## Rectifier Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Author | Changes Made |
| 1 | 2014/07/02 | Michel Rejani Miyazaki | Initial |
|  |  |  |  |

## Model Hierarchy

This block is a subsystem of the GensetDC

## Description

The rectifier is a block that calculates the terminal voltage on the DC grid. This includes the control strategy for load sharing between generators on DC grids (this version is implemented with voltage droop).

### Implementation details

The generator output power is used to calculate the desired terminal voltage based on voltage droop.

Also, if the generator is disconnected, the output terminal voltage is set to the bus voltage.

## Parameters (include parameter identification)

|  |  |
| --- | --- |
| Name | Description |
| genset.rectifier.droop | 1x1 Real number, with the rectifier voltage droop |
| genset.rectifier.T | 1x1 Real number, Time constant of the rectifier voltage dynamics |
| genset.rectifier.v\_noload | 1x1 Real number, describing the no load rectifier voltage output |

## Input

### Ports

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Name | Dimension | Unit | Description |
| 1 | p, pu | 1x1 | (Per unit) | Power delivered by the generator |
| 2 | Bus voltage, pu | 1x1 | (Per unit) | Bus DC voltage, defined by the switchboard |

### From

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Dimension | Unit | Description |
| Connected | 1x1 | Bool | Informs if the generator is connected |

## Output

### Ports

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Name | Dimension | Unit | Description |
| 1 | Vf | 1x1 | (Per unit) | Generator output terminal voltage |

## Limitation

This rectifier model uses the voltage droop control for power sharing, but more controllers could be further developed (see Pinto et. al. 2011 for more control strategies).

## Validation

N/A

## Comments

## Reference

R. T. Pinto , S. F. Rodrigues , P. Bauer and J. Pierik "Comparison of direct voltage control methods of multi-terminal DC (MTDC) networks through modular dynamic models", Proc. 14th EPE, pp.1 -10 2011