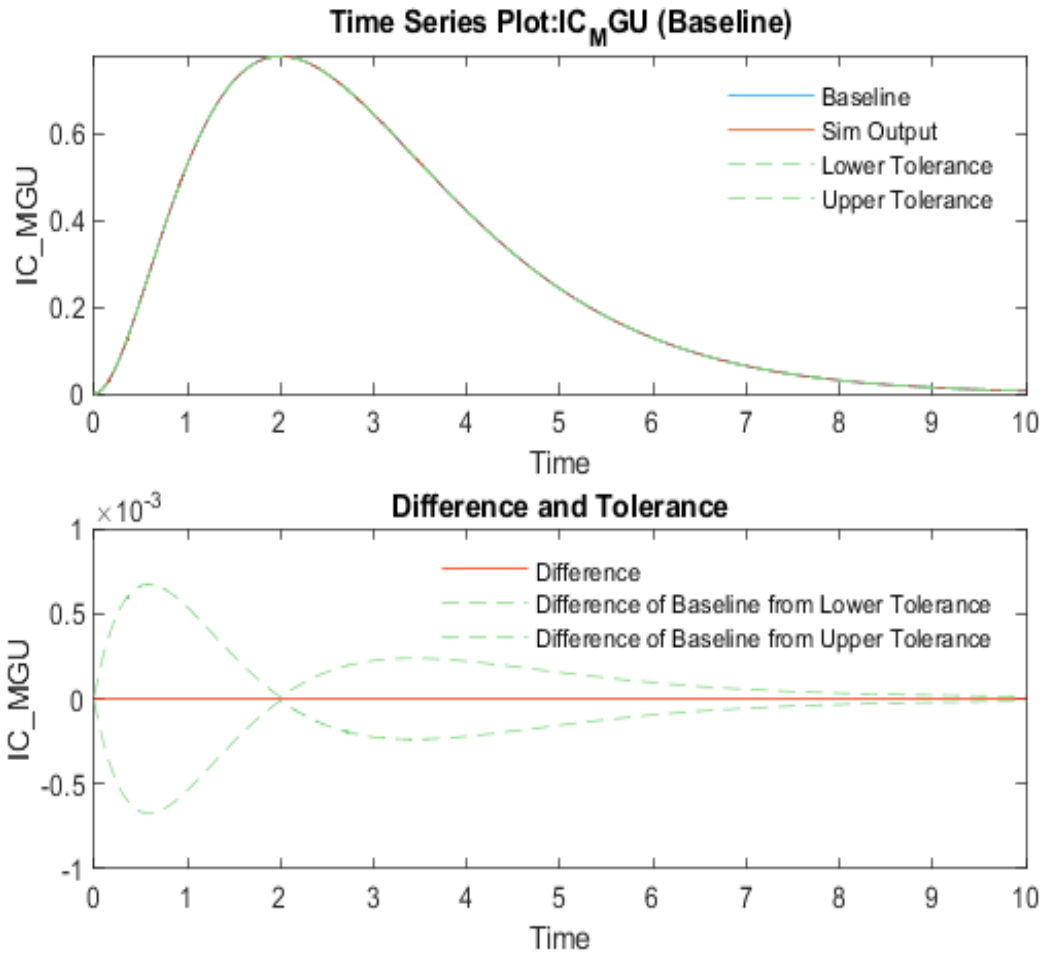
Test Case Information

Name:	Combined 4
Type:	Baseline Test
Baseline Name:	Combined_Baseline4.mat
Baseline File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\Baselines\Combined_Baseline4.mat

Baseline Comparison

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync	Link to Plot
IC_MGU	1e-05	0	0.001	0.001	1.11e-16	double		Continuous	double		Continuous	linear	union	Link

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
IC_MGU	1e-05	0	0.001	0.001	1.11e-16	double		Continuous	double		Continuous	linear	union



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Input Data

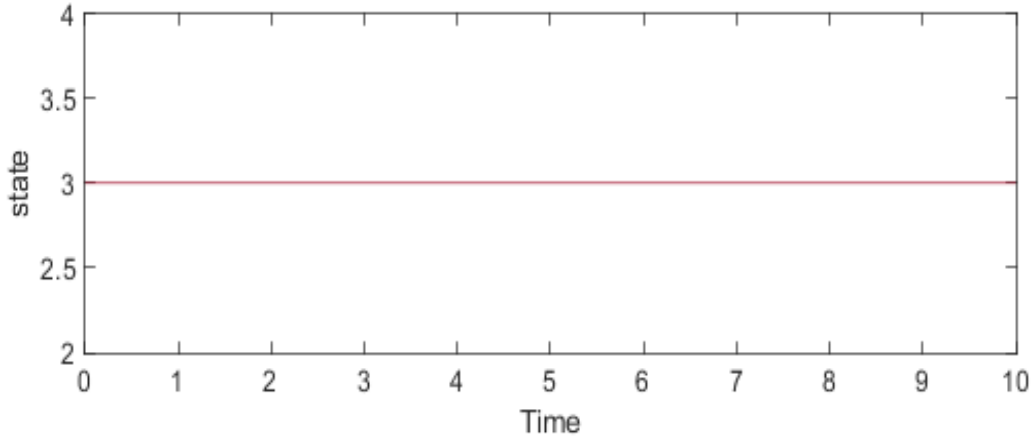
Input Information

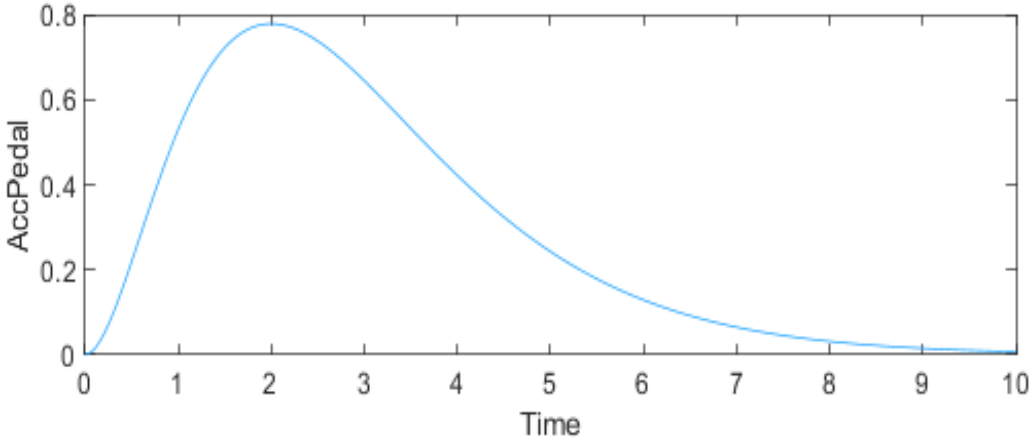
External Input Name: controllerInputs4.mat

External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs4.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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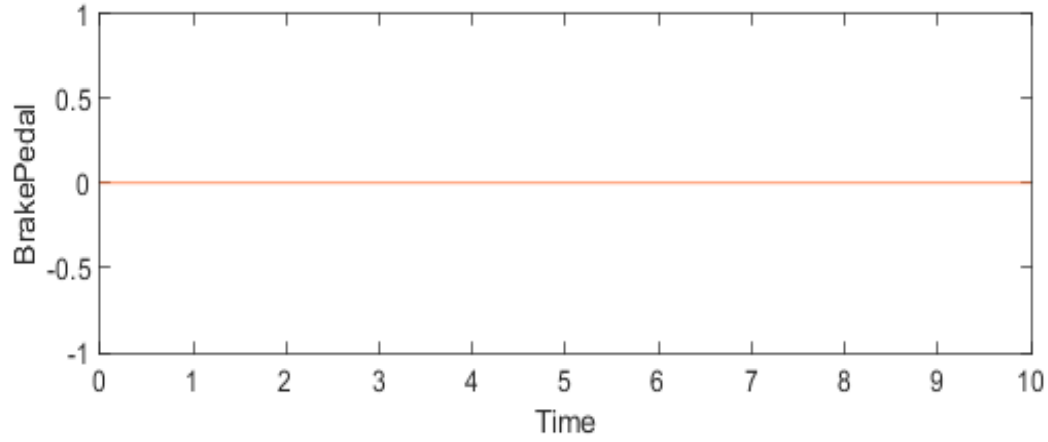
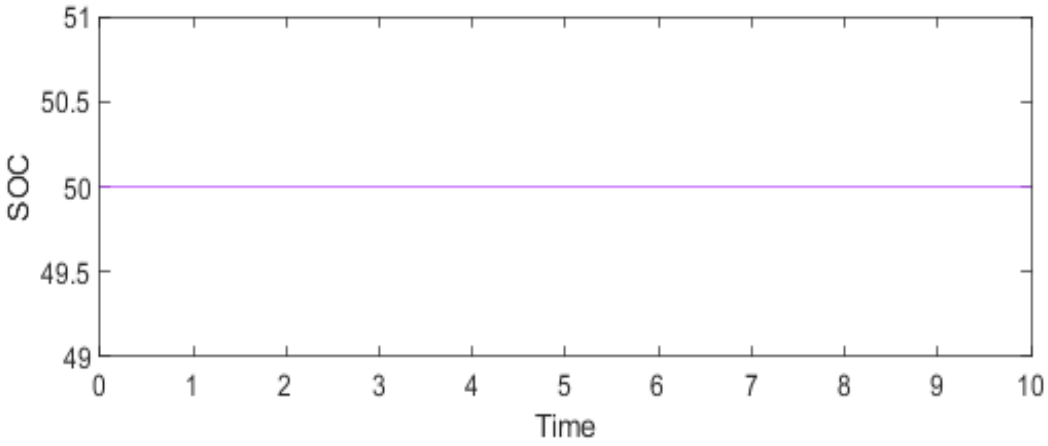
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

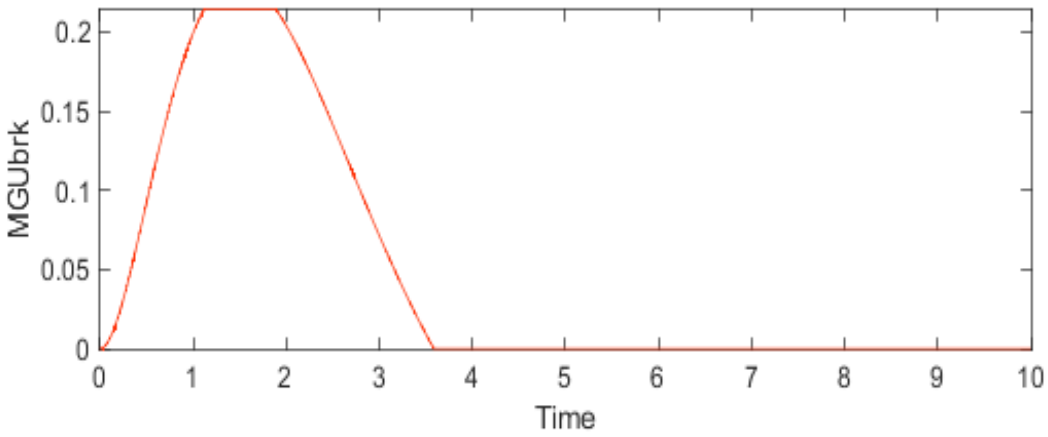
Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

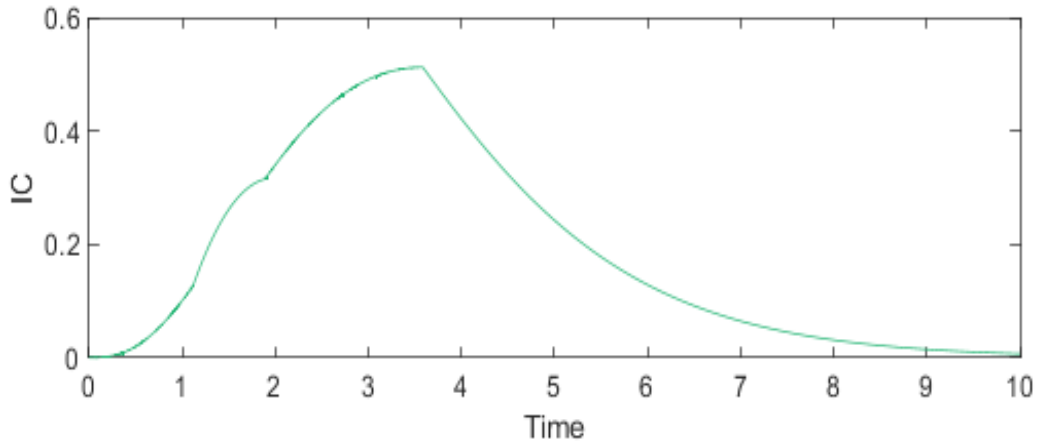
Configuration Set:	Configuration
External Input Name:	controllerInputs4.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs4.mat
Start Time:	0
Stop Time:	10
Checksum:	2446187602 1458968240 3058115607 2553426457
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:41
Simulation Stop Time:	2021-02-26 09:22:42
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union





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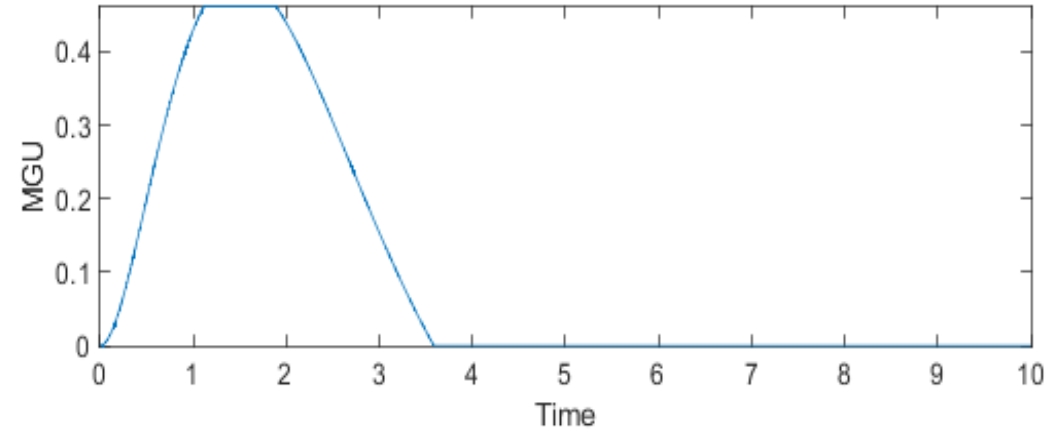
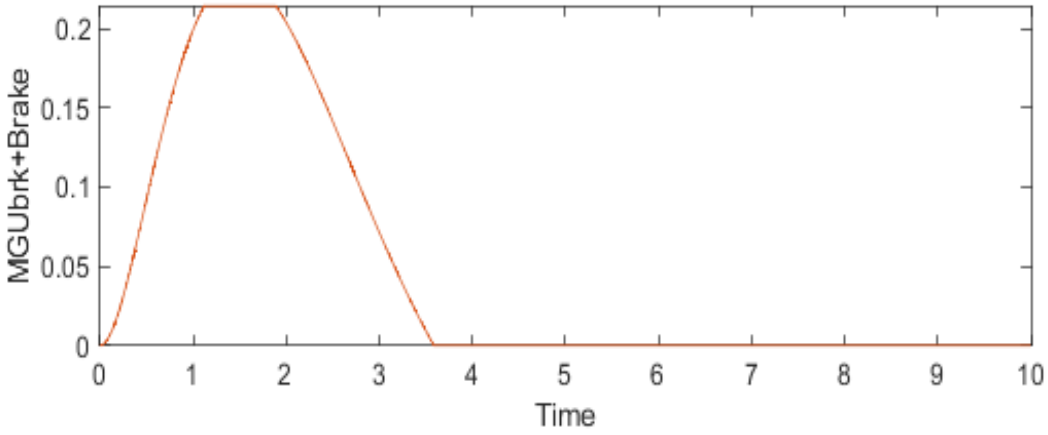
Name	Data Type	Units	Sample Time	Interp	Sync
MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union





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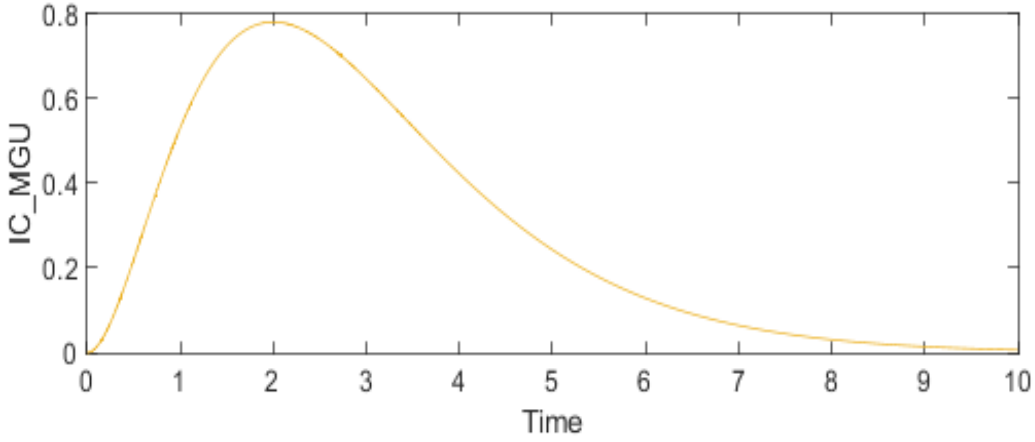
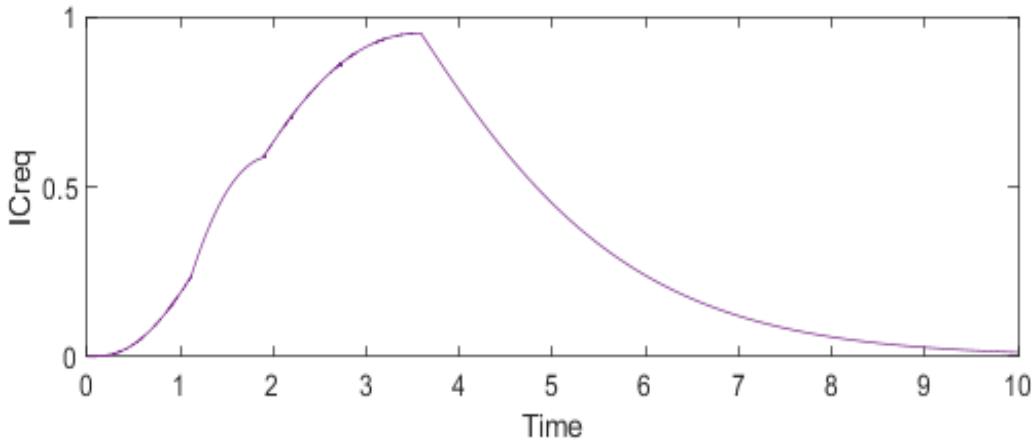
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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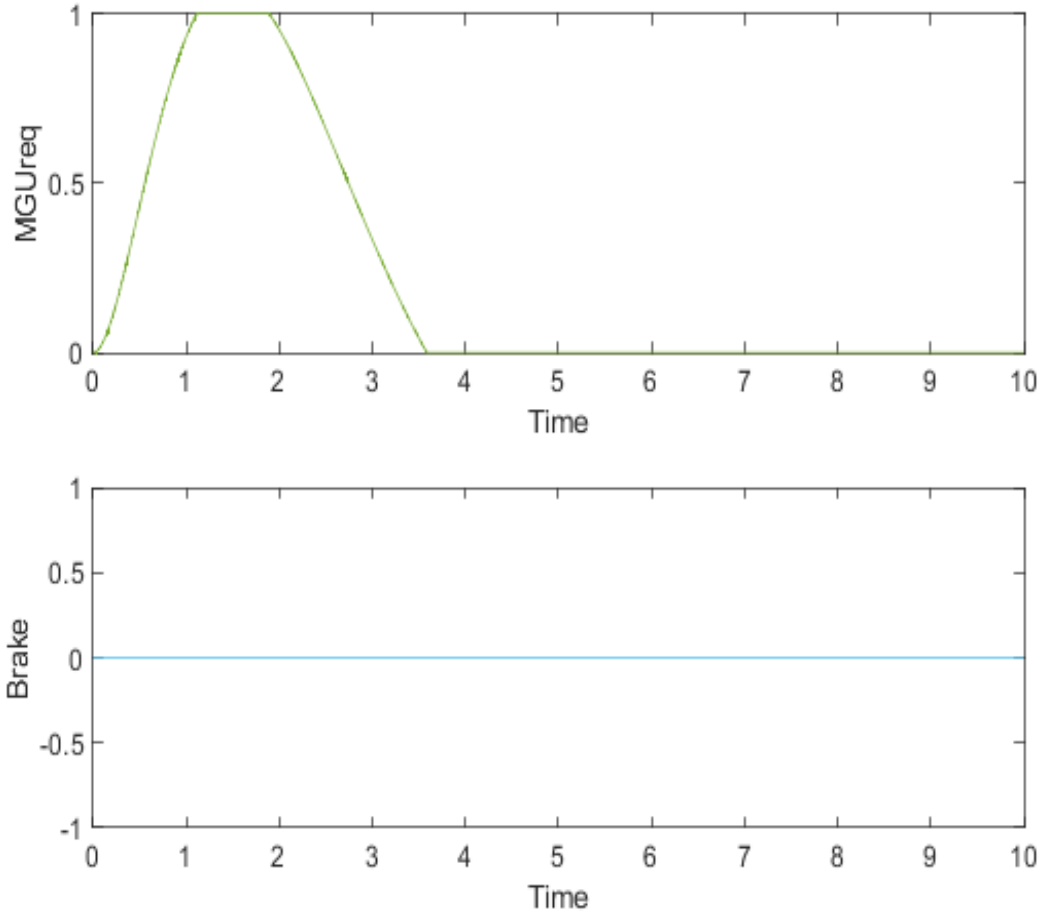
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union



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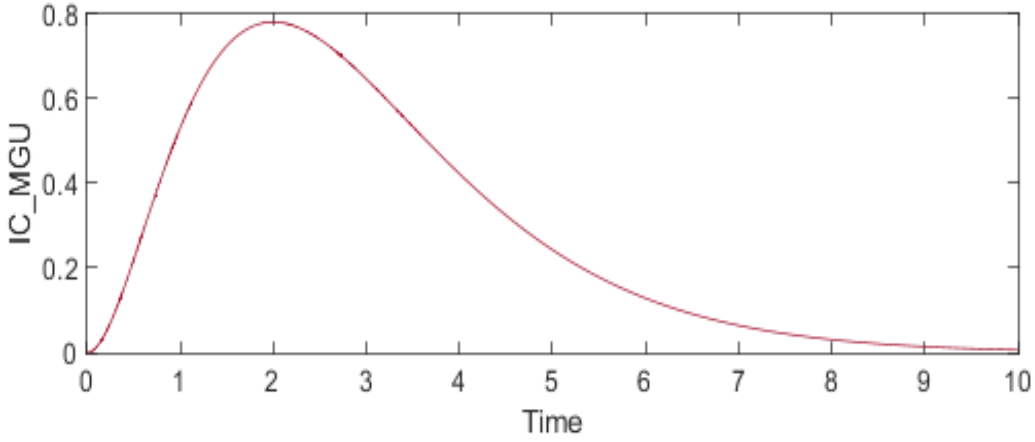
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Regenerative Braking

Test Result Information

Result Type:	Test Suite Result
Parent:	controllerTest
Start Time:	26-Feb-2021 09:22:43
End Time:	26-Feb-2021 09:22:51
Outcome:	Total: 4, Passed: 4
Description:	

Regenerative Braking case suite of tests

Test Suite Information

Name:	Regenerative Braking

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Regen 1

Test Result Information

Result Type:	Test Case Result
Parent:	Regenerative Braking
Start Time:	26-Feb-2021 09:22:43
End Time:	26-Feb-2021 09:22:45
Outcome:	Passed
Description:	

State under test: REGENERATIVE_BRAKING (4), Scenario 1

INPUTS:

- AccPedal: 0

- BrakePedal: pulse signal

- Amplitude: 0.5

- Width: 0.5

- Period: 10 seconds

- SOC: 50%

EXPECTED OUTPUT:

State 4, Regenerative braking.

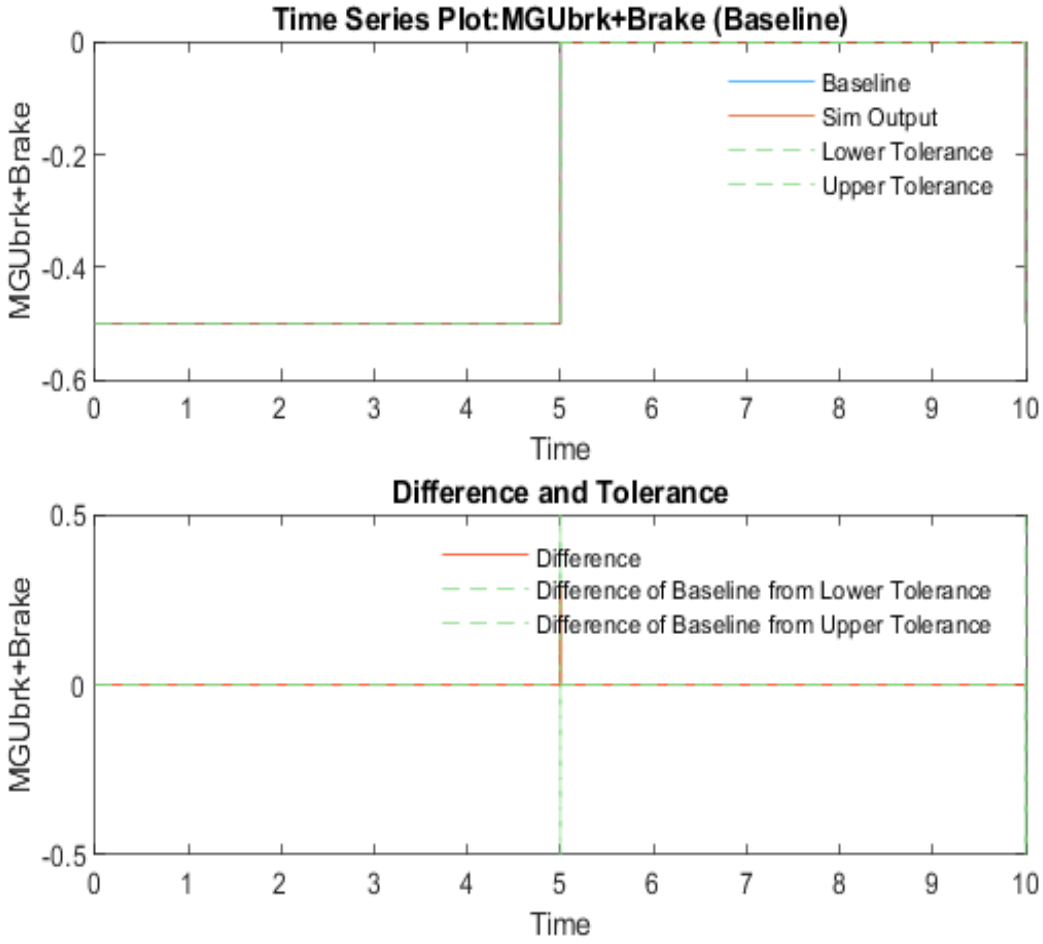
Test Case Information

Name:	Regen 1
Type:	Baseline Test
Baseline Name:	Regen_Baseline1.mat
Baseline File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\Baselines\Regen_Baseline1.mat

Baseline Comparison

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync	Link to Plot
MGUbrk+ Brake	1e-05	0	0.001	0.001	0.284	double		Continuous	double		Continuous	linear	union	Link

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
MGUbrk+ Brake	1e-05	0	0.001	0.001	0.284	double		Continuous	double		Continuous	linear	union



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Input Data

Input Information

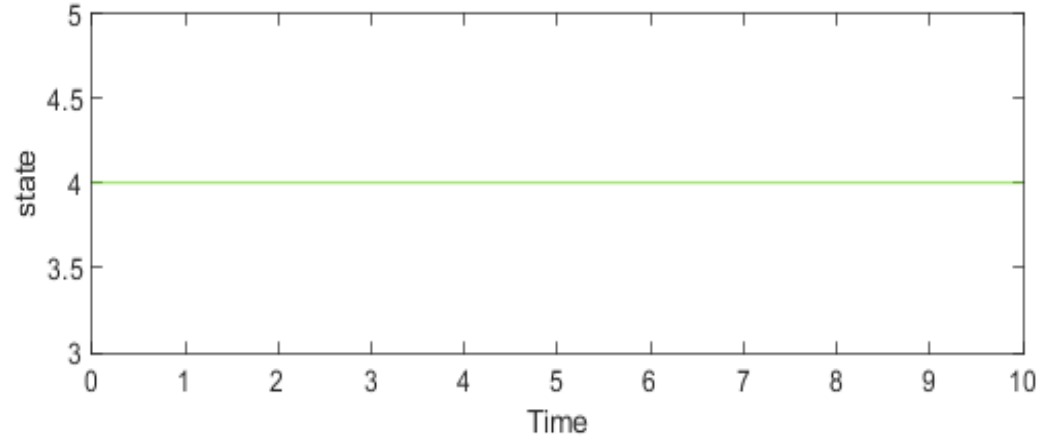
External Input Name: controllerInputs5.mat

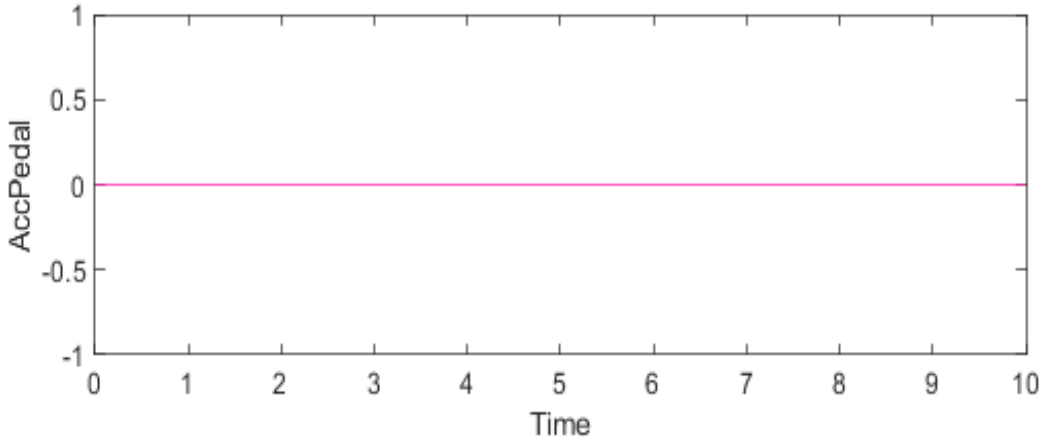
External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-

controller\Test\ControllerTest\testScenarios\controllerInputs5.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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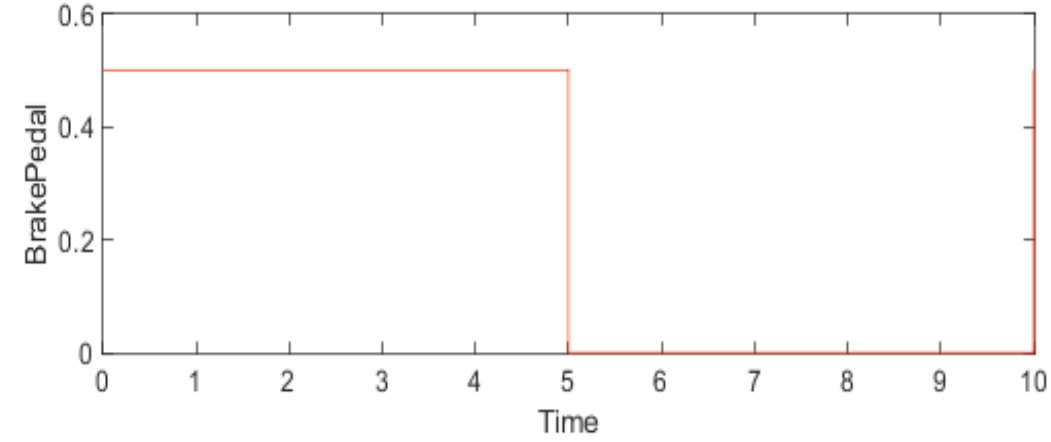
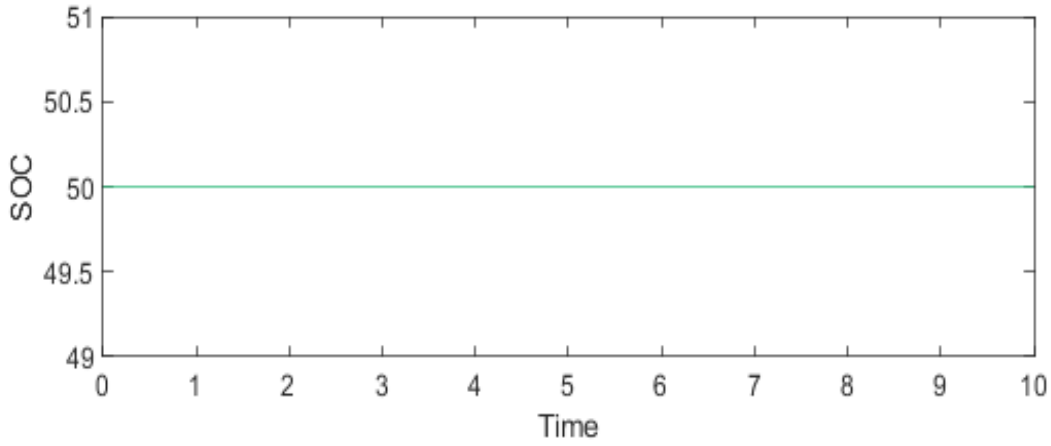
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

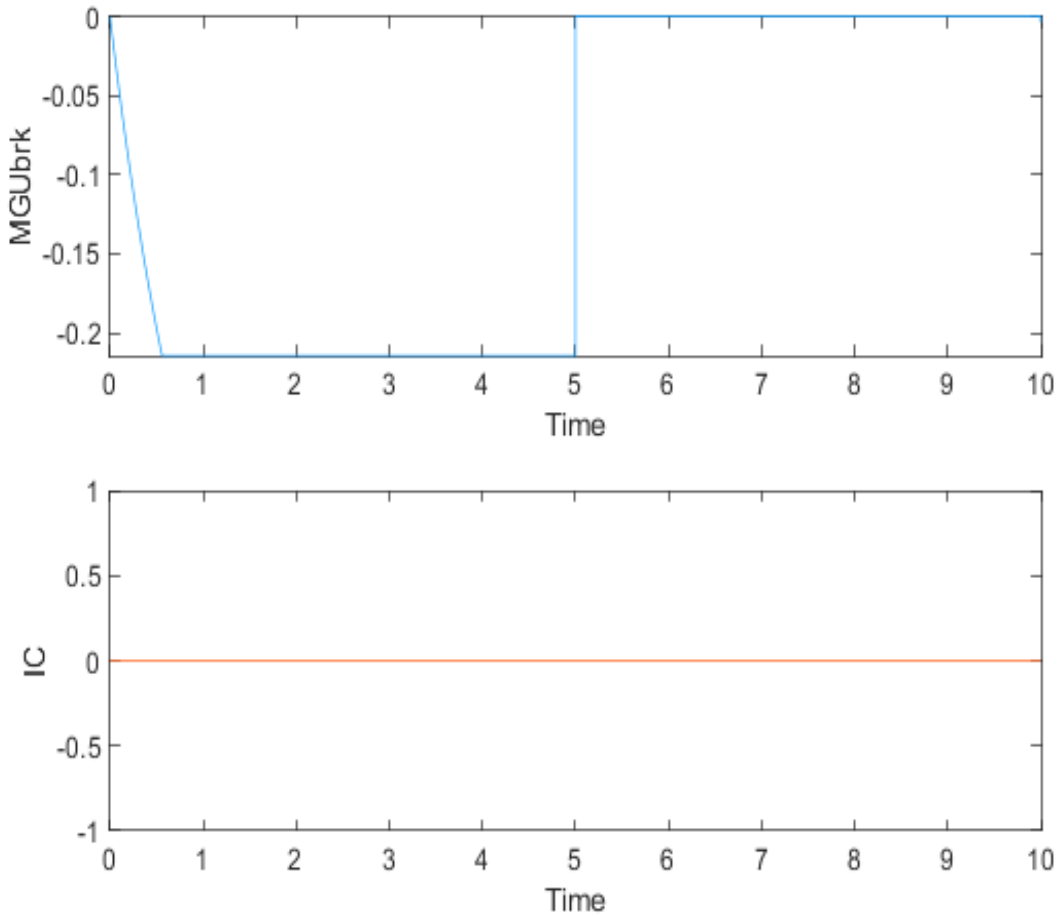
Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

Configuration Set:	Configuration
External Input Name:	controllerInputs5.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs5.mat
Start Time:	0
Stop Time:	10
Checksum:	2929848702 1127579629 3164981853 1998356518
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:43
Simulation Stop Time:	2021-02-26 09:22:44
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union



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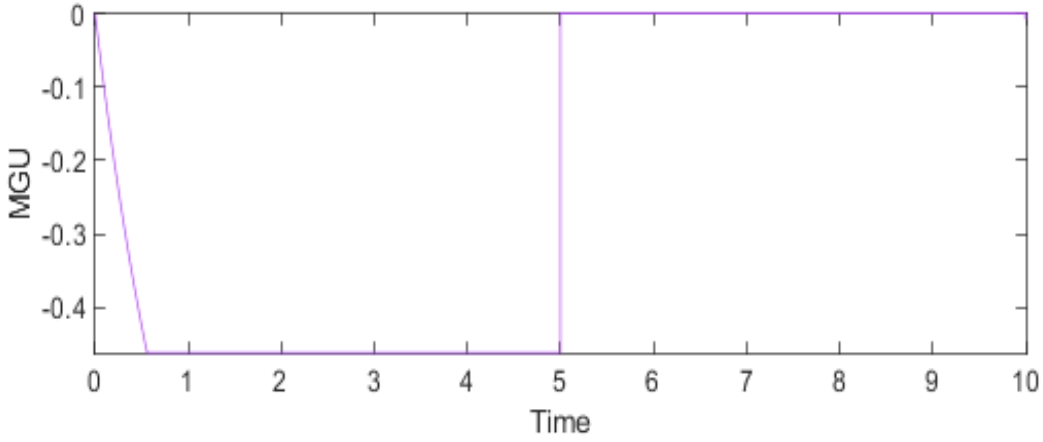
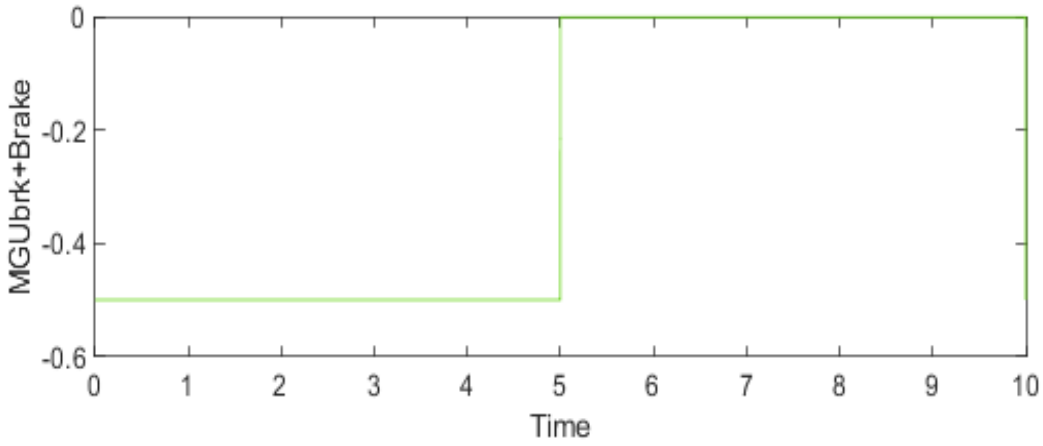
Name	Data Type	Units	Sample Time	Interp	Sync
MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union





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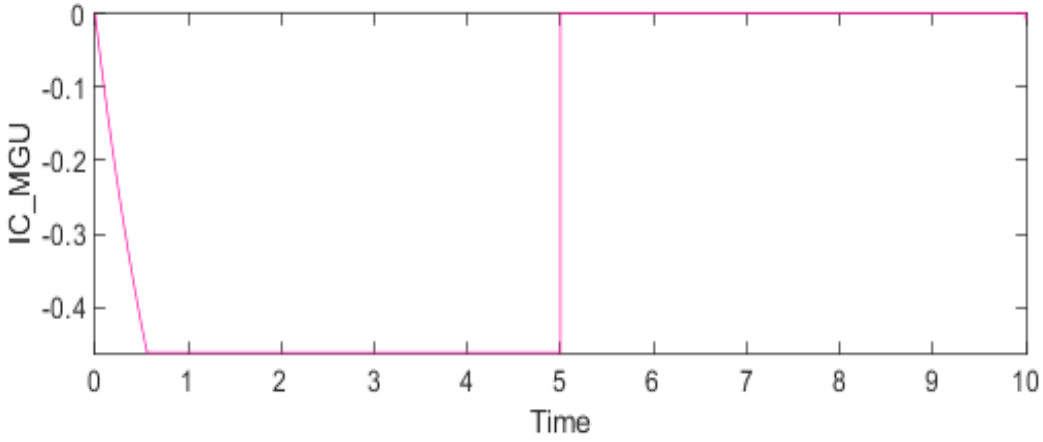
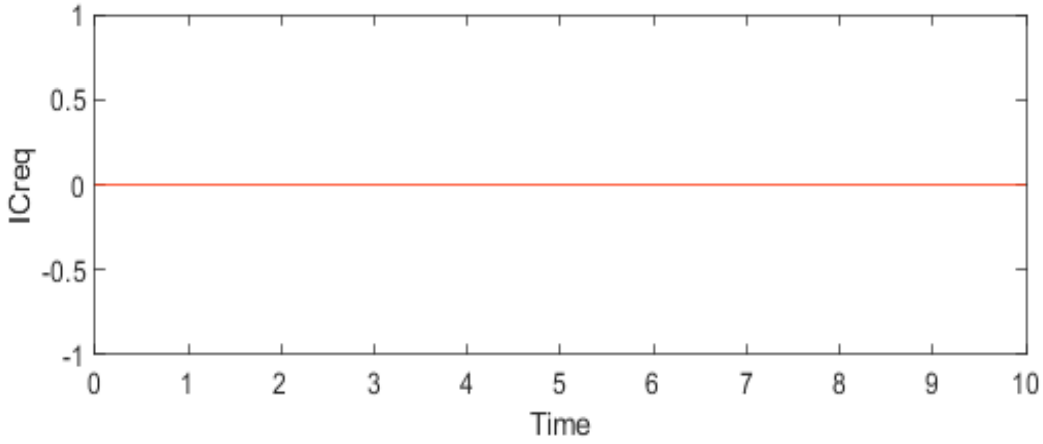
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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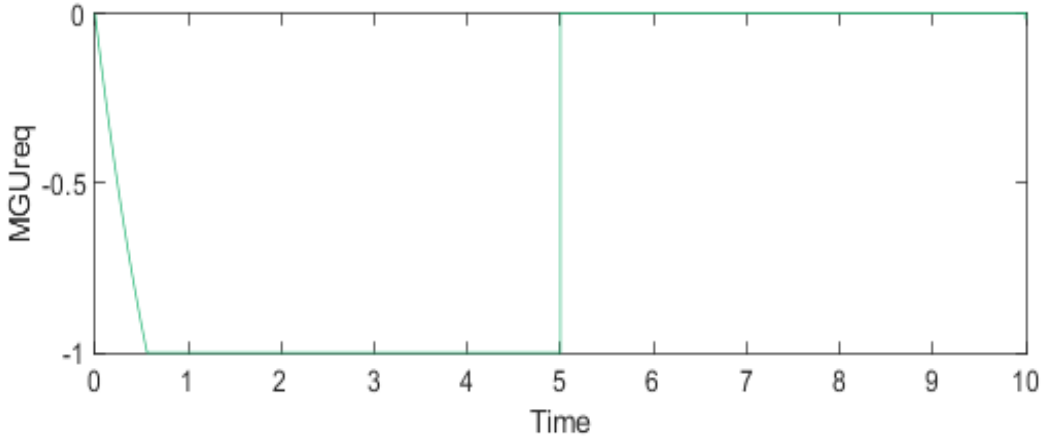
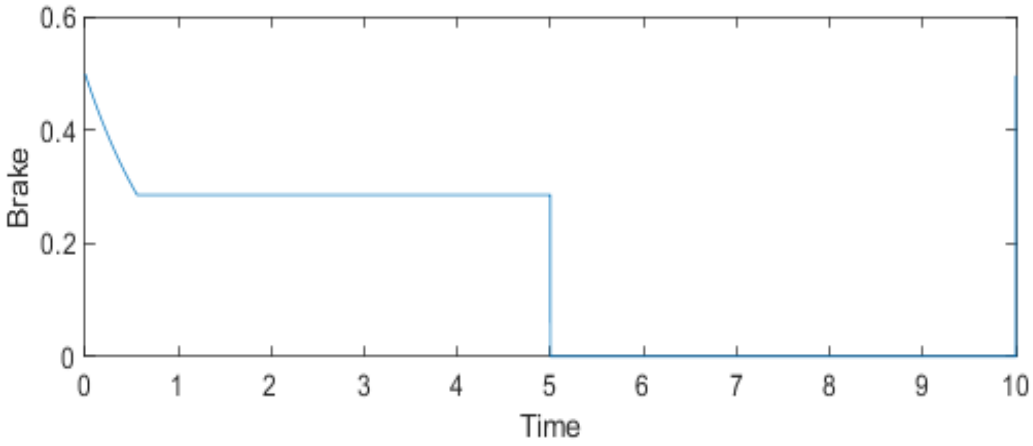
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union





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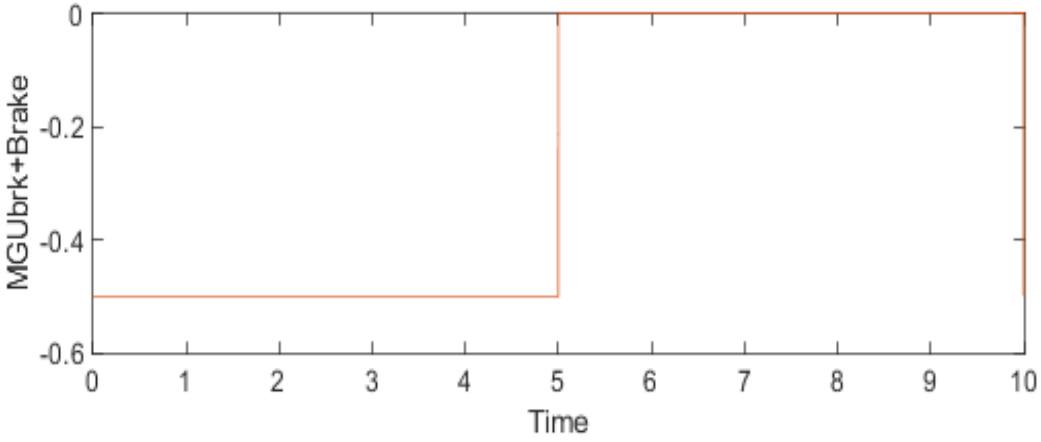
Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk+Brake	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Regen 2

Test Result Information

Result Type:	Test Case Result
Parent:	Regenerative Braking
Start Time:	26-Feb-2021 09:22:45
End Time:	26-Feb-2021 09:22:47
Outcome:	Passed
Description:	

State under test: REGENERATIVE_BRAKING (4), Scenario 2

INPUTS:

- AccPedal: 0

- BrakePedal: pulse signal

  - Amplitude: 0.1

  - Width: 0.5

  - Period: 10 seconds

- SOC: 50%

EXPECTED OUTPUT:

State 4, Regenerative braking.

Test Case Information

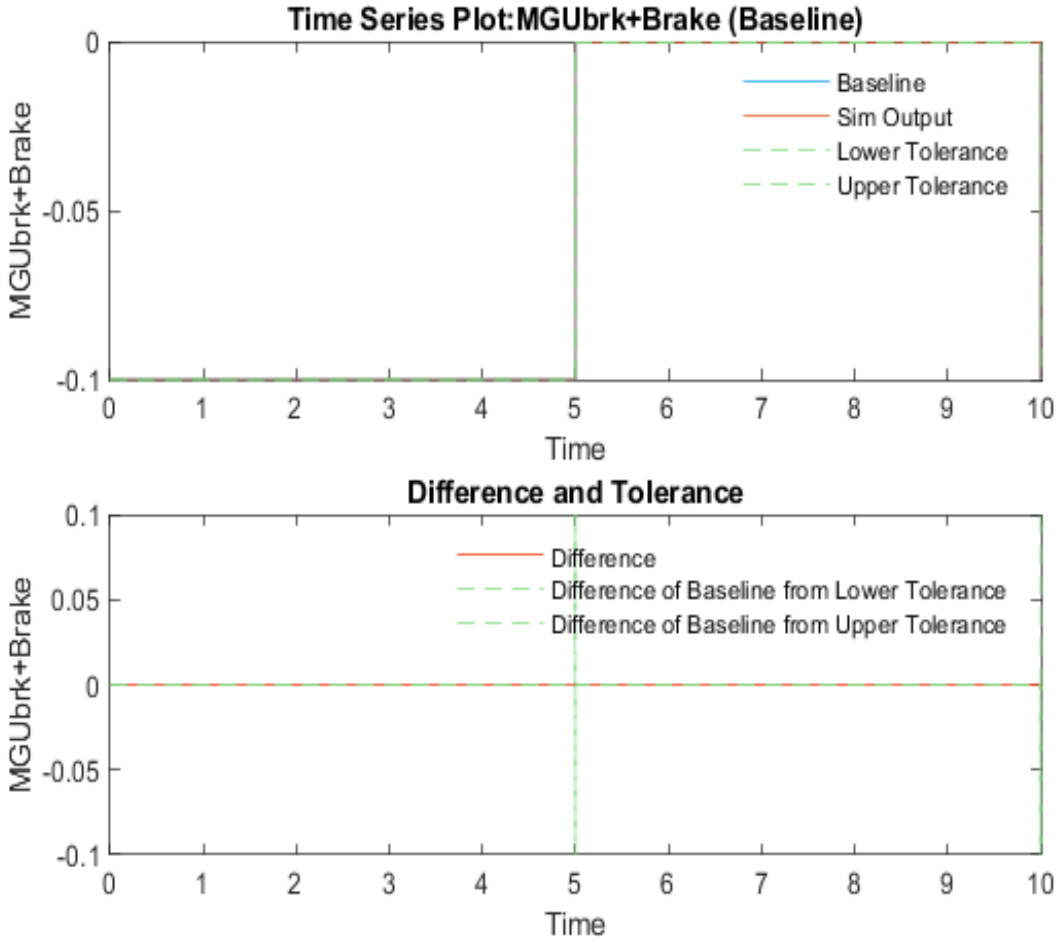
Name:	Regen 2
Type:	Baseline Test
Baseline Name:	Regen_Baseline2.mat

Baseline File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\Baselines\Regen_Baseline2.mat

Baseline Comparison

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync	Link to Plot
MGUbrk+ Brake	1e-05	0	0.001	0.001	0.000673	double		Continuous	double		Continuous	linear	union	Link

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
MGUbrk+ Brake	1e-05	0	0.001	0.001	0.000673	double		Continuous	double		Continuous	linear	union



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Input Data

Input Information

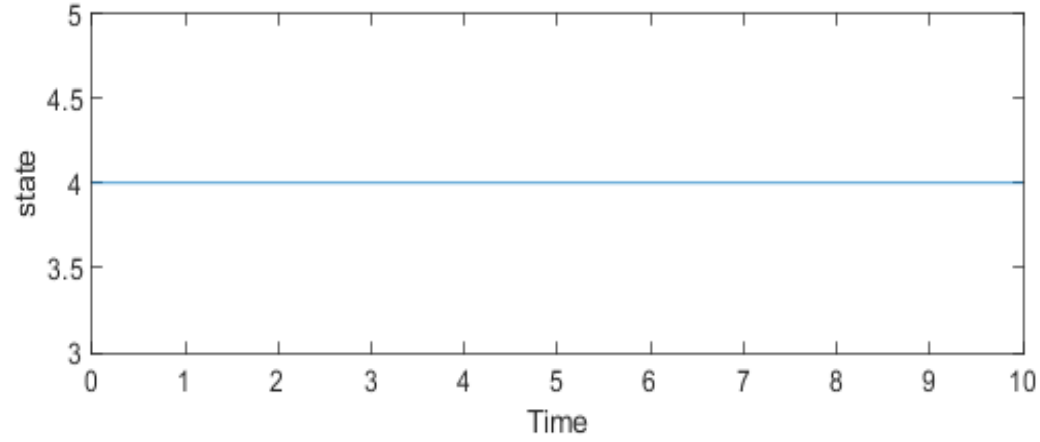
External Input Name: controllerInputs6.mat

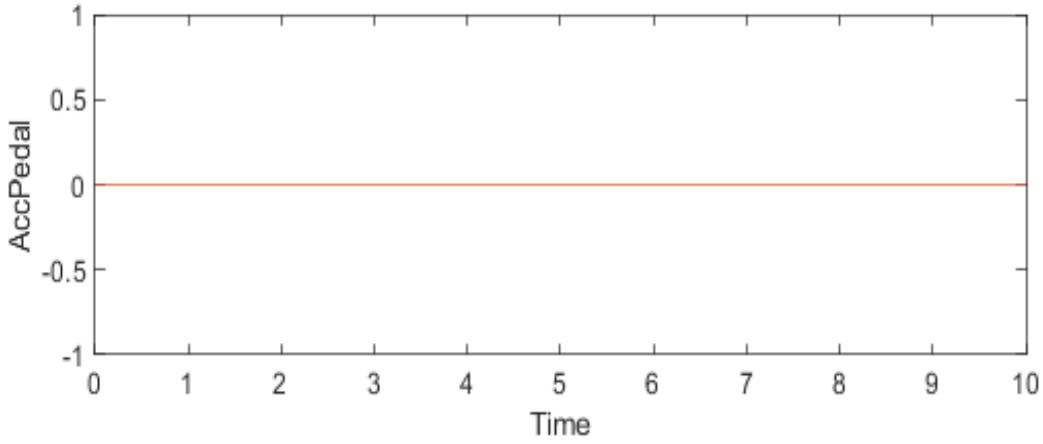
External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-

controller\Test\ControllerTest\testScenarios\controllerInputs6.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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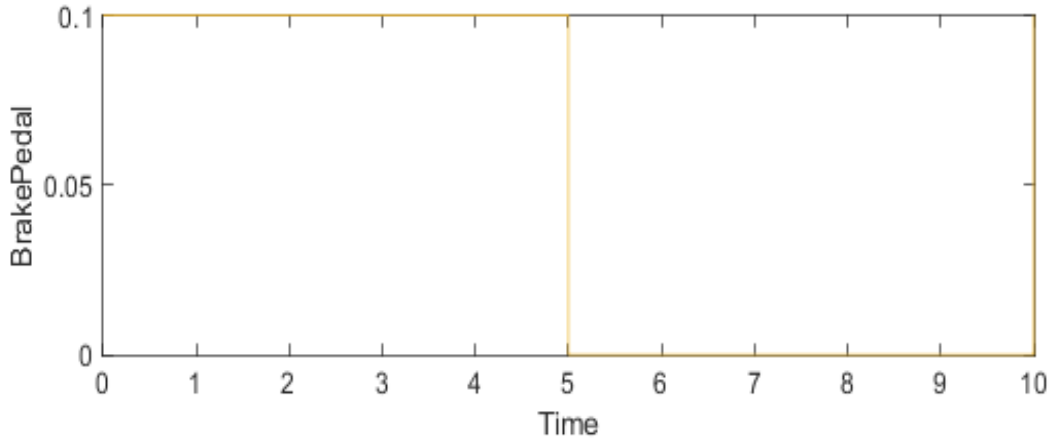
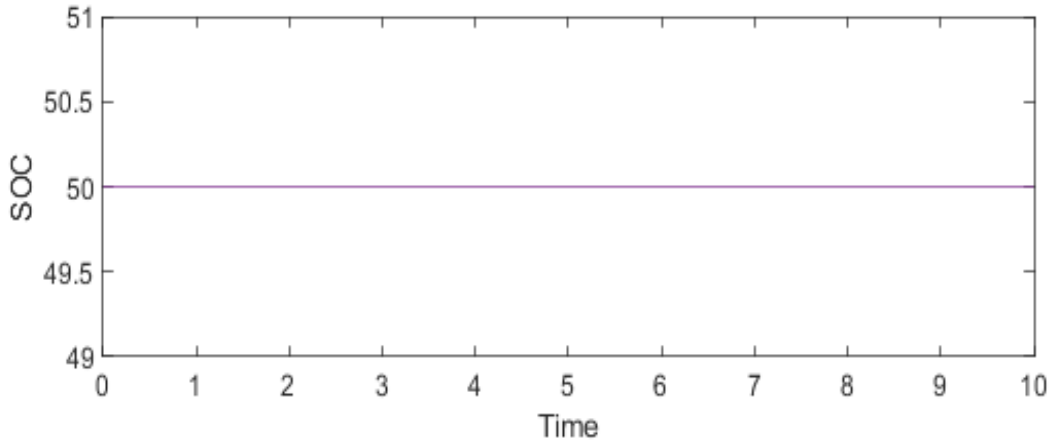
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

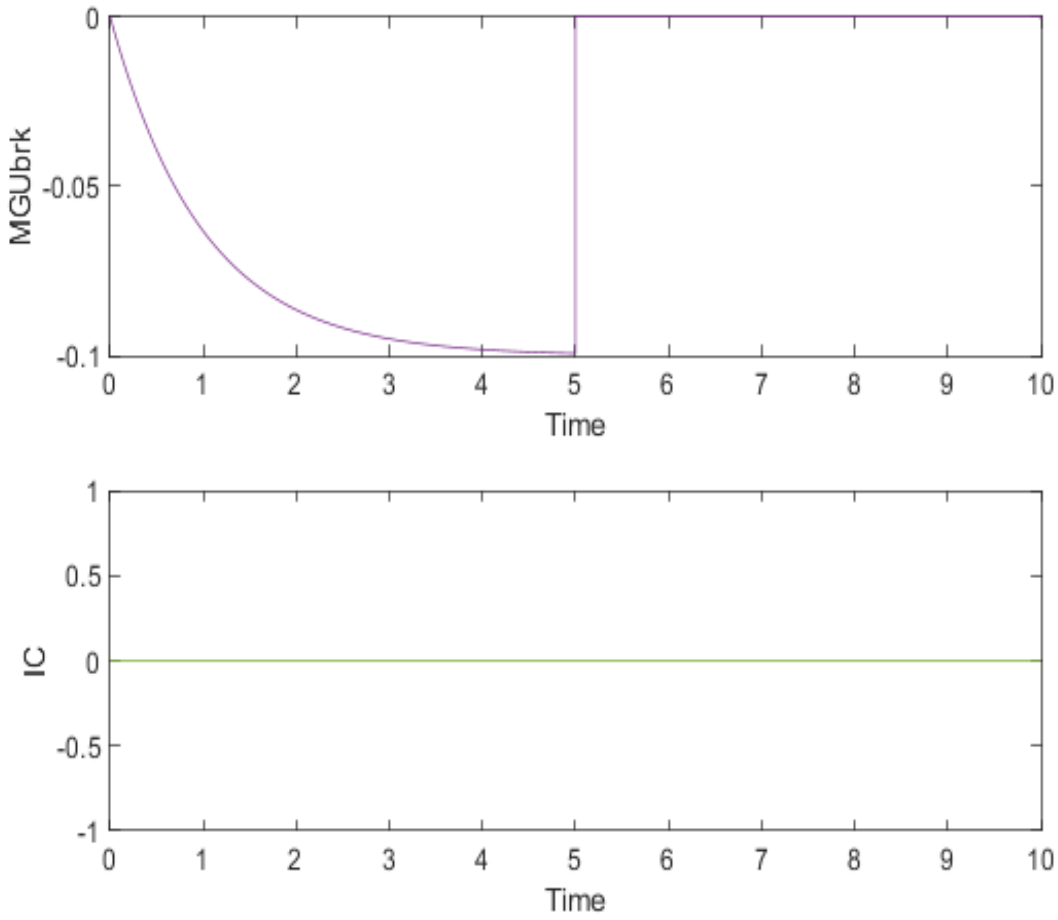
Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

Configuration Set:	Configuration
External Input Name:	controllerInputs6.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs6.mat
Start Time:	0
Stop Time:	10
Checksum:	2929848702 1127579629 3164981853 1998356518
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:45
Simulation Stop Time:	2021-02-26 09:22:46
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union



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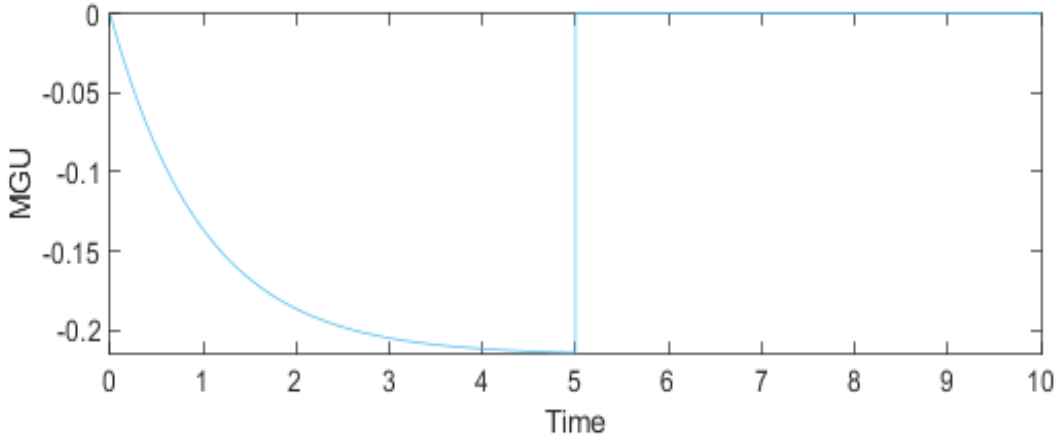
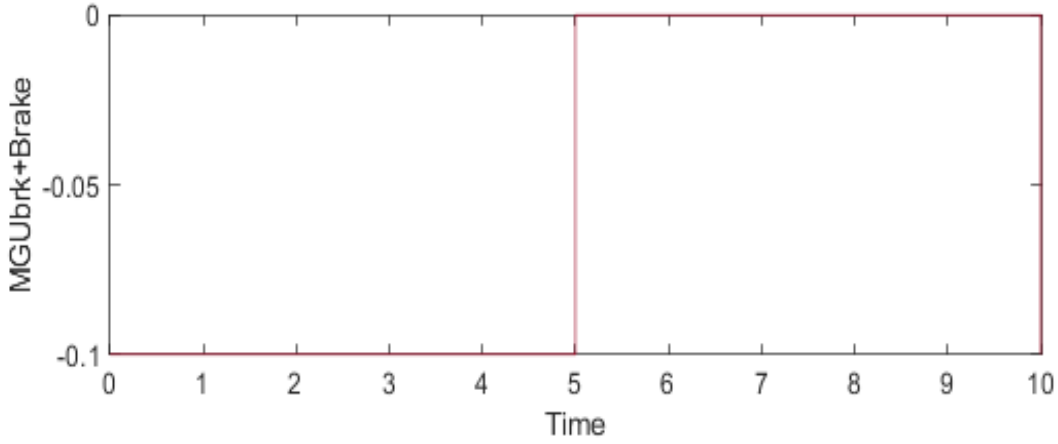
Name	Data Type	Units	Sample Time	Interp	Sync
MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union





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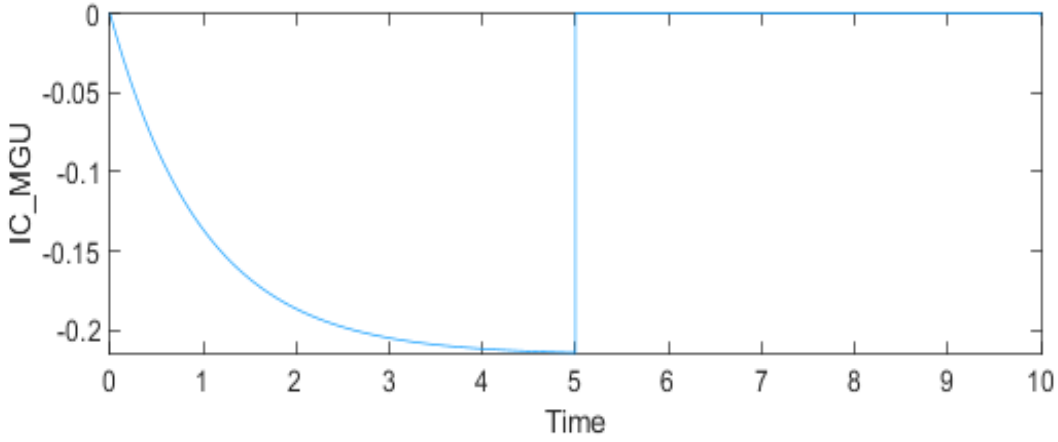
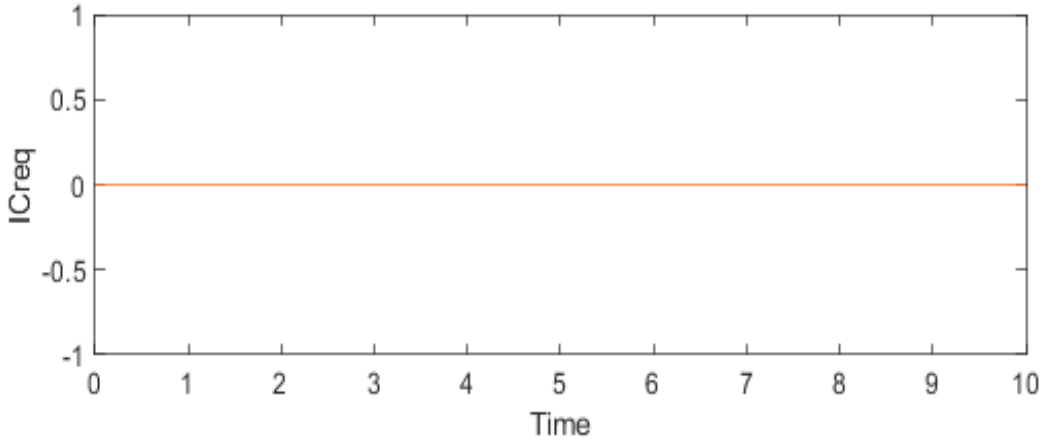
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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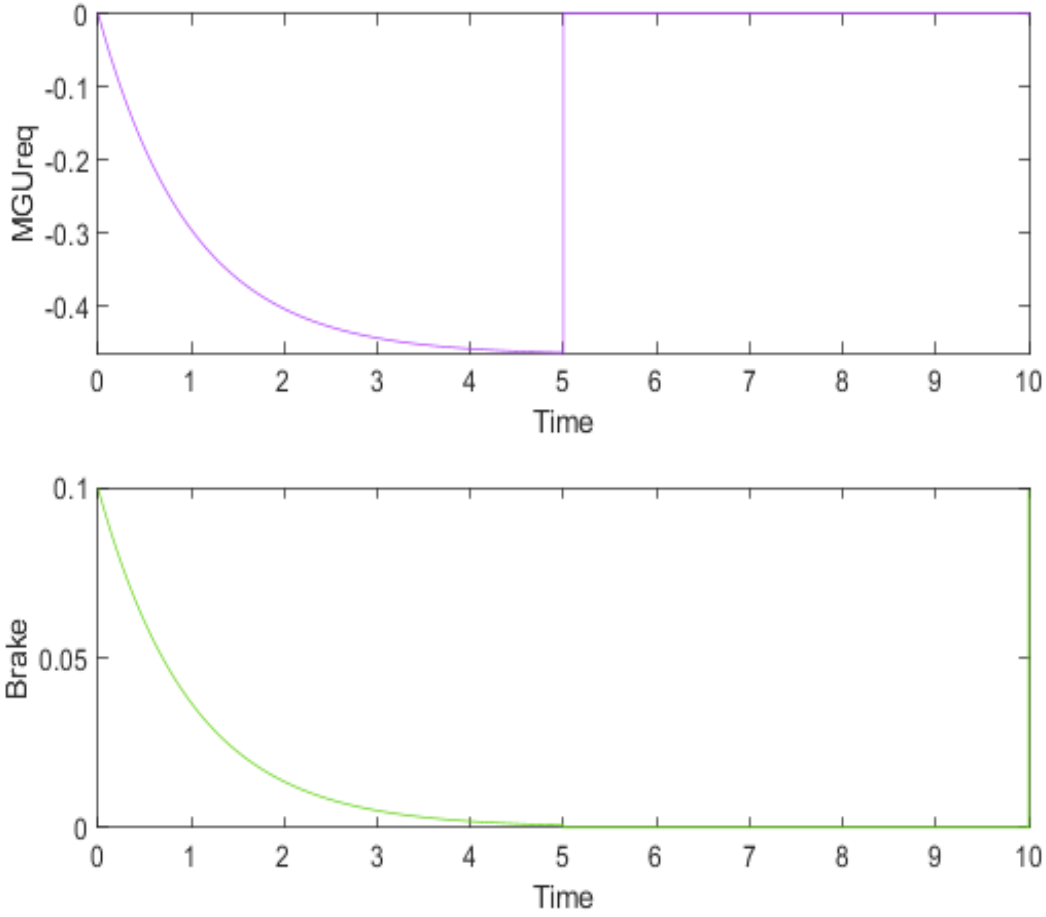
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union



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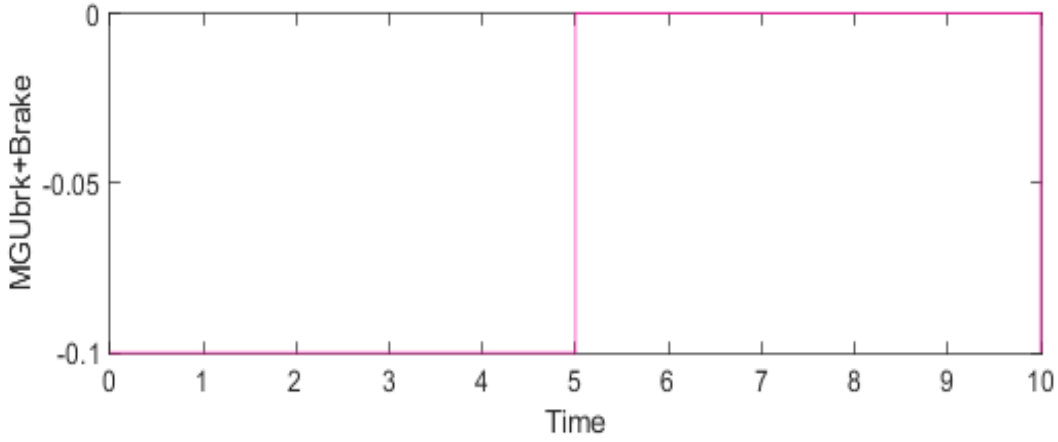
Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk+Brake	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Regen 3

Test Result Information

Result Type:	Test Case Result
Parent:	Regenerative Braking
Start Time:	26-Feb-2021 09:22:47
End Time:	26-Feb-2021 09:22:49
Outcome:	Passed
Description:	

State under test: REGENERATIVE_BRAKING (4), Scenario 3

INPUTS:

- AccPedal: 0

- BrakePedal: pulse signal

  - Amplitude: 0.9

  - Width: 0.5

  - Period: 10 seconds

- SOC: 100%

EXPECTED OUTPUT:

State 4, Regenerative braking.

Test Case Information

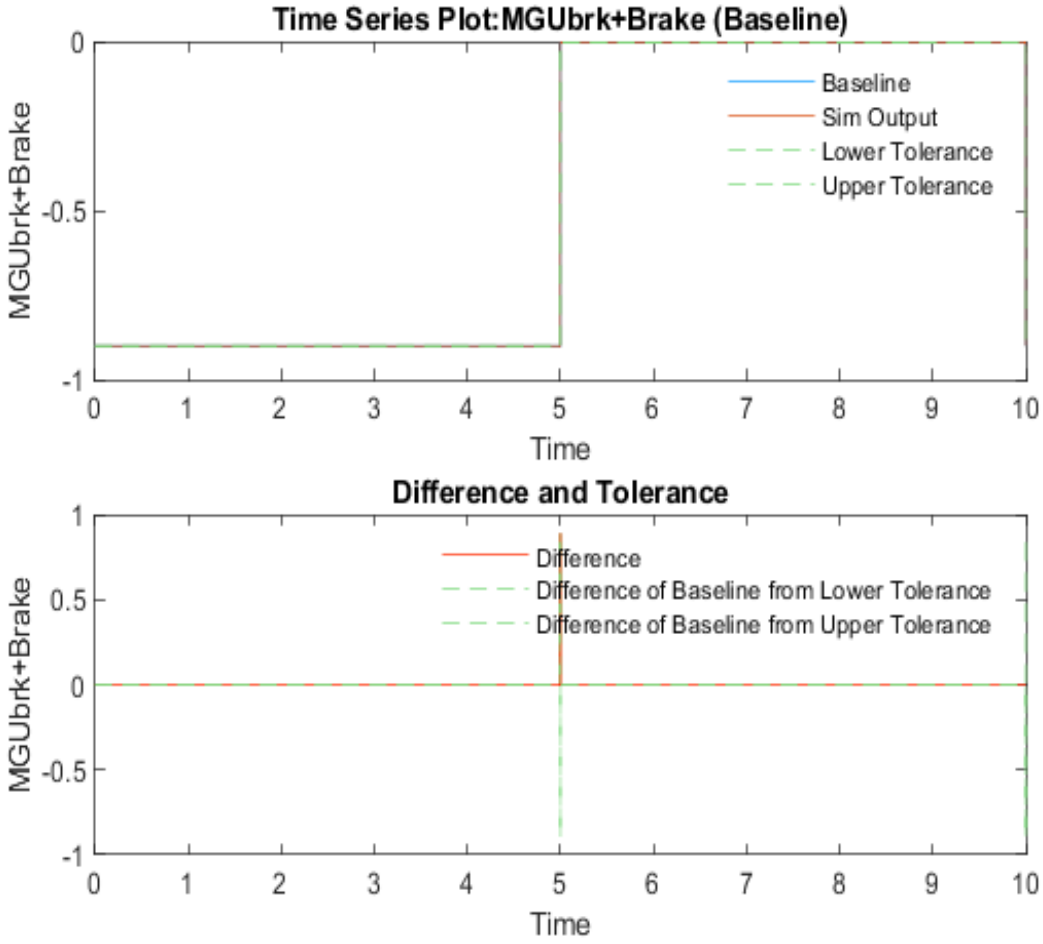
Name:	Regen 3
Type:	Baseline Test
Baseline Name:	Regen_Baseline3.mat

Baseline File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\Baselines\Regen_Baseline3.mat

Baseline Comparison

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync	Link to Plot
MGUbrk+ Brake	1e-05	0	0.001	0.001	0.891	double		Continuous	double		Continuous	linear	union	Link

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
MGUbrk+ Brake	1e-05	0	0.001	0.001	0.891	double		Continuous	double		Continuous	linear	union



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Logical and Temporal Assessments

Name	Assessment
Assessment1	At any point of time, (MGUbrk == 0) must be true

Input Data

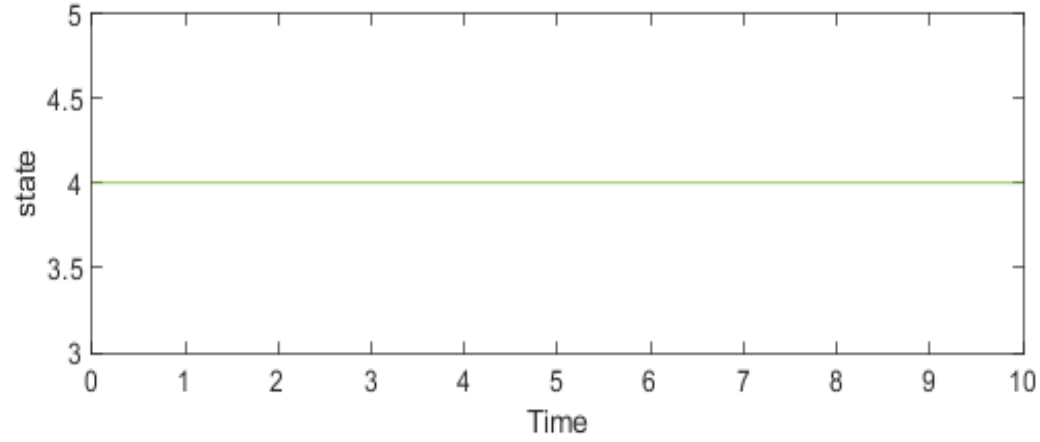
Input Information

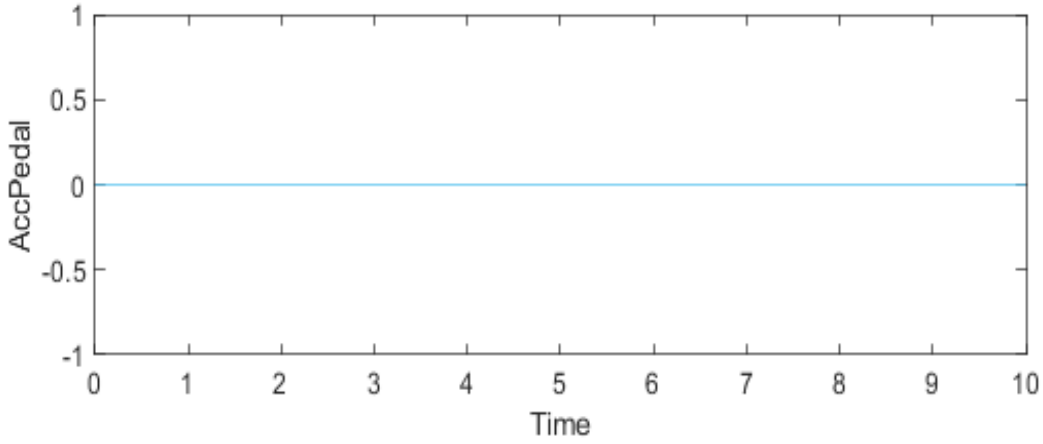
External Input Name: controllerInputs7.mat

External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs7.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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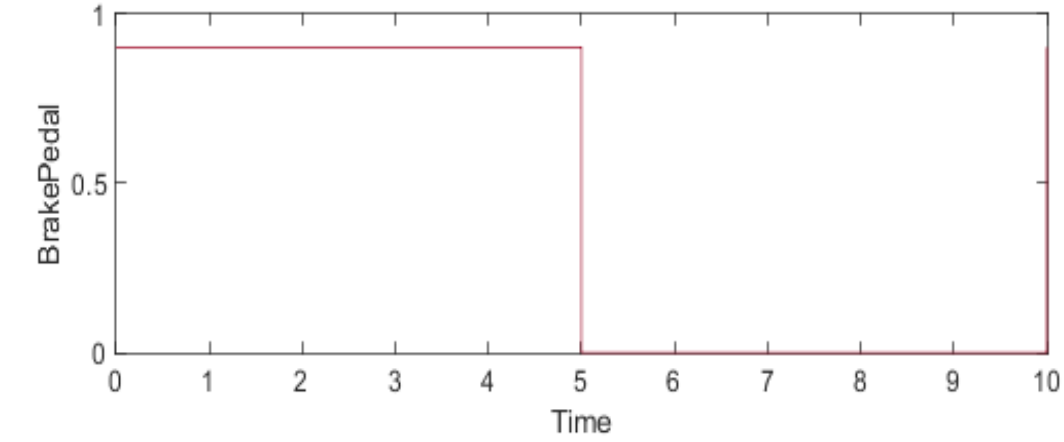
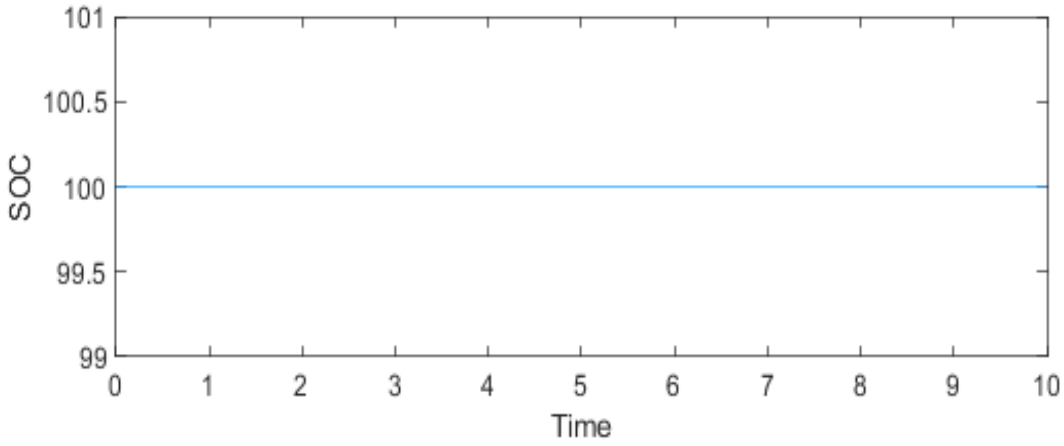
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

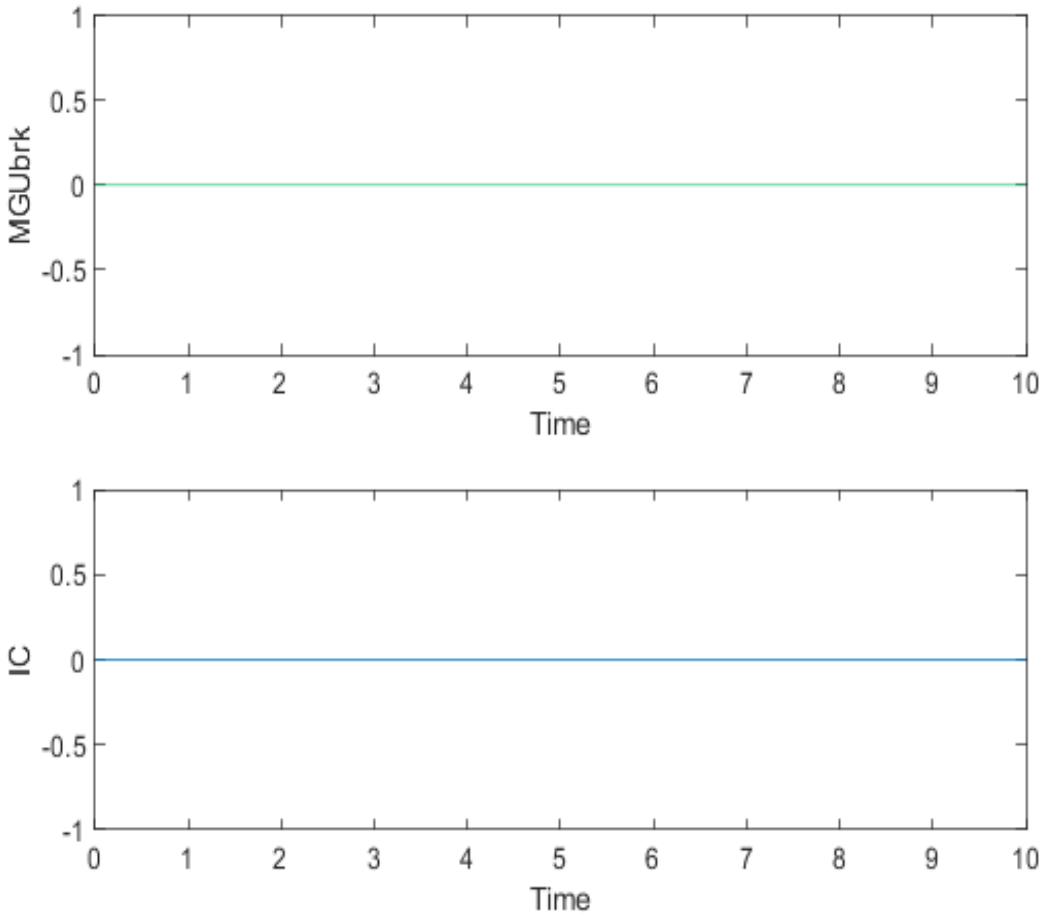
Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

Configuration Set:	Configuration
External Input Name:	controllerInputs7.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs7.mat
Start Time:	0
Stop Time:	10
Checksum:	2428519349 2064430534 1160019107 3949022053
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:47
Simulation Stop Time:	2021-02-26 09:22:48
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
MGUbrk	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union



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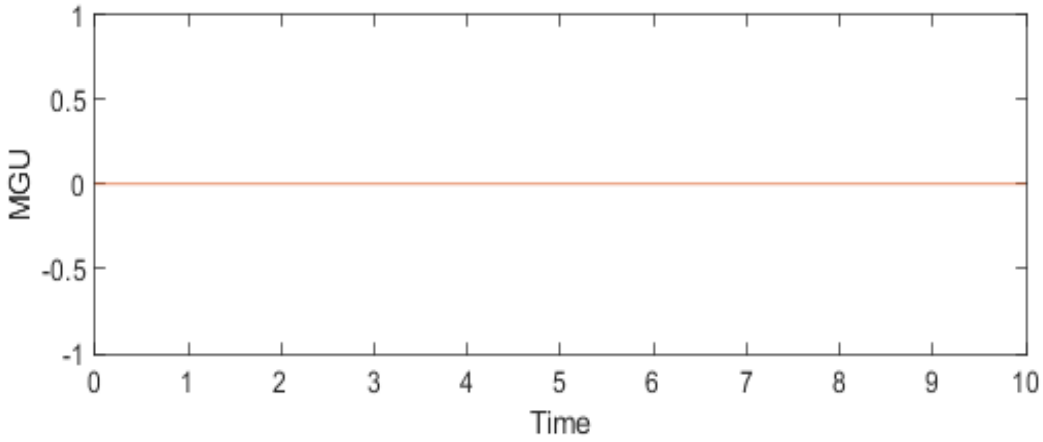
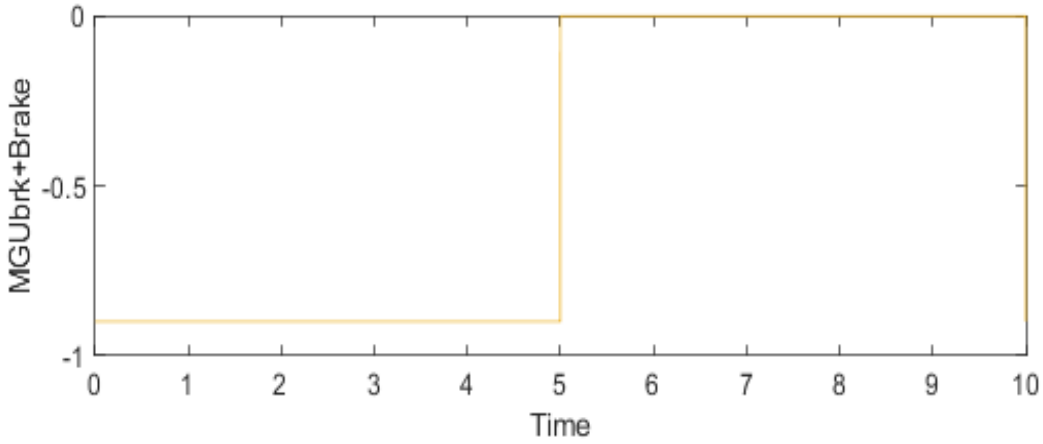
Name	Data Type	Units	Sample Time	Interp	Sync
MGU	double		Continuous	linear	union

MGUbrk+Brake	double		Continuous	linear	union





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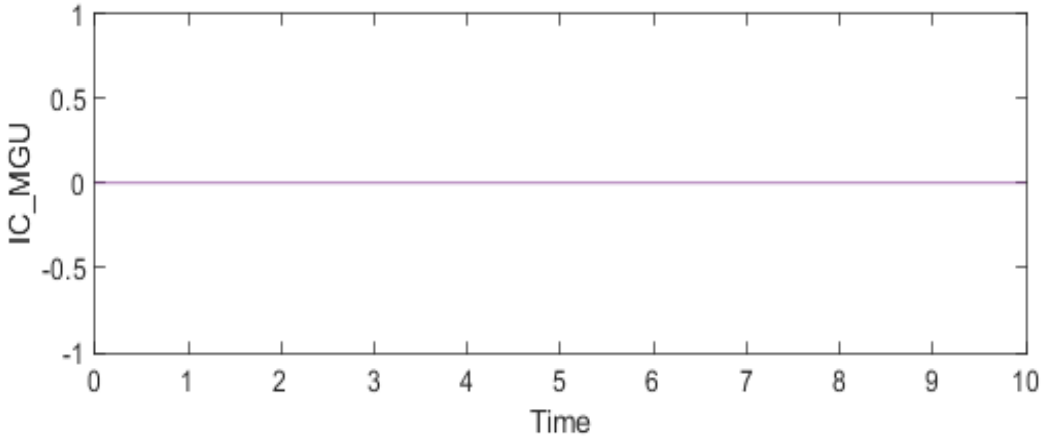
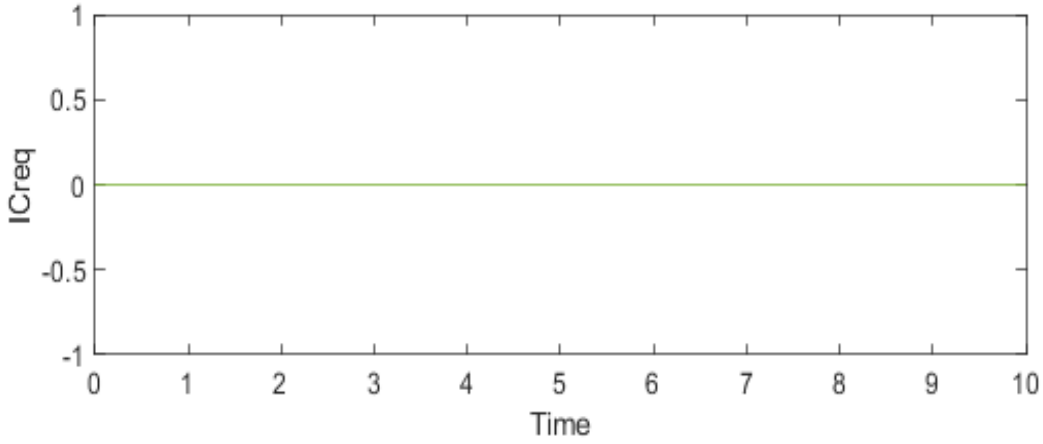
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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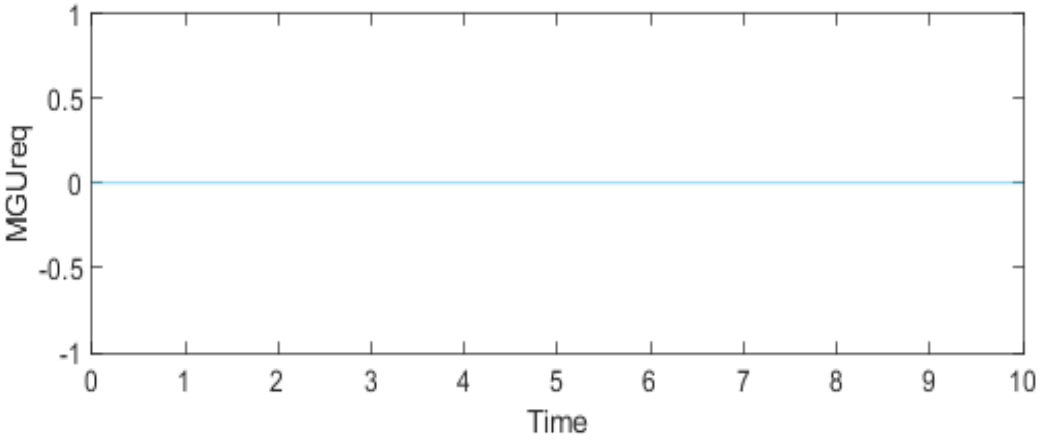
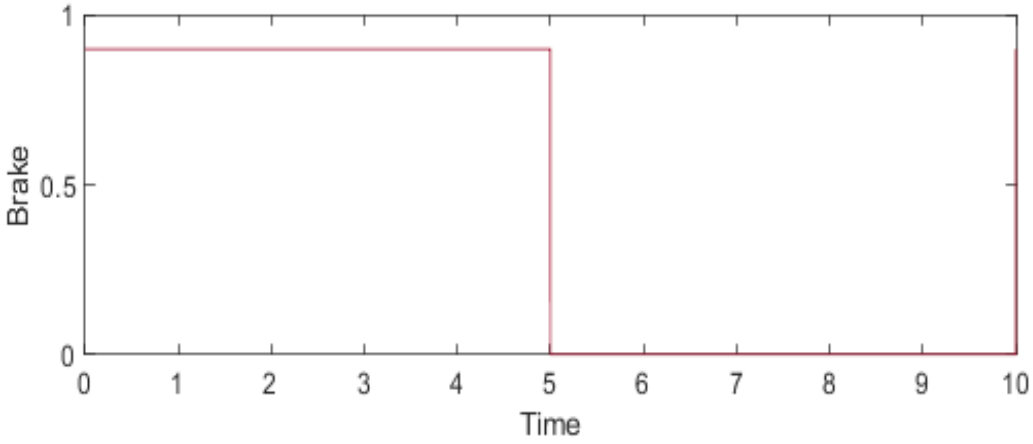
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union





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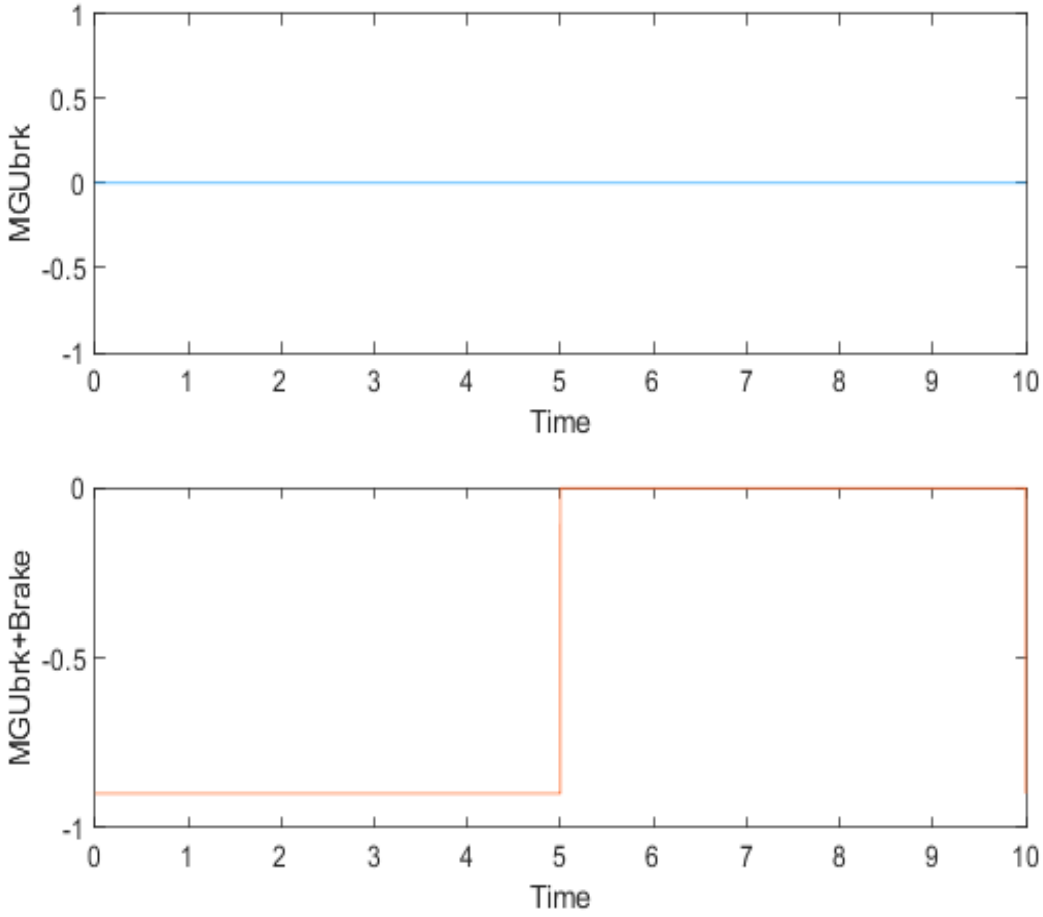
Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Regen 4

Test Result Information

Result Type:	Test Case Result
Parent:	Regenerative Braking
Start Time:	26-Feb-2021 09:22:49
End Time:	26-Feb-2021 09:22:51
Outcome:	Passed
Description:	

State under test: REGENERATIVE_BRAKING (4), Scenario 4

INPUTS:

- AccPedal: 0

- BrakePedal: exponential growth and decay over time

- SOC: 50%

EXPECTED OUTPUT:

State 4, Regenerative braking.

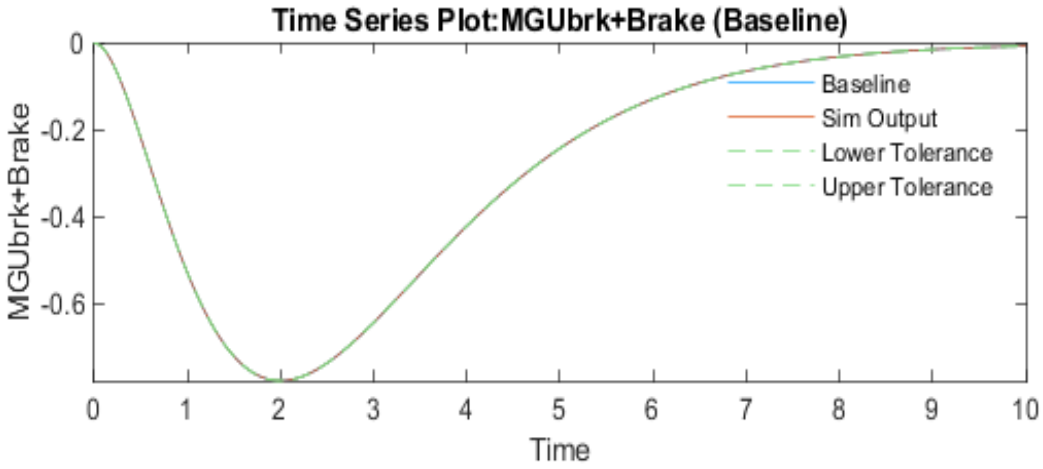
Test Case Information

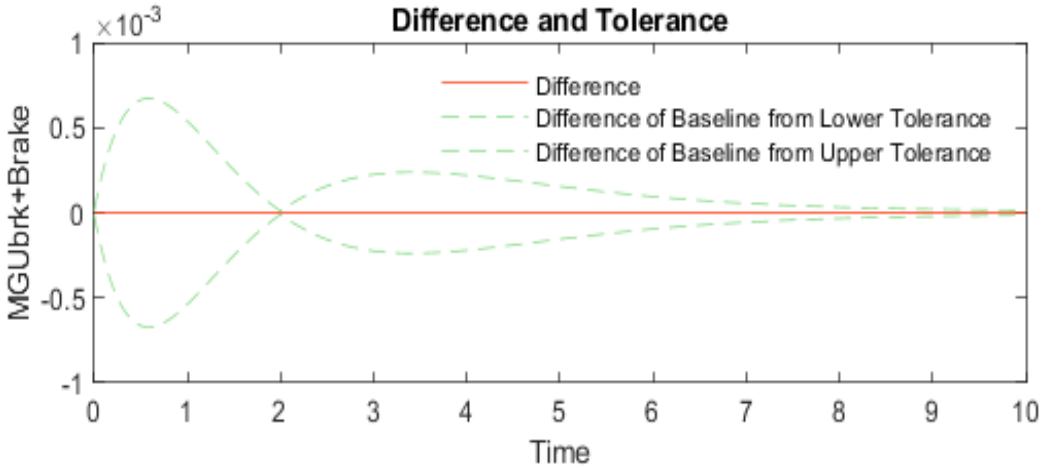
Name:	Regen 4
Type:	Baseline Test
Baseline Name:	Regen_Baseline4.mat
Baseline File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\Baselines\Regen_Baseline4.mat

Baseline Comparison

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync	Link to Plot
MGUbrk+Brake	1e-05	0	0.001	0.001	5.55e-17	double		Continuous	double		Continuous	linear	union	Link

Name	Abs Tol	Rel Tol	Lead Tol	Lag Tol	Max Diff	Data Type 1	Units 1	Sample Time 1	Data Type 2	Units 2	Sample Time 2	Interp	Sync
MGUbrk+Brake	1e-05	0	0.001	0.001	5.55e-17	double		Continuous	double		Continuous	linear	union





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Input Data

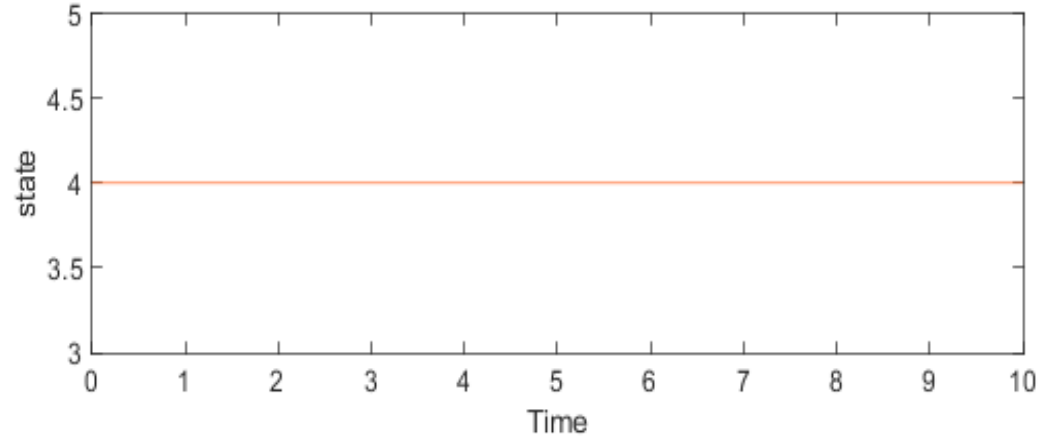
Input Information

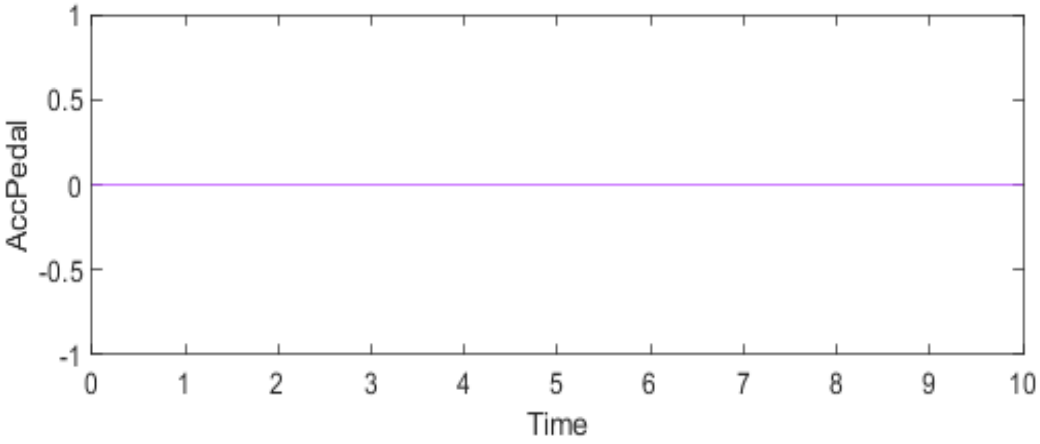
External Input Name: controllerInputs8.mat

External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs8.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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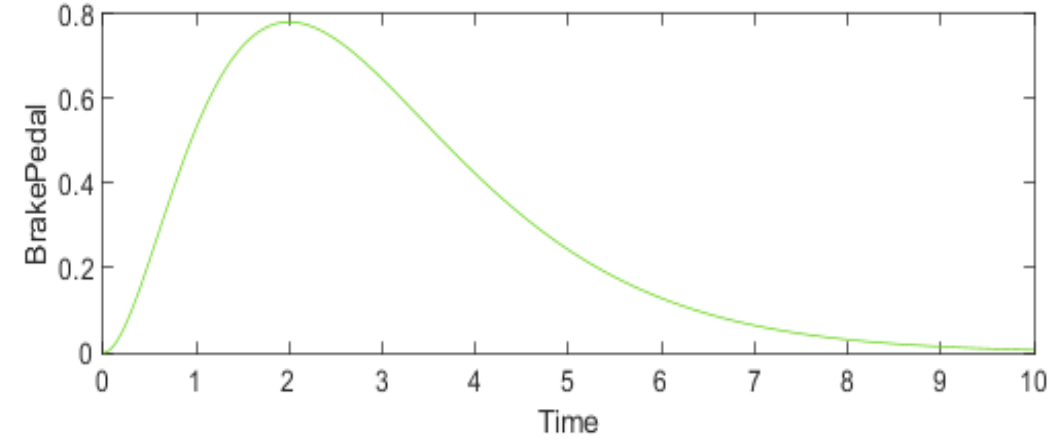
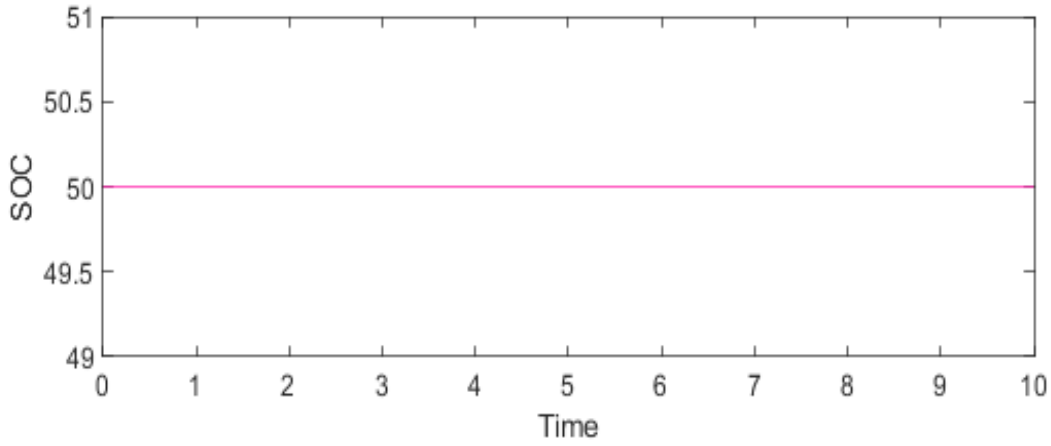
Name	Data Type	Units	Sample Time	Interp	Sync
BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

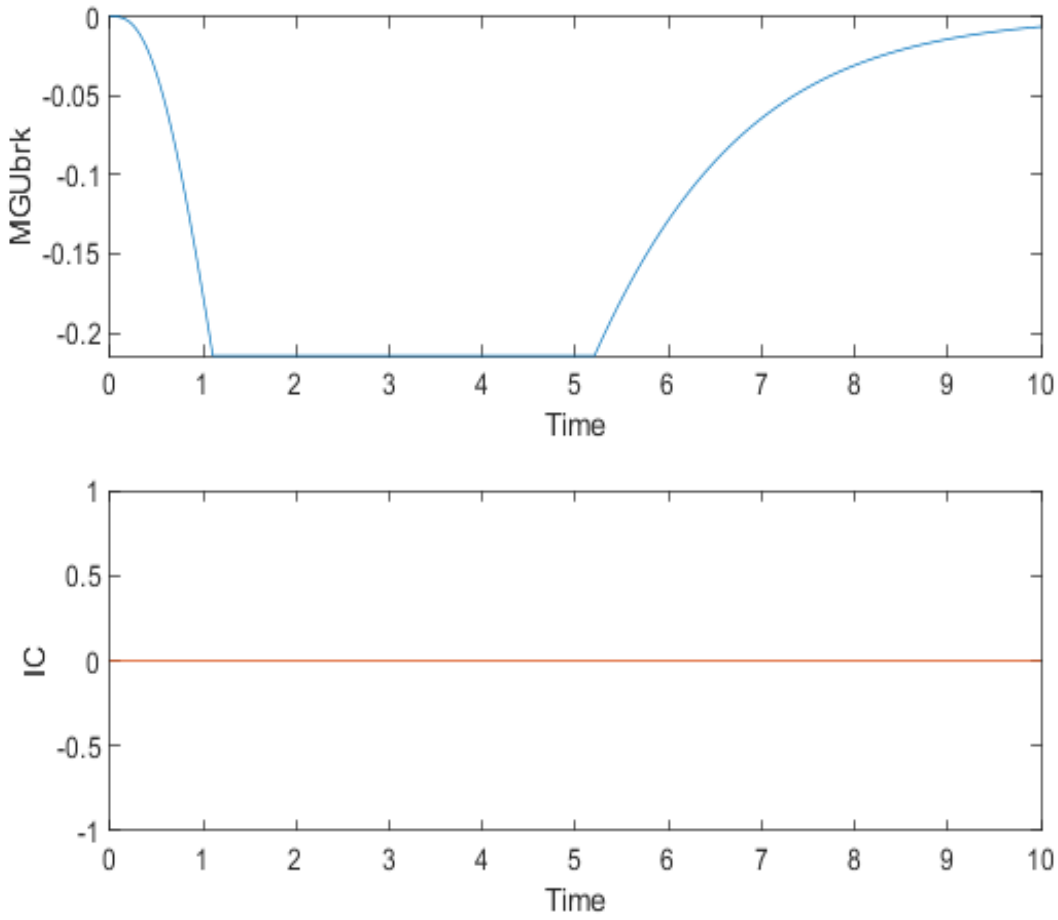
Model:	controllerModel
Release:	Current
Simulation Mode:	normal
Override SIL or PIL Mode:	0

Configuration Set:	Configuration
External Input Name:	controllerInputs8.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs8.mat
Start Time:	0
Stop Time:	10
Checksum:	2929848702 1127579629 3164981853 1998356518
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:49
Simulation Stop Time:	2021-02-26 09:22:50
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union



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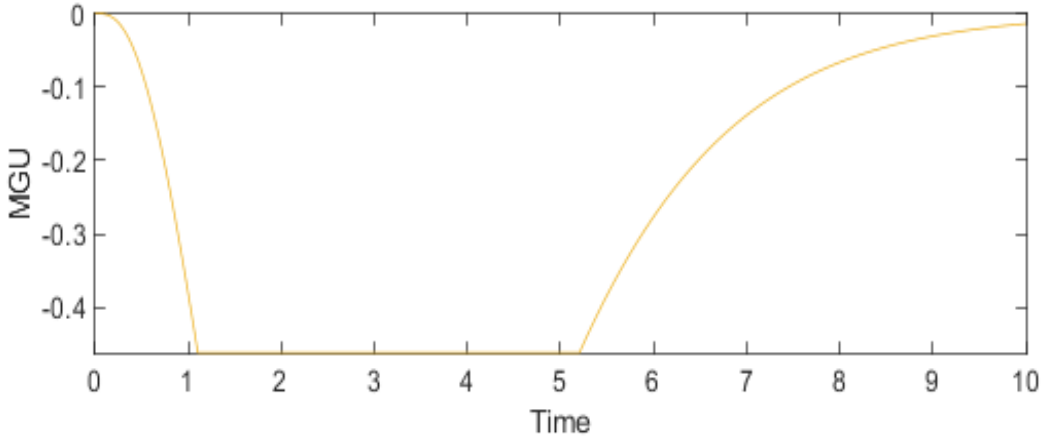
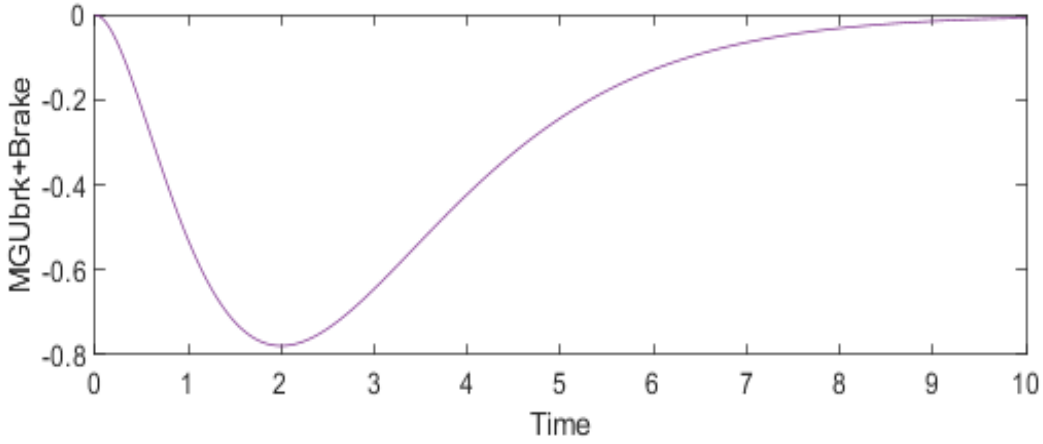
Name	Data Type	Units	Sample Time	Interp	Sync
MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union





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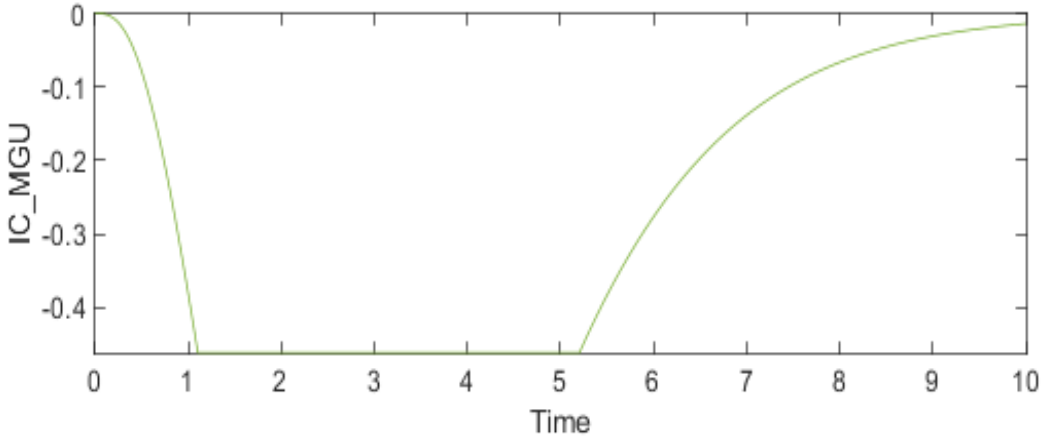
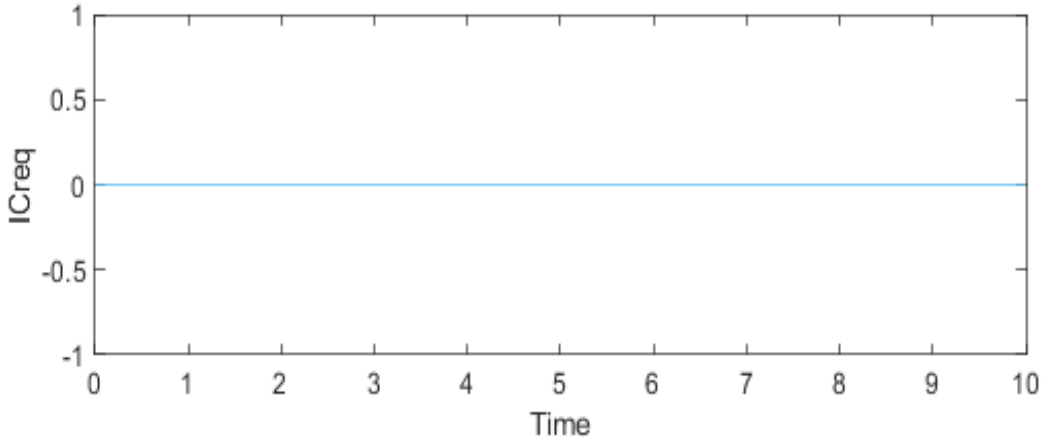
Name	Data Type	Units	Sample Time	Interp	Sync
IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union





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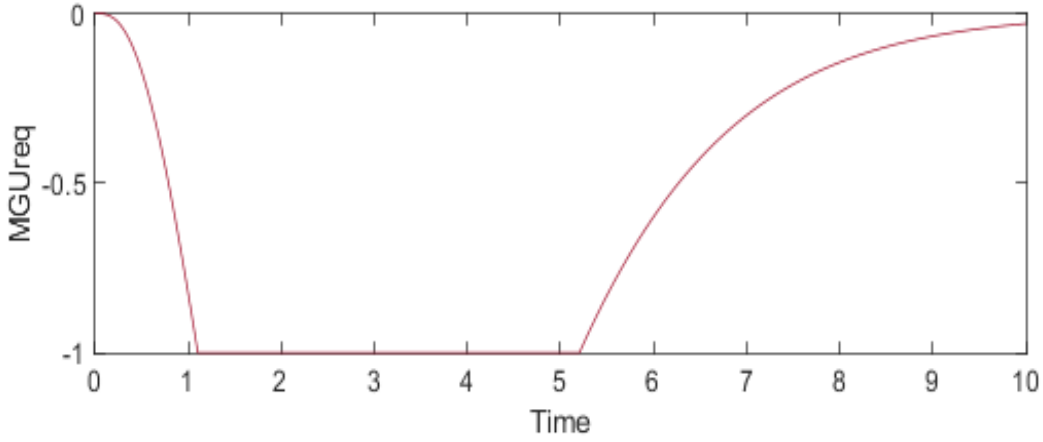
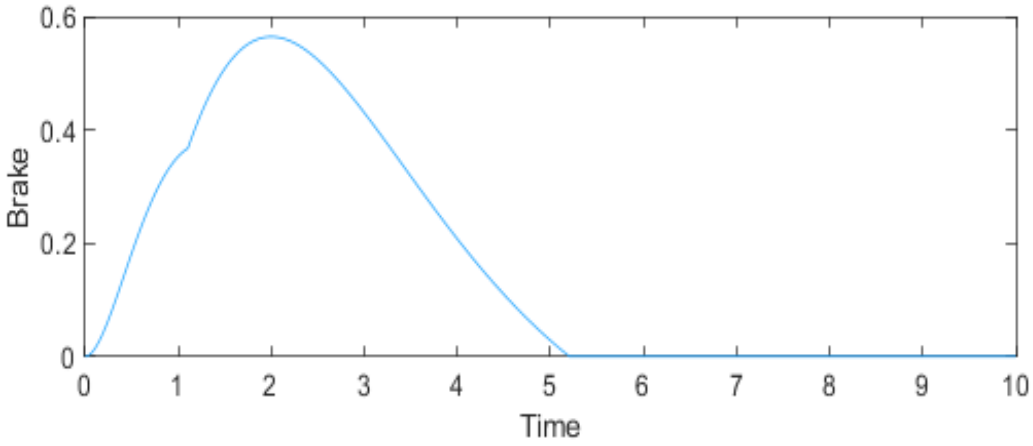
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union





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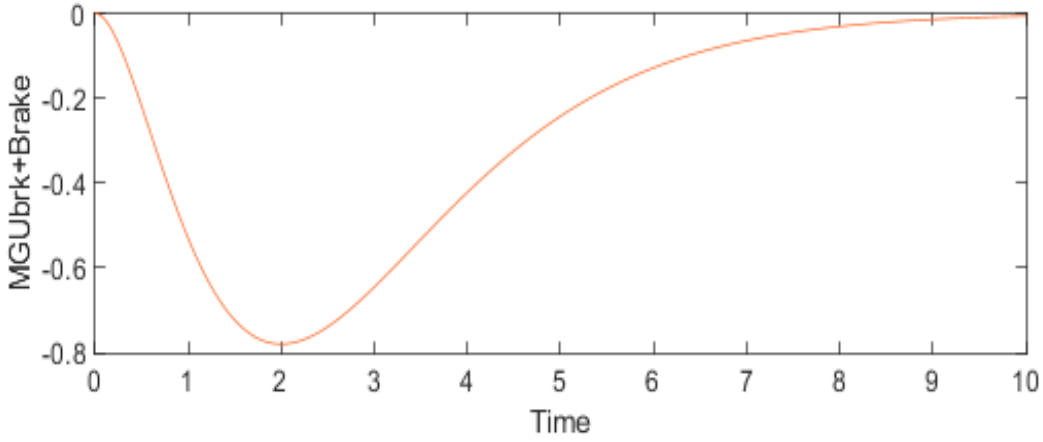
Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk+Brake	double		Continuous	linear	union



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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Electrical Drive

Test Result Information

Result Type:	Test Suite Result
Parent:	controllerTest
Start Time:	26-Feb-2021 09:22:51
End Time:	26-Feb-2021 09:22:53
Outcome:	Total: 1, Passed: 1
Description:	

Electrical Drive case suite of tests

Test Suite Information

Name: Electrical Drive

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ED 1

Test Result Information

Result Type:	Test Case Result
Parent:	Electrical Drive
Start Time:	26-Feb-2021 09:22:51
End Time:	26-Feb-2021 09:22:53
Outcome:	Passed
Description:	

State under test: ELECTRIC_DRIVE (ED, 2)

INPUTS:

- AccPedal: exponential growth and decay

- BrakePedal: 0

- SOC: 70% to 15%

EXPECTED OUTPUTS:

- ICreq: 0

- SOC: 15%

Test Case Information

Name: ED 1
Type: Baseline Test

Logical and Temporal Assessments

Name	Assessment
Assessment1	At any point of time, (((SOC >= 15) & (BrakePedal == 0)) & ((MGUreq <= AccPedal) | (MGUreq <= 1))) must be true
Assessment2	At any point of time, (ICreq == 0) must be true

Input Data

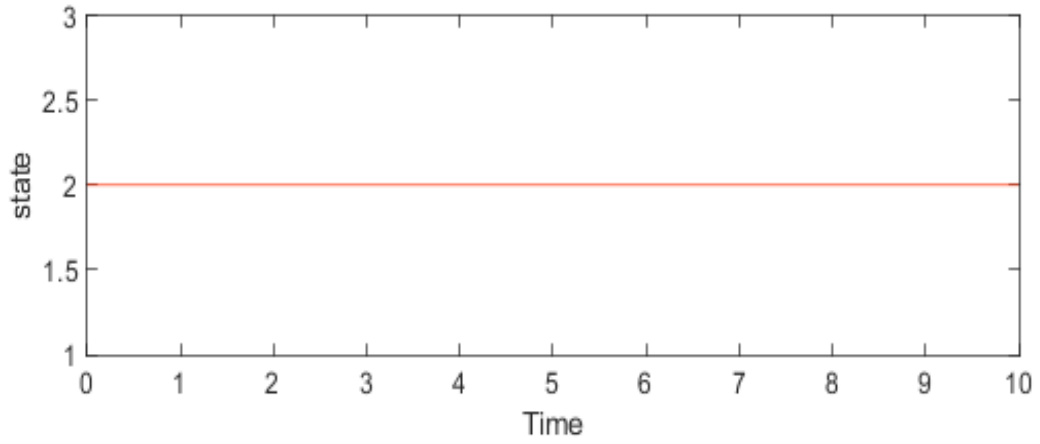
Input Information

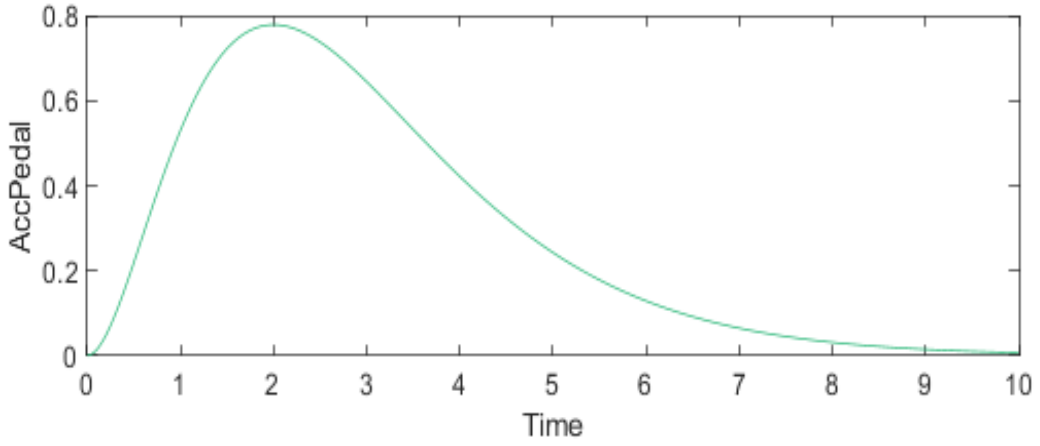
External Input Name: controllerInputs11.mat
External Input File: C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs11.mat

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
state	double		Continuous	linear	union	Link
AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link

SOC	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
state	double		Continuous	linear	union
AccPedal	double		Continuous	linear	union





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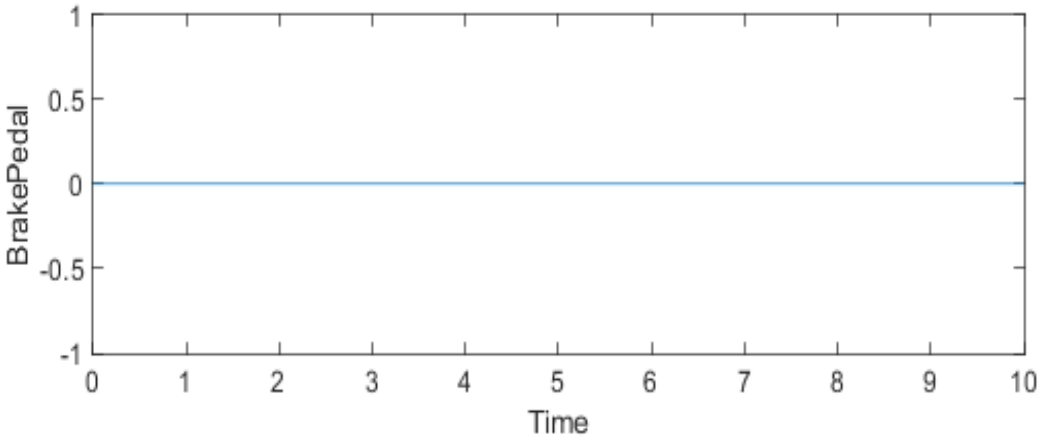
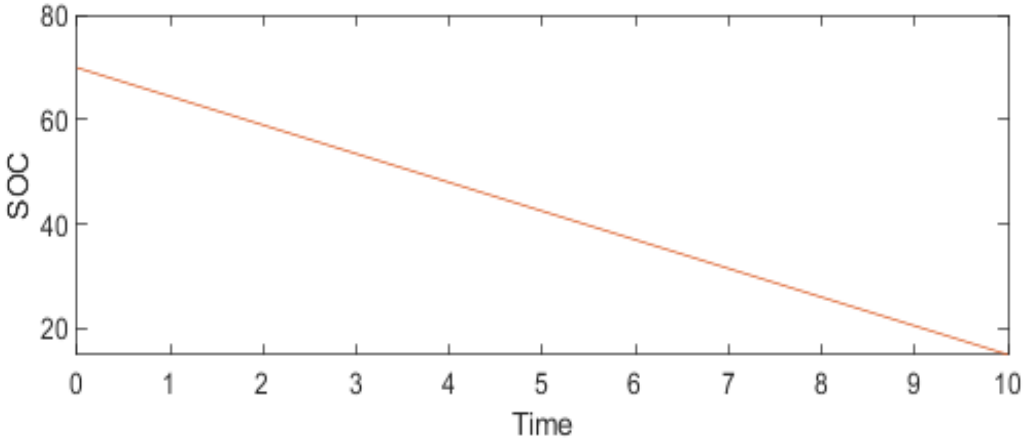
Name	Data Type	Units	Sample Time	Interp	Sync

BrakePedal	double		Continuous	linear	union
SOC	double		Continuous	linear	union





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Simulation

System Under Test Information

Model: controllerModel
Release: Current
Simulation Mode: normal

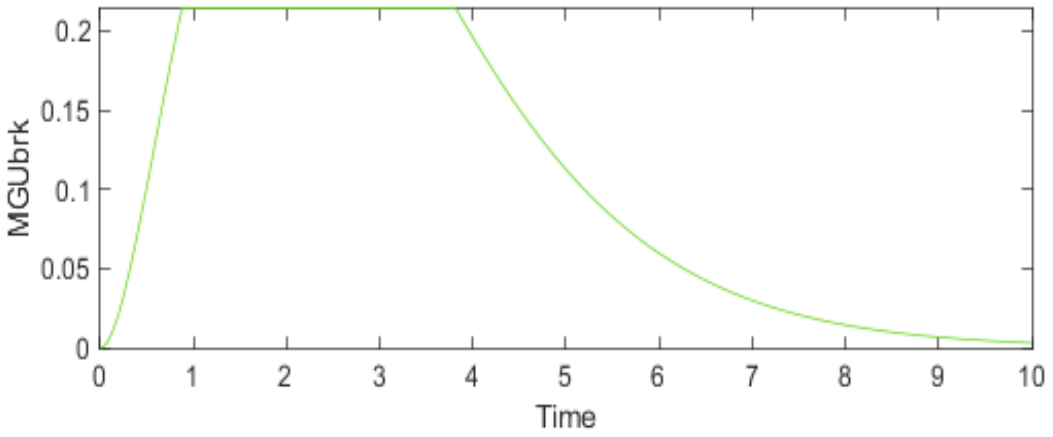
Override SIL or PIL Mode:	0
Configuration Set:	Configuration
External Input Name:	controllerInputs11.mat
External Input File:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\testScenarios\controllerInputs11.mat
Start Time:	0
Stop Time:	10
Checksum:	523149798 1526931866 3684534821 2273549215
Simulink Version:	10.2
Model Version:	1.21
Model Author:	ivane
Date:	Wed Feb 24 09:03:31 2021
User ID:	ivane
Model Path:	C:\Users\ivane\Documents\GitHub\hybrid-controller\Hybrid-controller\Test\ControllerTest\controllerModel.slx
Machine Name:	DESKTOP-MPG8QDG
Solver Name:	VariableStepDiscrete
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2021-02-26 09:22:51
Simulation Stop Time:	2021-02-26 09:22:52
Platform:	PCWIN64

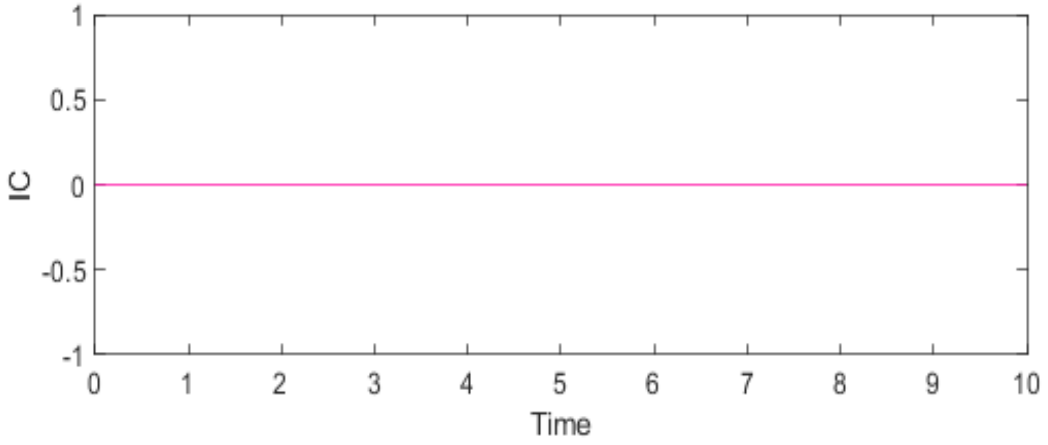
Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
MGUbrk	double		Continuous	linear	union	Link
IC	double		Continuous	linear	union	Link
MGU	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
IC_MGU	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link
Brake	double		Continuous	linear	union	Link

AccPedal	double		Continuous	linear	union	Link
BrakePedal	double		Continuous	linear	union	Link
SOC	double		Continuous	linear	union	Link
MGUbrk+Brake	double		Continuous	linear	union	Link
ICreq	double		Continuous	linear	union	Link
MGUreq	double		Continuous	linear	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
MGUbrk	double		Continuous	linear	union
IC	double		Continuous	linear	union





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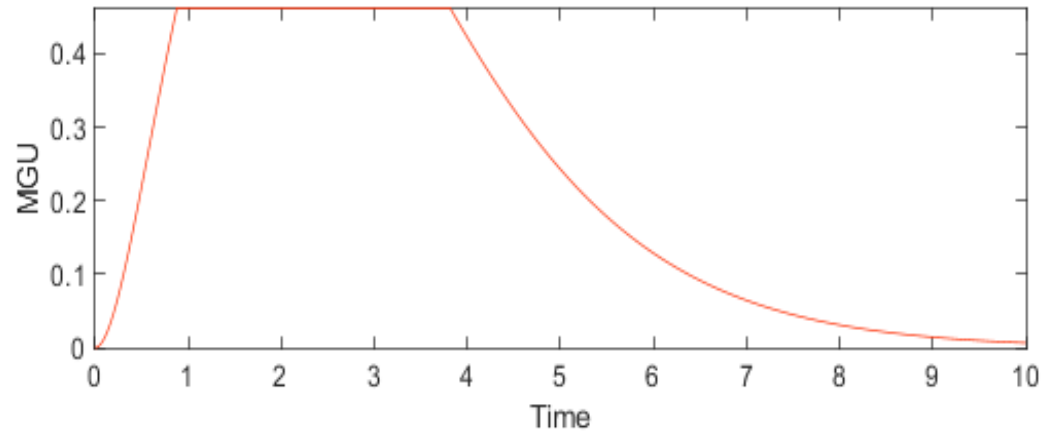
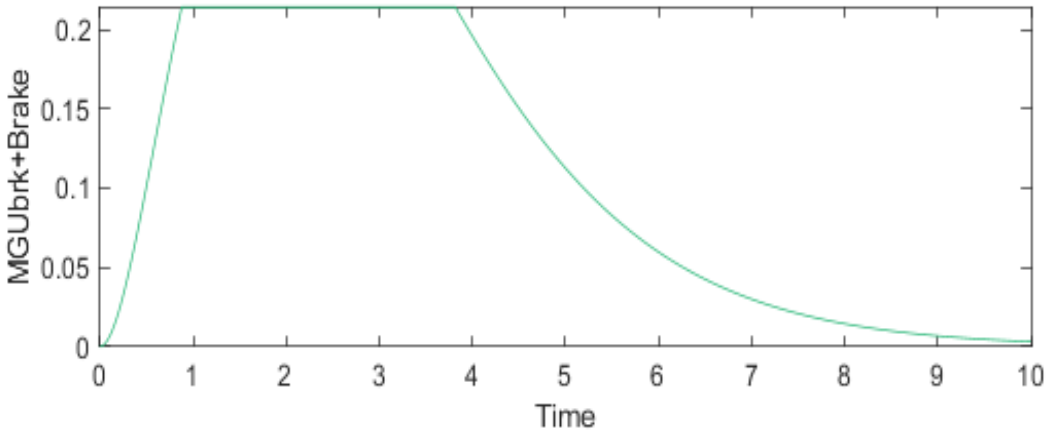
Name	Data Type	Units	Sample Time	Interp	Sync
MGU	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union





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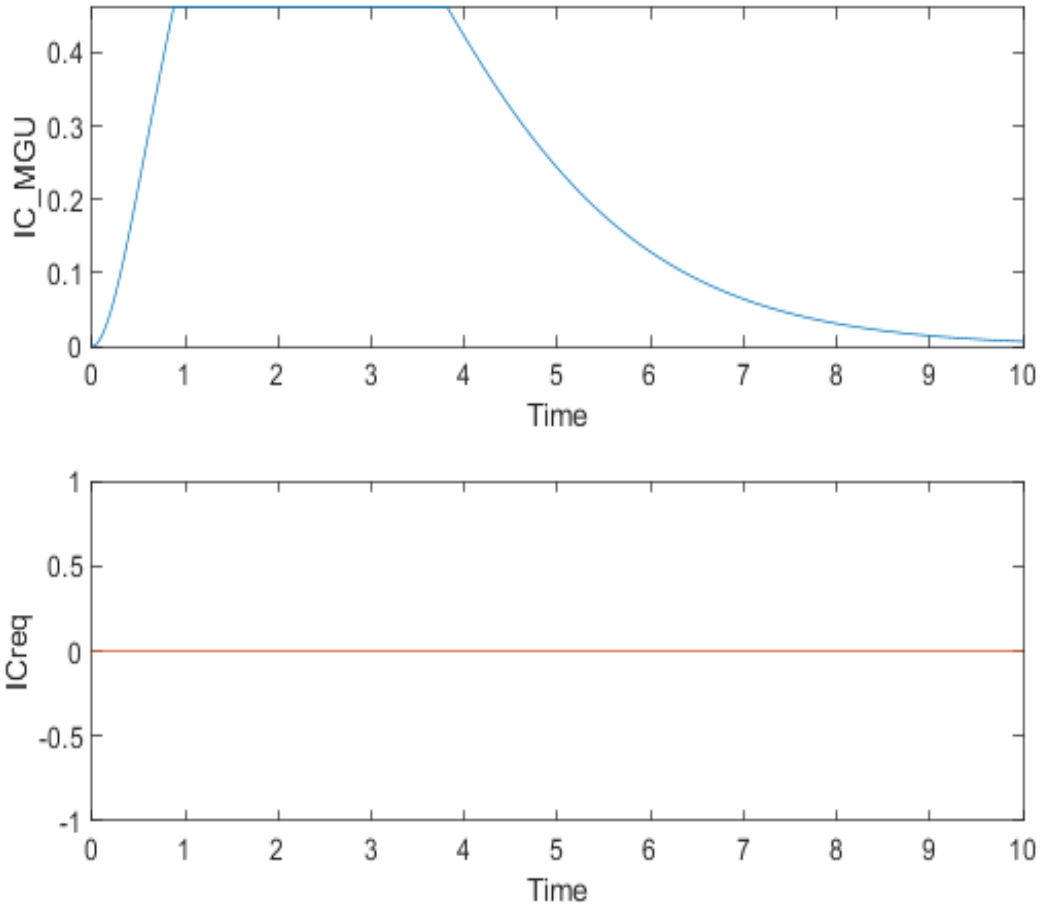
Name	Data Type	Units	Sample Time	Interp	Sync

IC_MGU	double		Continuous	linear	union
ICreq	double		Continuous	linear	union



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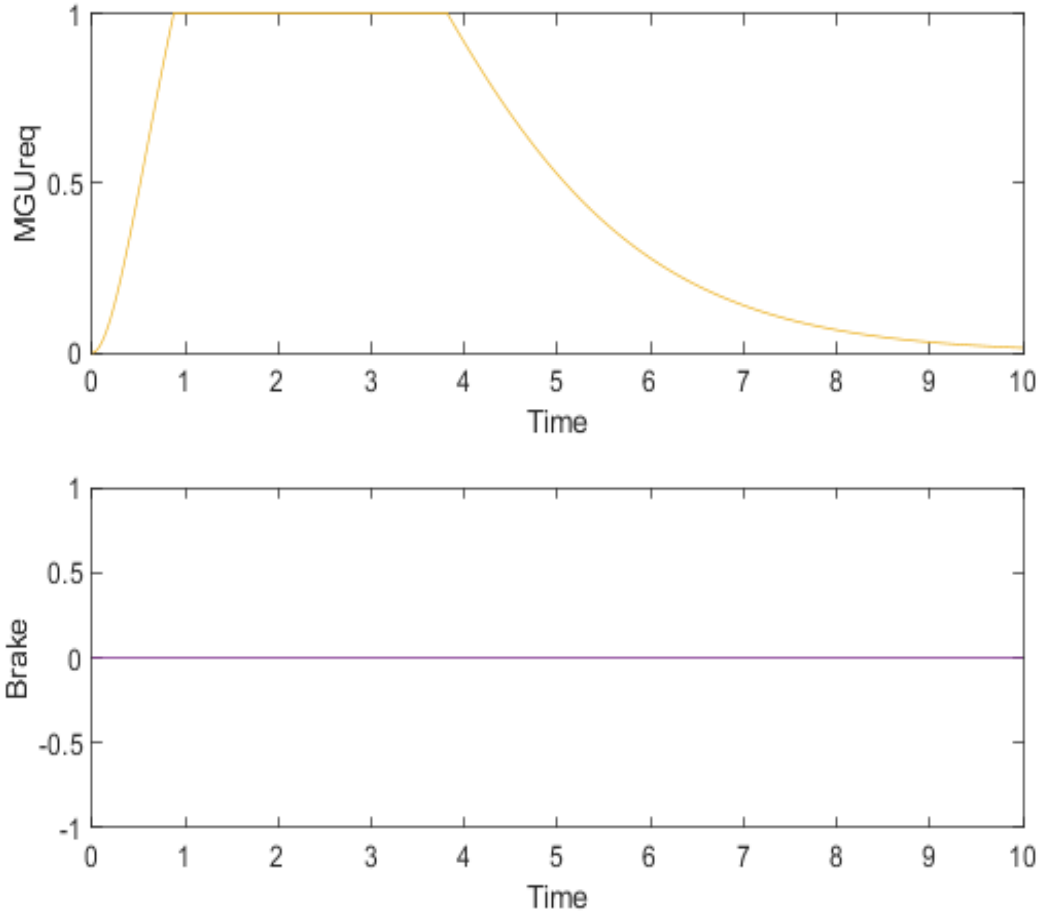
Name	Data Type	Units	Sample Time	Interp	Sync
MGUreq	double		Continuous	linear	union
Brake	double		Continuous	linear	union



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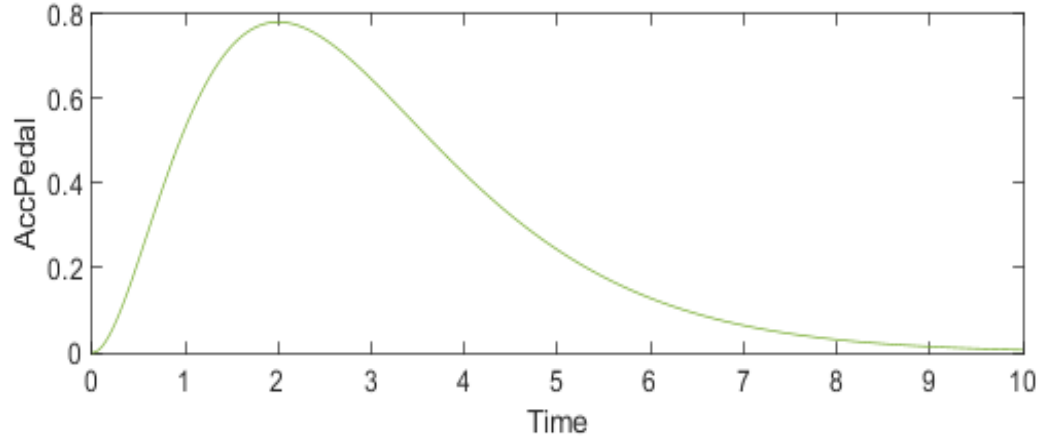
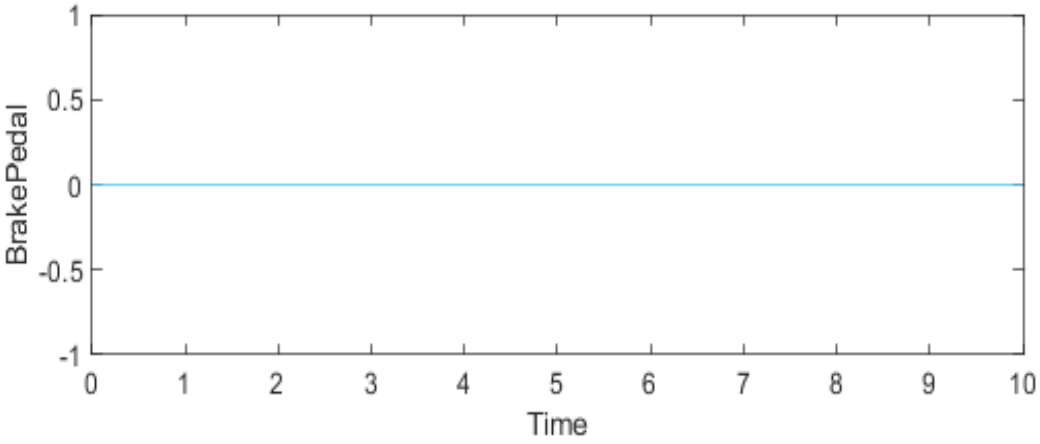
Name	Data Type	Units	Sample Time	Interp	Sync
AccPedal	double		Continuous	linear	union
BrakePedal	double		Continuous	linear	union





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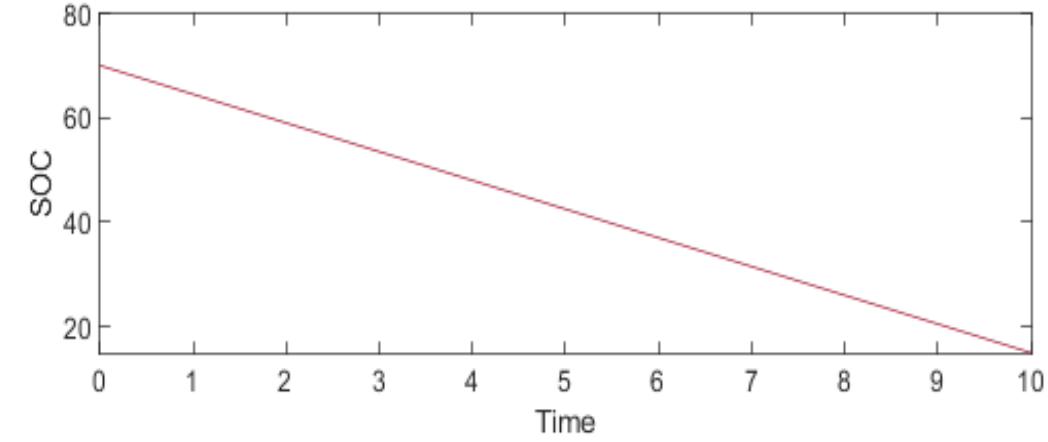
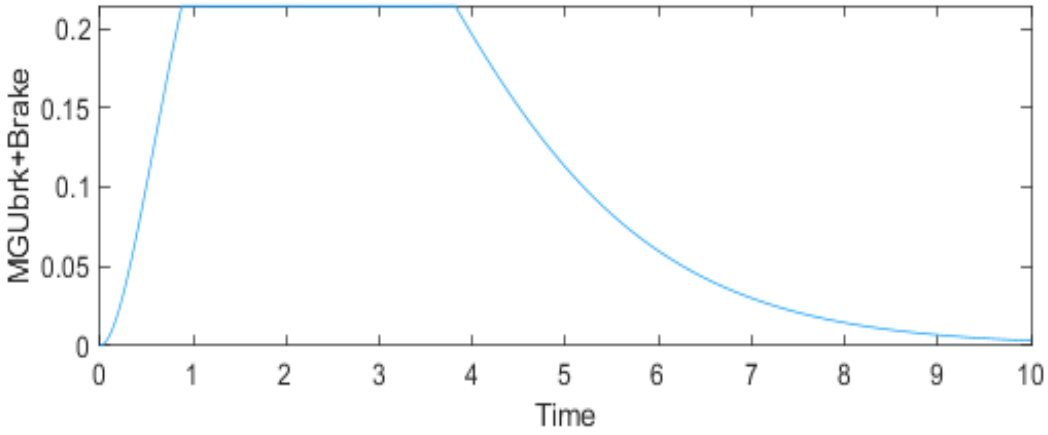
Name	Data Type	Units	Sample Time	Interp	Sync
SOC	double		Continuous	linear	union
MGUbrk+Brake	double		Continuous	linear	union





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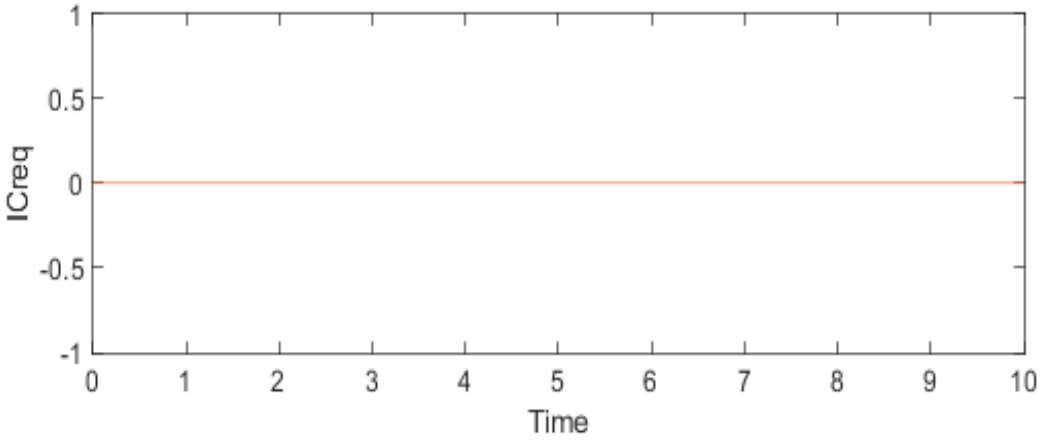
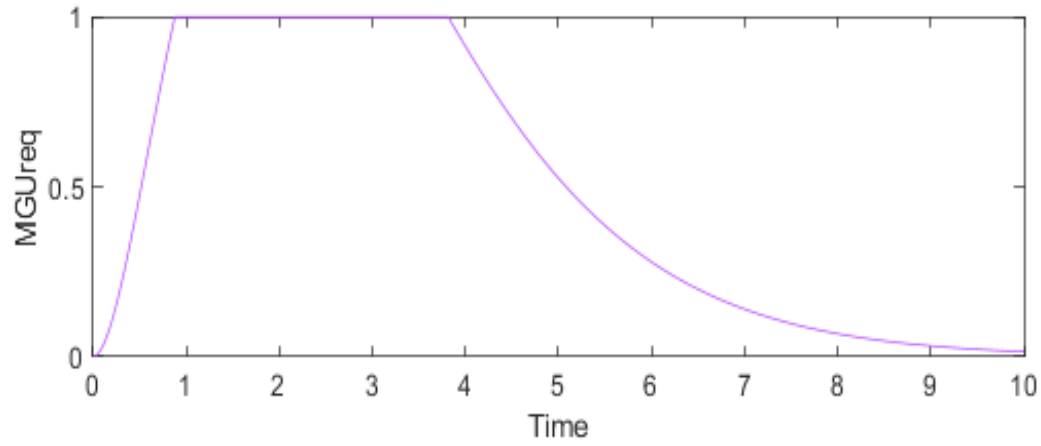
Name	Data Type	Units	Sample Time	Interp	Sync
ICreq	double		Continuous	linear	union
MGUreq	double		Continuous	linear	union





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Simulation Logs:
Simulation stopped at '10' because there is no input data after this time point.

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Test Logs:
No baseline criteria evaluation performed as no baseline data is available for this test.

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