Simulink Report: Tee_

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Model - Tee_

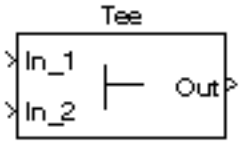


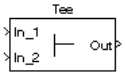
Tabelle 1.1. Tee_ Simulation Parameters

Solver ode14x	*ZeroCross* on	*StartTime* 0.0*StopTime* 10.0
RelTol 1e-3	*AbsTol* auto	*Refine* 1
InitialStep auto	*FixedStep* auto	*MaxStep* auto

Tabelle 1.2. Tee_ Summary Information

NumModelInputs	N/A	*NumModelOutputs*	N/A
NumVirtualSubsystems	N/A	*NumNonvirtSubsystems*	N/A
NumNonVirtBlocksInModel	N/A	*NumBlockTypeCounts*	N/A
NumBlockSignals	N/A	*NumBlockParams*	N/A
NumZCEvents	N/A	*NumNonsampledZCs*	N/A

Systems

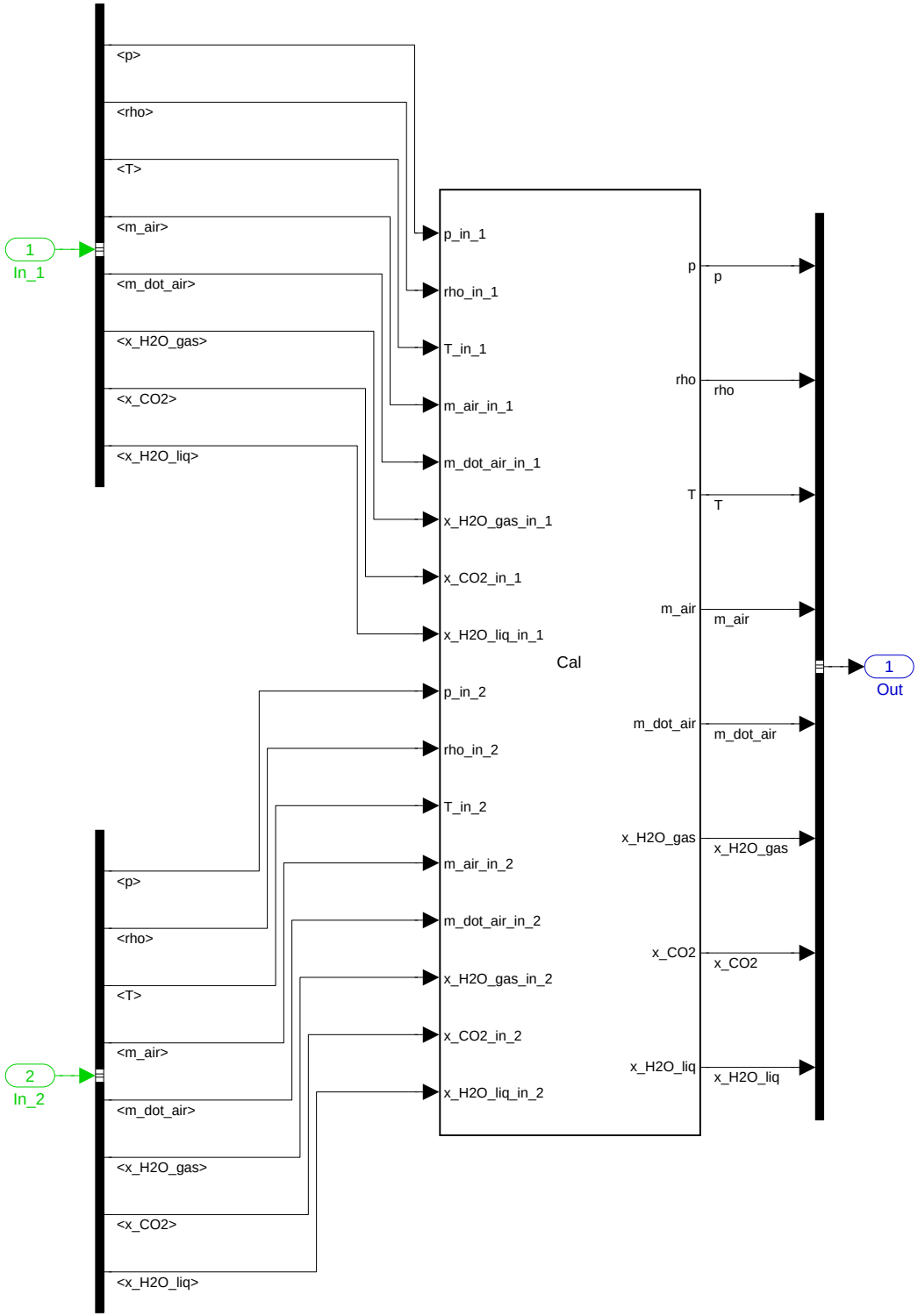
Name	Parent	Snapshot	Blocks	Signals
Tee_	<root>		Tee	Tee<1>

Blocks

Tabelle 1.3. Block Type Count

BlockType	Count	Block Names
Inport	18	In_1, In_2, p_in_1, rho_in_1, T_in_1, m_air_in_1, m_dot_air_in_1, x_H2O_gas_in_1, x_CO2_in_1, x_H2O_liq_in_1, p_in_2, rho_in_2, T_in_2, m_air_in_2, m_dot_air_in_2, x_H2O_gas_in_2, x_CO2_in_2, x_H2O_liq_in_2
Outport	9	p, rho, T, m_air, m_dot_air, x_H2O_gas, x_CO2, x_H2O_liq, Out
BusSelector	2	Bus Selector1, Bus Selector16
Terminator	1	Terminator

BlockType	Count	Block Names
SubSystem	1	Tee
Stateflow (m)	1	Embedded MATLA Function
S-Function	1	SFunction
Demux	1	Demux
BusCreator	1	Bus Creator1


1
In_1
<p>
<rho>
<T>
<m_air>
<m_dot_air>
<x_H2O_gas>
<x_CO2>
<x_H2O_liq>
p_in_1
rho_in_1
T_in_1
m_air_in_1
m_dot_air_in_1
x_H2O_gas_in_1
x_CO2_in_1
x_H2O_liq_in_1
p_in_2
rho_in_2
T_in_2
m_air_in_2
m_dot_air_in_2
x_H2O_gas_in_2
x_CO2_in_2
x_H2O_liq_in_2
Cal
p
rho
T
m_air
m_dot_air
x_H2O_gas
x_CO2
x_H2O_liq
1
Out
2
In_2

```
function [p,rho,T,m_air,m_dot_air,x_H2O_gas,x_CO2,x_H2O_liq]=Cal(p_in_1,rho_in_1,↙
T_in_1,m_air_in_1,m_dot_air_in_1,x_H2O_gas_in_1,x_CO2_in_1,x_H2O_liq_in_1,p_in_2,↙
rho_in_2,T_in_2,m_air_in_2,m_dot_air_in_2,x_H2O_gas_in_2,x_CO2_in_2,x_H2O_liq_in_2)

% ************************************************************************
% * Definition of a tee
% *
% * Number of Inputs : 2
% *
% * Parameter : Threshold Equality Input/Output Pressures
% *
% *
% * Relevant input variables of Tee
% *
% * pressure :               p
% * density :                rho
% * temperature :            T
% * mass dry air :           m_air
% * mass flow dry air :      m_dot_air
% * content water vapor :    x_H2O_gas
% * content CO2 :            x_CO2
% * content water :          x_H2O_liq
% *
% *
% * Relevant output variables of Tee
% *
% * pressure :               p
% * density :                rho
% * temperature :            T
% * mass dry air :           m_air
% * mass flow dry air :      m_dot_air
% * content water vapor :    x_H2O_gas
% * content CO2 :            x_CO2
% * content water :          x_H2O_liq
% *
% ************************************************************************
% * Embedded MATLAB Function Cal:
% *
% * Calculations:
% * 1. Initialization.
% * 2. Mixing.
% *
% *
% * Last modification : 15.03.2008
% * Author : Christian Müller(HAW)
% *
% ************************************************************************

% * 1. Initialization
p           =0;
rho         =0;
T           =0;
m_air       =0;
m_dot_air   =0;
x_H2O_gas   =0;
x_CO2       =0;
```

```
x_H2O_liq    =0;
% ************************************************************************

% * 2. Mixing
if abs(m_dot_air_in_1)+abs(m_dot_air_in_2)>0
   p         =(p_in_1*m_dot_air_in_1+p_in_2*m_dot_air_in_2)/↙
(m_dot_air_in_1+m_dot_air_in_2);
   rho       =(rho_in_1*m_dot_air_in_1+rho_in_2*m_dot_air_in_2)/↙
(m_dot_air_in_1+m_dot_air_in_2);
   T         =(T_in_1*m_dot_air_in_1+T_in_2*m_dot_air_in_2)/↙
(m_dot_air_in_1+m_dot_air_in_2);
   m_air     =(m_air_in_1*m_dot_air_in_1+m_air_in_2*m_dot_air_in_2)/↙
(m_dot_air_in_1+m_dot_air_in_2);
   m_dot_air =(m_dot_air_in_1+m_dot_air_in_2);
   x_H2O_gas =(x_H2O_gas_in_1*m_dot_air_in_1+x_H2O_gas_in_2*m_dot_air_in_2)/↙
(m_dot_air_in_1+m_dot_air_in_2);
   x_CO2     =(x_CO2_in_1*m_dot_air_in_1+x_CO2_in_2*m_dot_air_in_2)/↙
(m_dot_air_in_1+m_dot_air_in_2);
   x_H2O_liq =(x_H2O_liq_in_1*m_dot_air_in_1+x_H2O_liq_in_2*m_dot_air_in_2)/↙
(m_dot_air_in_1+m_dot_air_in_2);
end

if abs(m_dot_air_in_1)+abs(m_dot_air_in_2)==0
   p         =(p_in_1+p_in_2)/2;
   rho       =(rho_in_1+rho_in_2)/2;
   T         =(T_in_1+T_in_2)/2;
   m_air     =(m_air_in_1+m_air_in_2)/2;
   m_dot_air =(m_dot_air_in_1+m_dot_air_in_2);
   x_H2O_gas =(x_H2O_gas_in_1+x_H2O_gas_in_2)/2;
   x_CO2     =(x_CO2_in_1+x_CO2_in_2)/2;
   x_H2O_liq =(x_H2O_liq_in_1+x_H2O_liq_in_2)/2;
end
% ************************************************************************
```