

## ANEXO 1 TERMOTASAJERO I

### 1. Curva de Saturación y Parámetros del Generador.

Main Flux Saturation Tabular Input

Saturation Parameter →

No load saturation:

|     | Tem. volta...<br>p.u. | SG(u)<br>p.u. | ifd<br>% |
|-----|-----------------------|---------------|----------|
| ▶ 1 | 0.1                   | 0,00092135    | 10,00921 |
| 2   | 0.2                   | 0,0010407     | 20,02081 |
| 3   | 0.3                   | 0,00156736    | 30,04702 |
| 4   | 0.4                   | 0,00265559    | 40,10622 |
| 5   | 0.5                   | 0,00479934    | 50,23997 |
| 6   | 0.6                   | 0,00903508    | 60,5421  |
| 7   | 0.7                   | 0,01749512    | 71,22466 |

Smoothing factor  %

Main Flux Saturation Tabular Input

Saturation Parameter →

No load saturation:

|    | Tem. volta...<br>p.u. | SG(u)<br>p.u. | ifd<br>% |
|----|-----------------------|---------------|----------|
| 7  | 0.7                   | 0,01749512    | 71,22466 |
| 8  | 0.8                   | 0,0345825     | 82,7666  |
| 9  | 0.85                  | 0,04892076    | 89,15826 |
| 10 | 0.9                   | 0,0694441     | 96,24997 |
| 11 | 0.95                  | 0,09888263    | 104,3939 |
| 12 | 1.                    | 0,1411918     | 114,1192 |
| 13 | 1.05                  | 0,2021091     | 126,2215 |

Smoothing factor  %

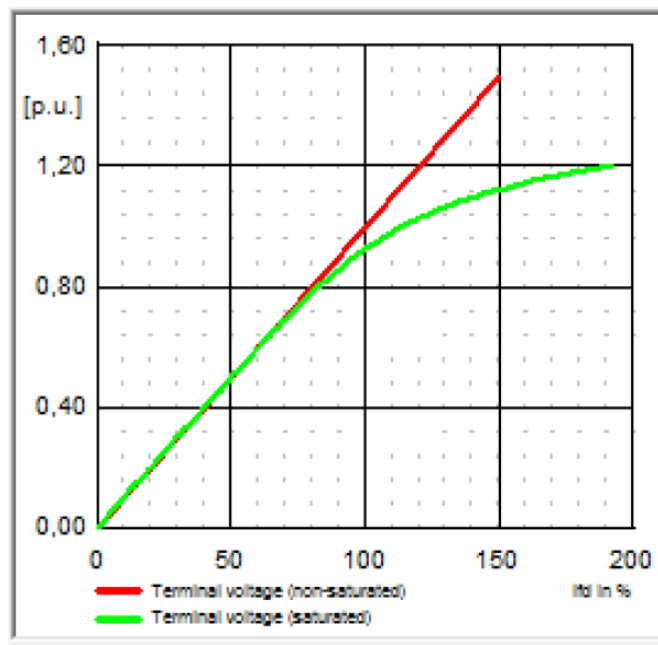
Main Flux Saturation Tabular Input

Saturation Parameter →

No load saturation:

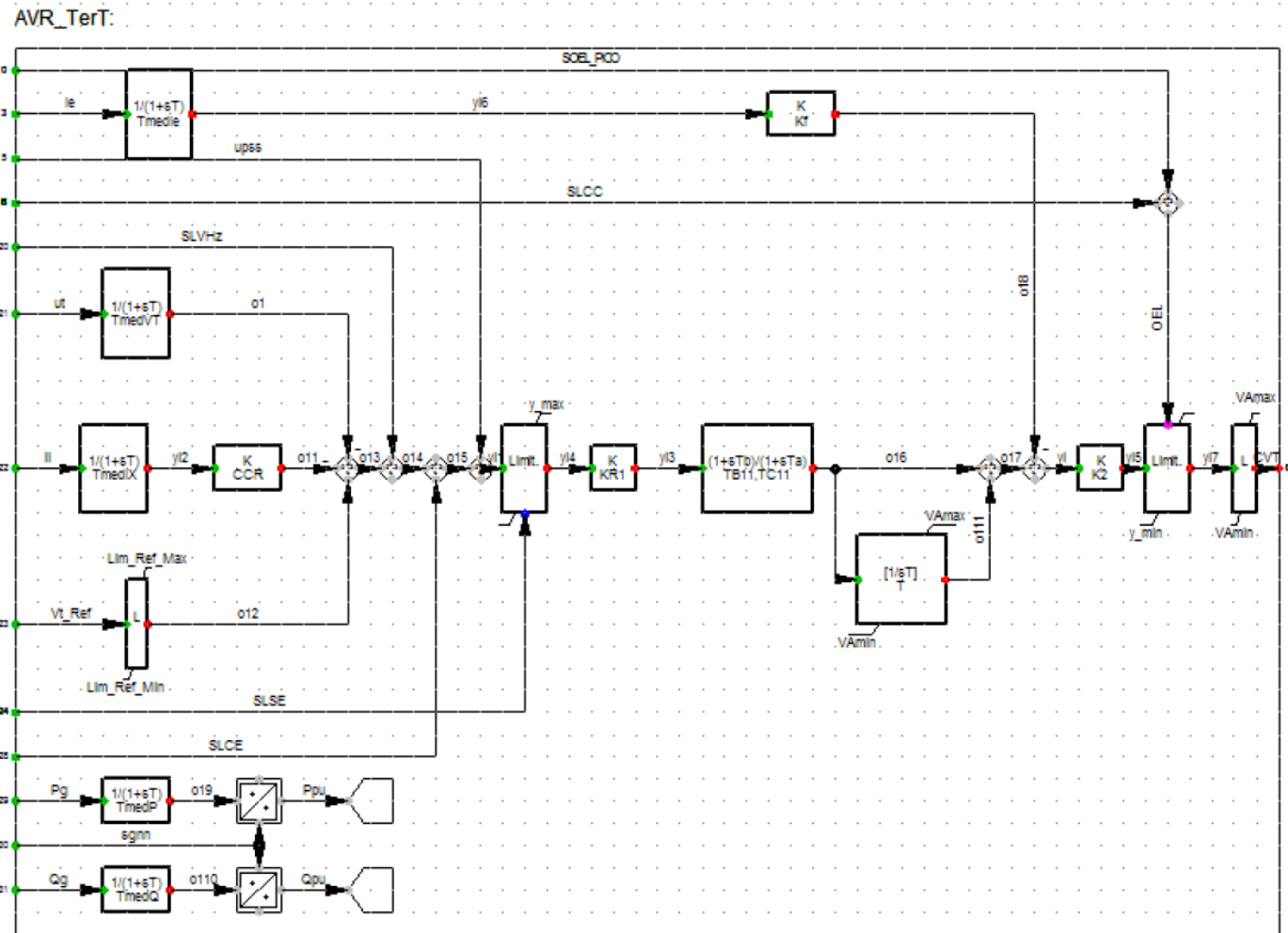
|    | Tem. volta...<br>p.u. | SG(u)<br>p.u. | ifd<br>% |
|----|-----------------------|---------------|----------|
| 13 | 1.05                  | 0,2021091     | 126,2215 |
| 14 | 1.1                   | 0,2899667     | 141,8963 |
| 15 | 1.15                  | 0,4168778     | 162,9409 |
| 16 | 1.2                   | 0,6004697     | 192,0564 |

Smoothing factor  %



|  |  |   |
|--|--|---|
| <b>Inertia</b>                               |  | ➔ |
| Inertia Time Constant (rated to Sgn) H       | <input type="text" value="3.9"/> s     |   |
| Mechanical Damping                           | <input type="text" value="0."/> p.u.   |   |
| <b>Stator Resistance/Leakage Reactances</b>  |  |   |
| rstr   | <input type="text" value="0."/> p.u.   |   |
| xl   | <input type="text" value="0.14"/> p.u. |   |
| xrl  | <input type="text" value="0."/> p.u.   |   |
| <b>Rotor Type</b>                            |  |   |
| <input type="radio"/> Salient pole           |  |   |
| <input checked="" type="radio"/> Round Rotor |  |   |
| <b>Synchronous Reactances</b>                |  |   |
| xd   | <input type="text" value="1.72"/> p.u. |   |
| xq   | <input type="text" value="1.55"/> p.u. |   |
| <b>Transient Time Constants</b>              |  | ➔ |
| Td0'   | <input type="text" value="7.1"/> s     |   |
| Tq0'   | <input type="text" value="0.35"/> s    |   |
| <b>Transient Reactances</b>                  |  |   |
| xd'  | <input type="text" value="0.26"/> p.u. |   |
| xq'  | <input type="text" value="0.6"/> p.u.  |   |
| <b>Subtransient Time Constants</b>           |  | ➔ |
| Td0''  | <input type="text" value="0.04"/> s    |   |
| Tq0''  | <input type="text" value="0.06"/> s    |   |
| <b>Subtransient Reactances</b>               |  |   |
| xd''   | <input type="text" value="0.22"/> p.u. |   |
| xq''   | <input type="text" value="0.24"/> p.u. |   |

2. Diagrama de bloques del sistema de excitación.



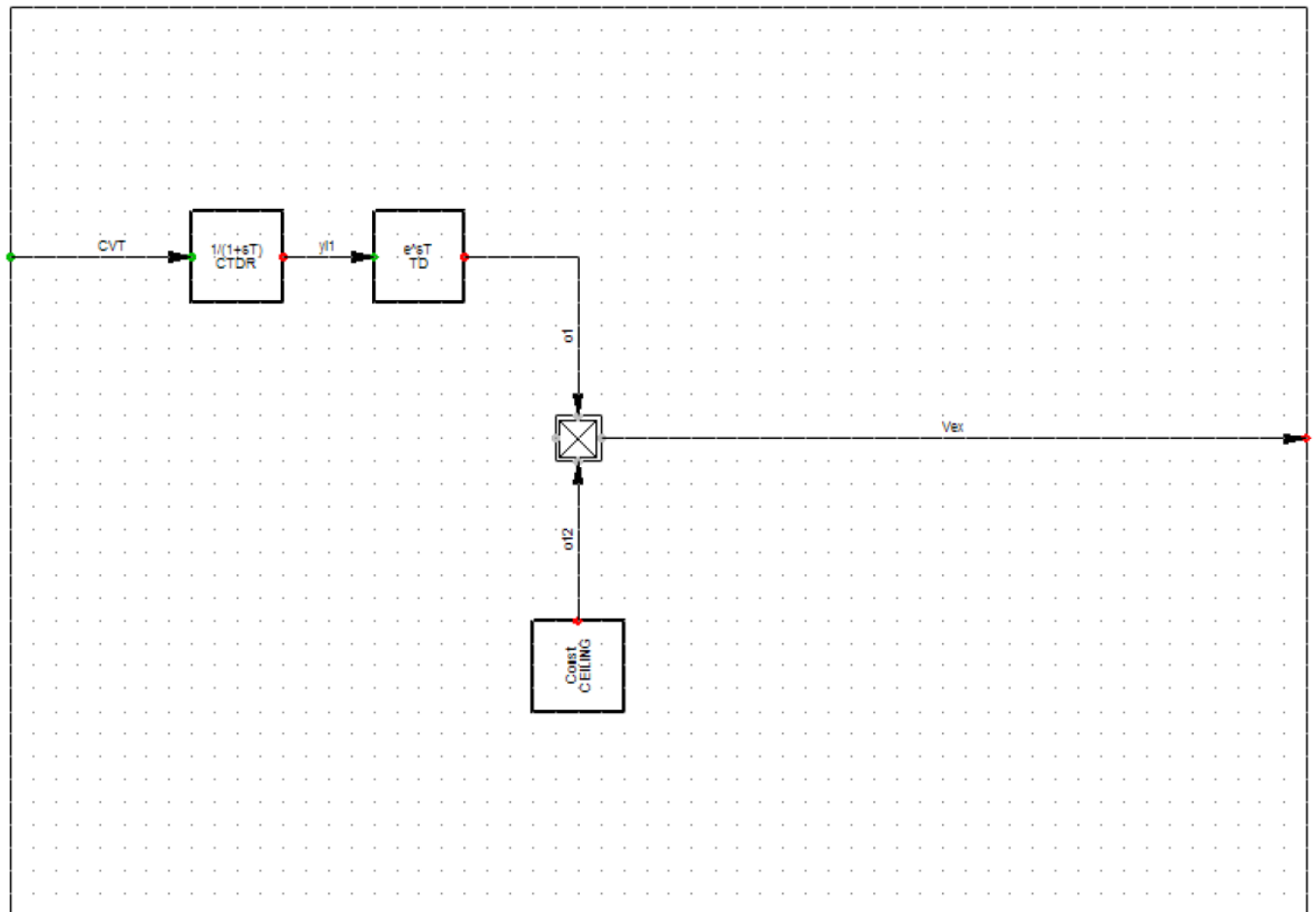
3. Parámetros del sistema de excitación.

|               |                 |
|---------------|-----------------|
| <b>TmedIX</b> | <b>0,005000</b> |
| <b>TmedVT</b> | 0,005000        |
| <b>Tmedle</b> | 0,005000        |
| <b>CCR</b>    | 0,000000        |
| <b>KR1</b>    | 17,500000       |
| <b>TB11</b>   | 0,750000        |
| <b>TC11</b>   | 4,140000        |
| <b>TmedP</b>  | 0,020000        |
| <b>TmedQ</b>  | 0,020000        |
| <b>K2</b>     | 10,000000       |
| <b>Kf</b>     | 0,075000        |
| <b>T</b>      | 20,000000       |

|                    |           |
|--------------------|-----------|
| <b>Lim_Ref_Min</b> | 0,850000  |
| <b>VAmin</b>       | -0,642800 |
| <b>y_min</b>       | -1,000000 |
| <b>y_max</b>       | 1,000000  |
| <b>Lim_Ref_Max</b> | 1,100000  |
| <b>VAmax</b>       | 0,984800  |

4. Diagrama de bloques del conversor de potencia.

DRIVE\_TerT:

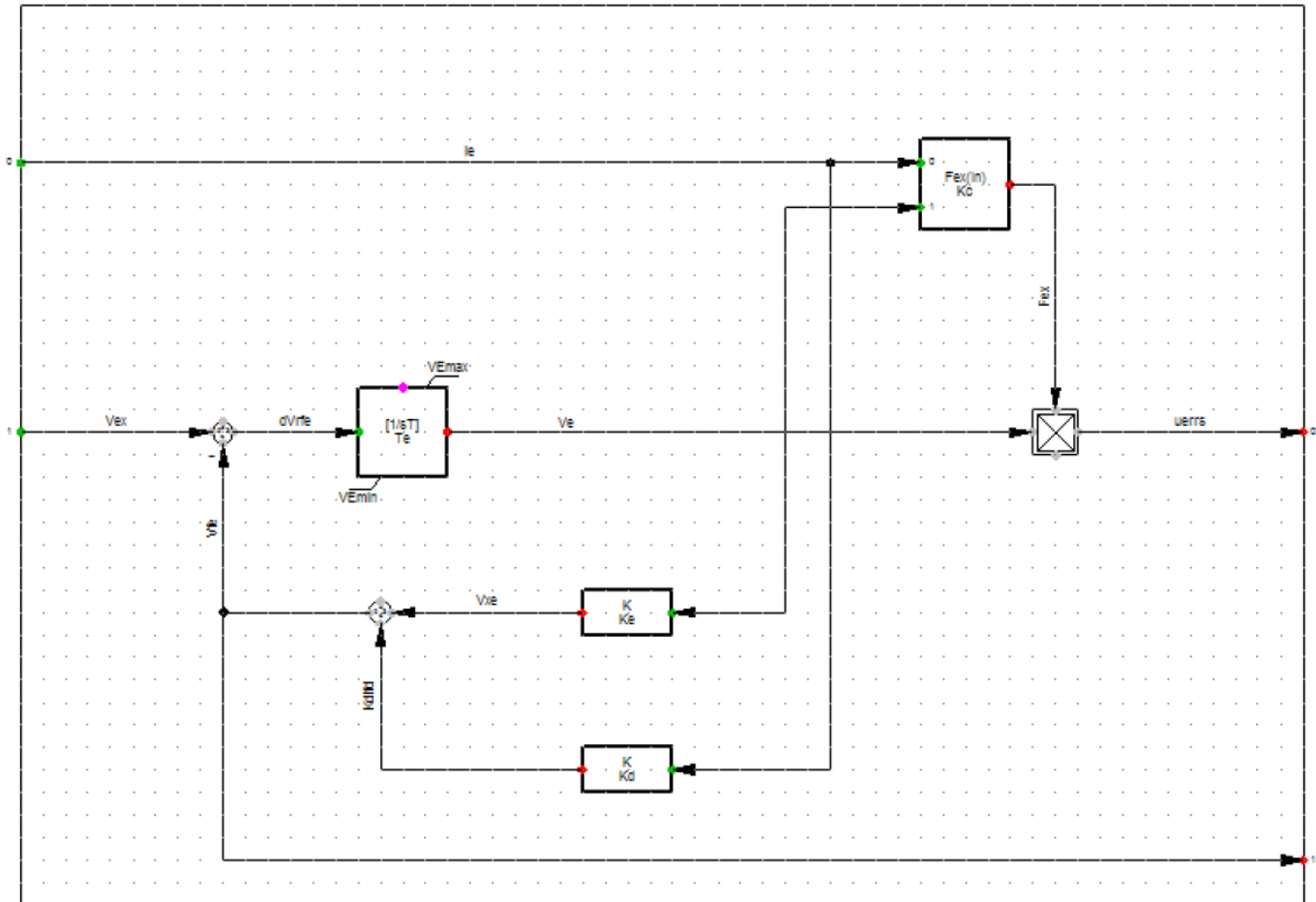


5. Parámetros del conversor de potencia.

|         |           |
|---------|-----------|
| CTDR    | 0,005000  |
| TD      | 0,005000  |
| CEILING | 15,000000 |

6. Diagrama de bloques de la excitatriz.

EXCITATRIZ\_TerT:

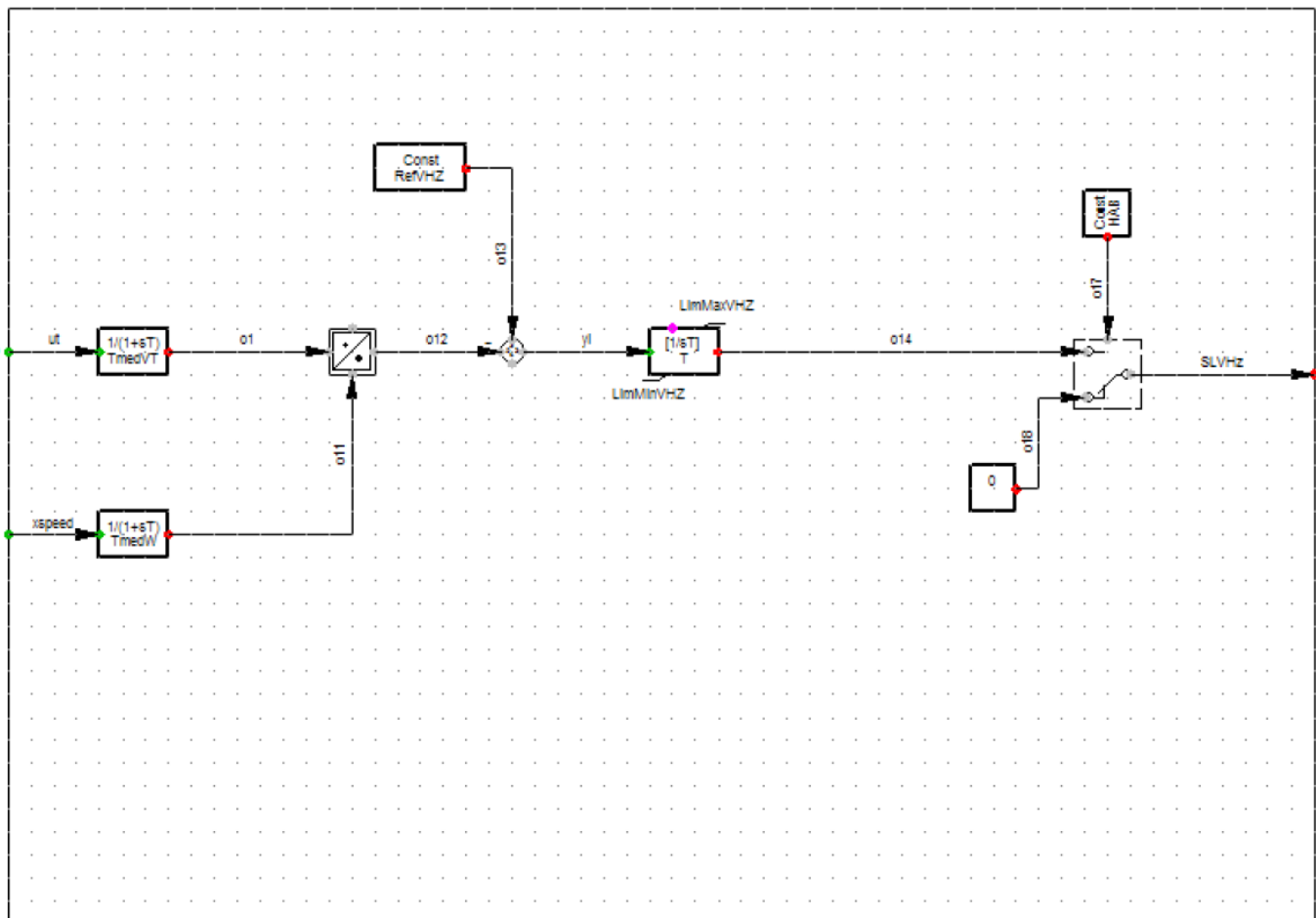


7. Parámetros de la excitatriz.

|              |                 |
|--------------|-----------------|
| <b>Te</b>    | <b>0,810000</b> |
| <b>Ke</b>    | 0,700000        |
| <b>Kd</b>    | 0,300000        |
| <b>Kc</b>    | 0,100000        |
| <b>VEmin</b> | 0,000000        |
| <b>VEmax</b> | 10,000000       |

### 8. Diagrama de bloques del limitador VHZ.

LVHZ:

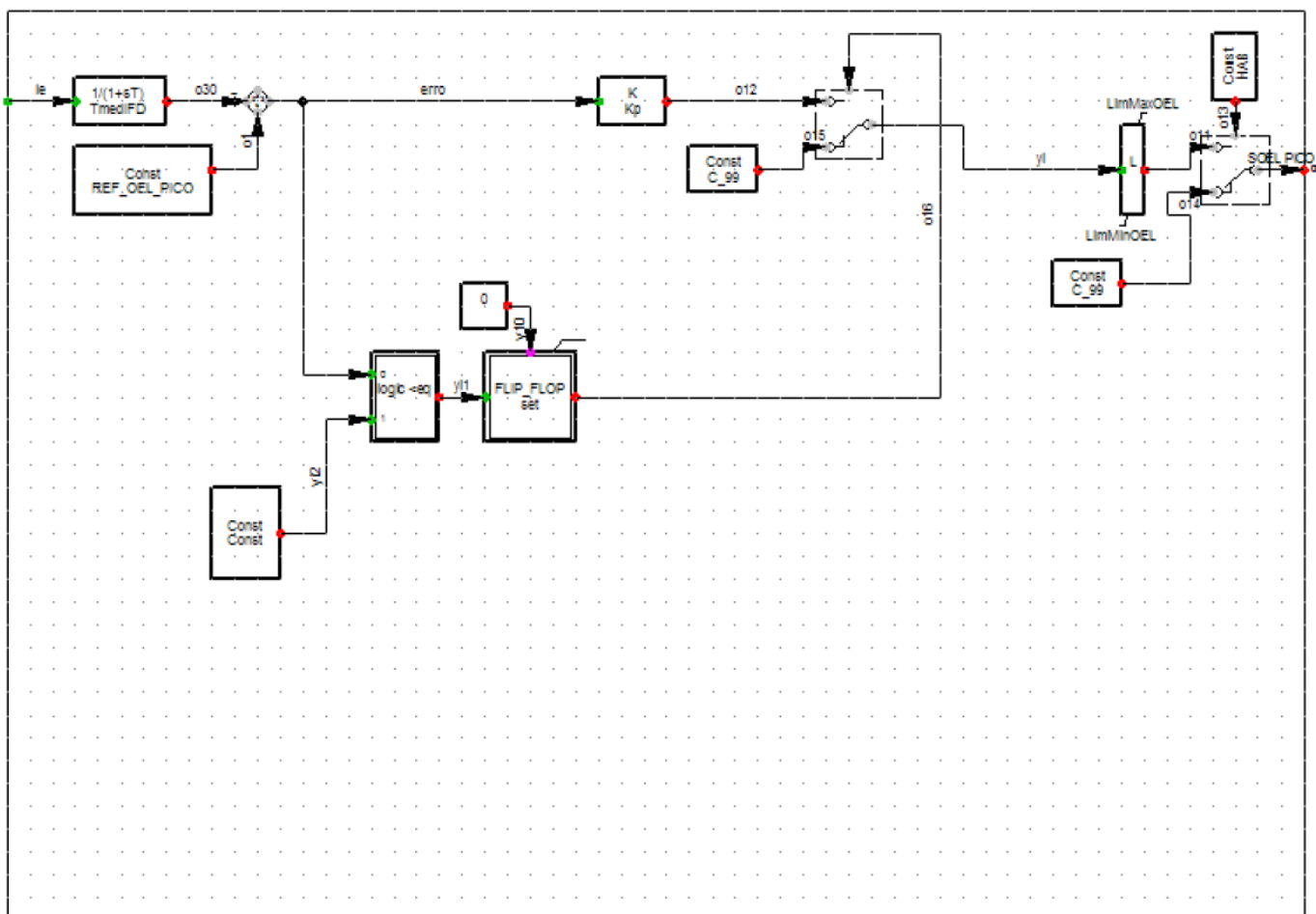


### 9. Parámetros del limitador VHZ.

|                  |                 |
|------------------|-----------------|
| <b>TmedVT</b>    | <b>0,020000</b> |
| <b>TmedW</b>     | 0,020000        |
| <b>RefVHZ</b>    | 1,050000        |
| <b>T</b>         | 5,000000        |
| <b>HAB</b>       | 1,000000        |
| <b>LimMinVHZ</b> | -5,000000       |
| <b>LimMaxVHZ</b> | 0,000000        |

10. Diagrama de bloques del limitador OEL Pico.

OEL\_PICO:



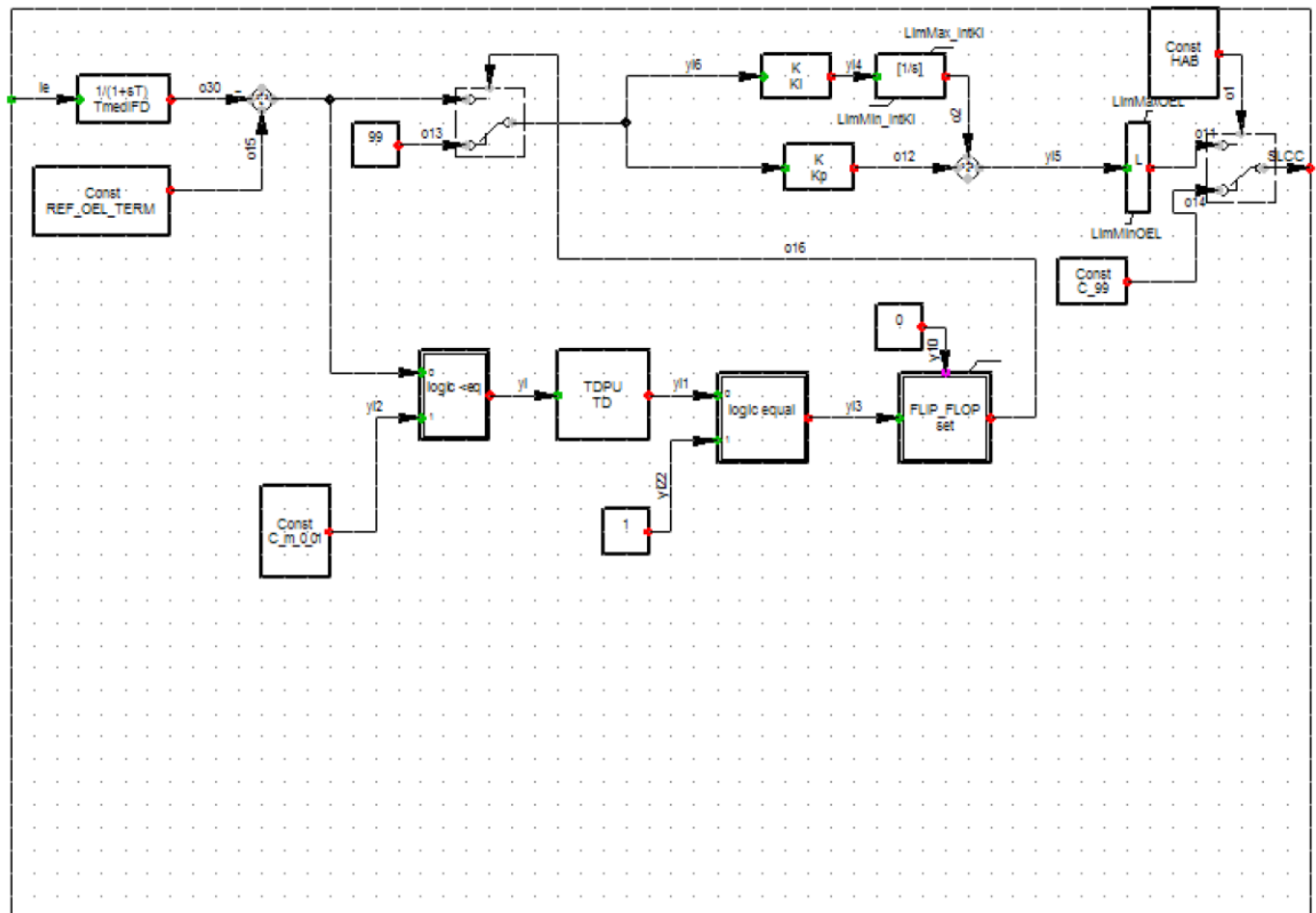
11. Parámetros del limitador OEL Pico.



|                     |                 |
|---------------------|-----------------|
| <b>REF_OEL_PICO</b> | <b>5,980000</b> |
| <b>Kp</b>           | 1,000000        |
| <b>TmedIFD</b>      | 0,020000        |
| <b>HAB</b>          | 1,000000        |
| <b>C_99</b>         | 99,000000       |
| <b>Const</b>        | 99,000000       |
| <b>set</b>          | 0,500000        |
| <b>LimMinOEL</b>    | -5,000000       |
| <b>LimMaxOEL</b>    | 1,000000        |

12. Diagrama de bloques del limitador OEL.

OEL:

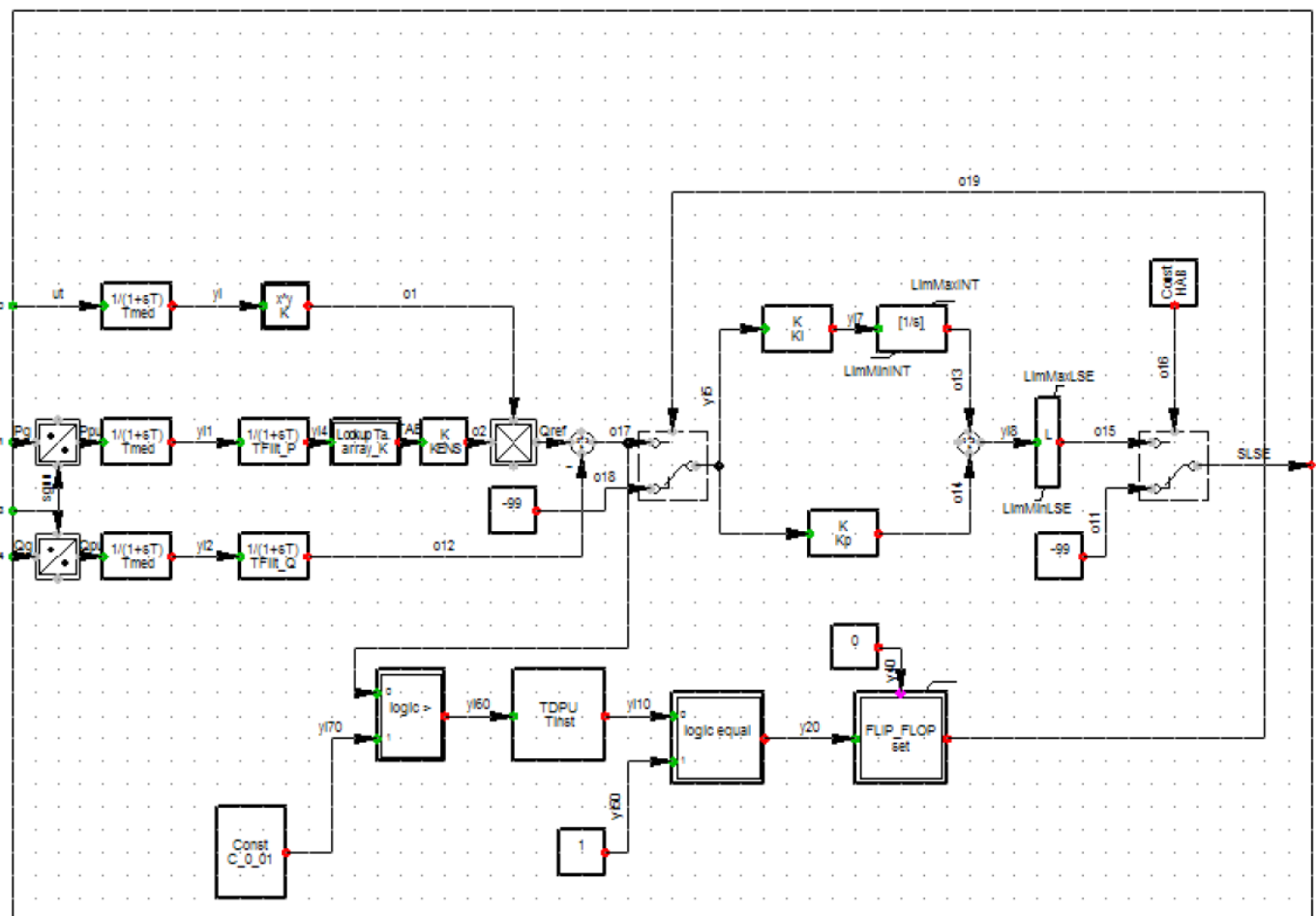


13. Parámetros del limitador OEL.

|                     |                 |
|---------------------|-----------------|
| <b>REF_OEL_TERM</b> | <b>2,750000</b> |
| <b>Ki</b>           | 2,000000        |
| <b>Kp</b>           | 0,500000        |
| <b>TmedIFD</b>      | 0,020000        |
| <b>TD</b>           | 10,000000       |
| <b>HAB</b>          | 1,000000        |
| <b>C_m_0_01</b>     | -0,010000       |
| <b>C_99</b>         | 99,000000       |
| <b>set</b>          | 0,500000        |
| <b>LimMin_IntKi</b> | -5,000000       |
| <b>LimMinOEL</b>    | -5,000000       |
| <b>LimMax_IntKi</b> | 0,000000        |
| <b>LimMaxOEL</b>    | 0,000000        |

14. Diagrama de bloques del limitador UEL

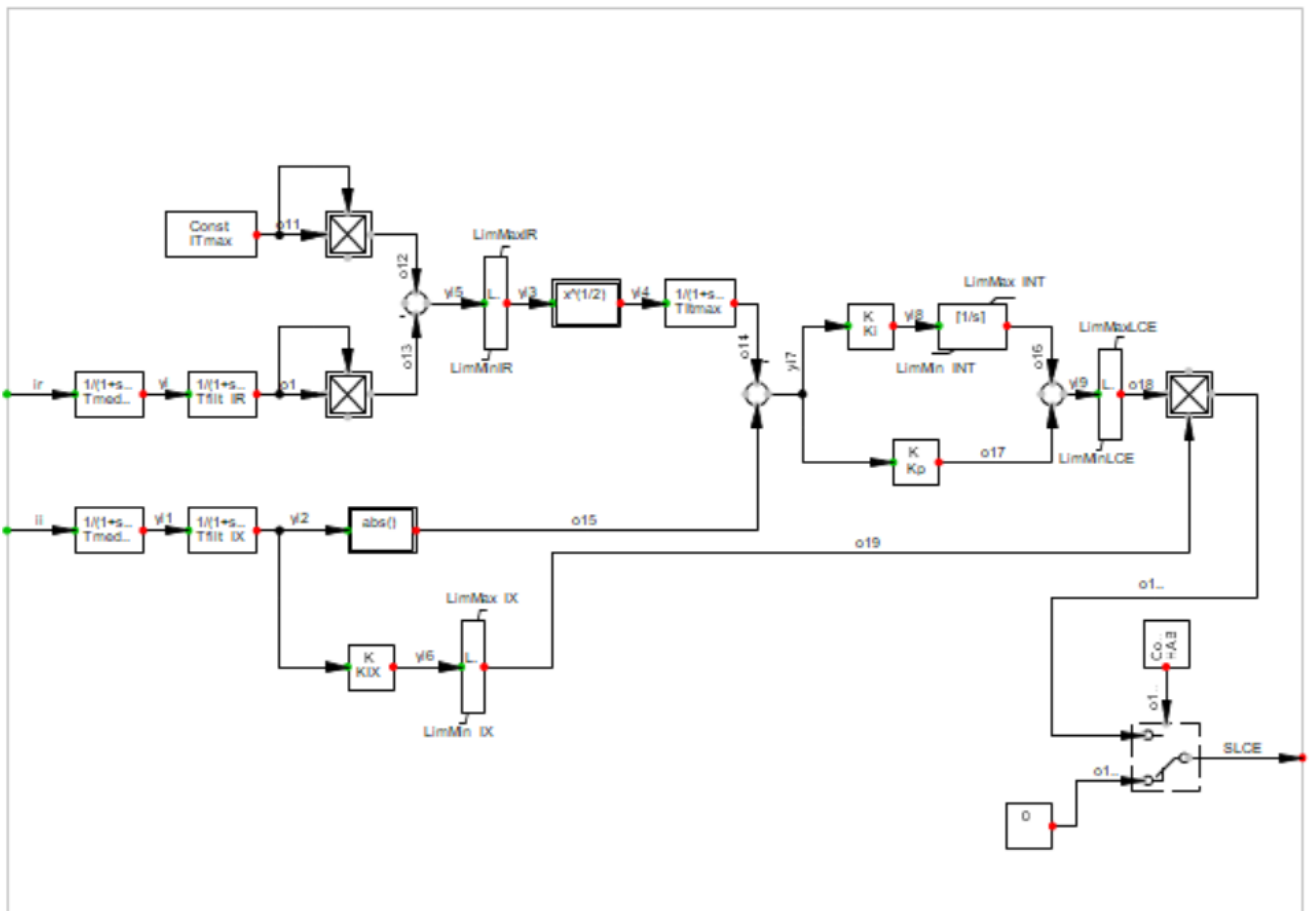
UEL:



15. Parámetros del limitador UEL

|                  |                 |
|------------------|-----------------|
| <b>Tmed</b>      | <b>0,010000</b> |
| <b>TFilt_P</b>   | 0,010000        |
| <b>TFilt_Q</b>   | 0,010000        |
| <b>Ki</b>        | 0,000000        |
| <b>Kp</b>        | 0,100000        |
| <b>HAB</b>       | 1,000000        |
| <b>Tinst</b>     | 0,050000        |
| <b>C_0_01</b>    | 0,010000        |
| <b>K</b>         | 2,000000        |
| <b>KENS</b>      | 1,000000        |
| <b>set</b>       | 0,500000        |
| <b>LimMinINT</b> | 0,000000        |
| <b>LimMinLSE</b> | -1,000000       |
| <b>LimMaxINT</b> | 5,000000        |
| <b>LimMaxLSE</b> | 5,000000        |
|                  |                 |
| <b>K_x</b>       | <b>K_y</b>      |
| <b>0</b>         | -0,472          |
| <b>0,5</b>       | -0,355          |
| <b>1</b>         | -0,212          |
| <b>1,2</b>       | -0,162          |

16. Diagrama de bloques del limitador SCL

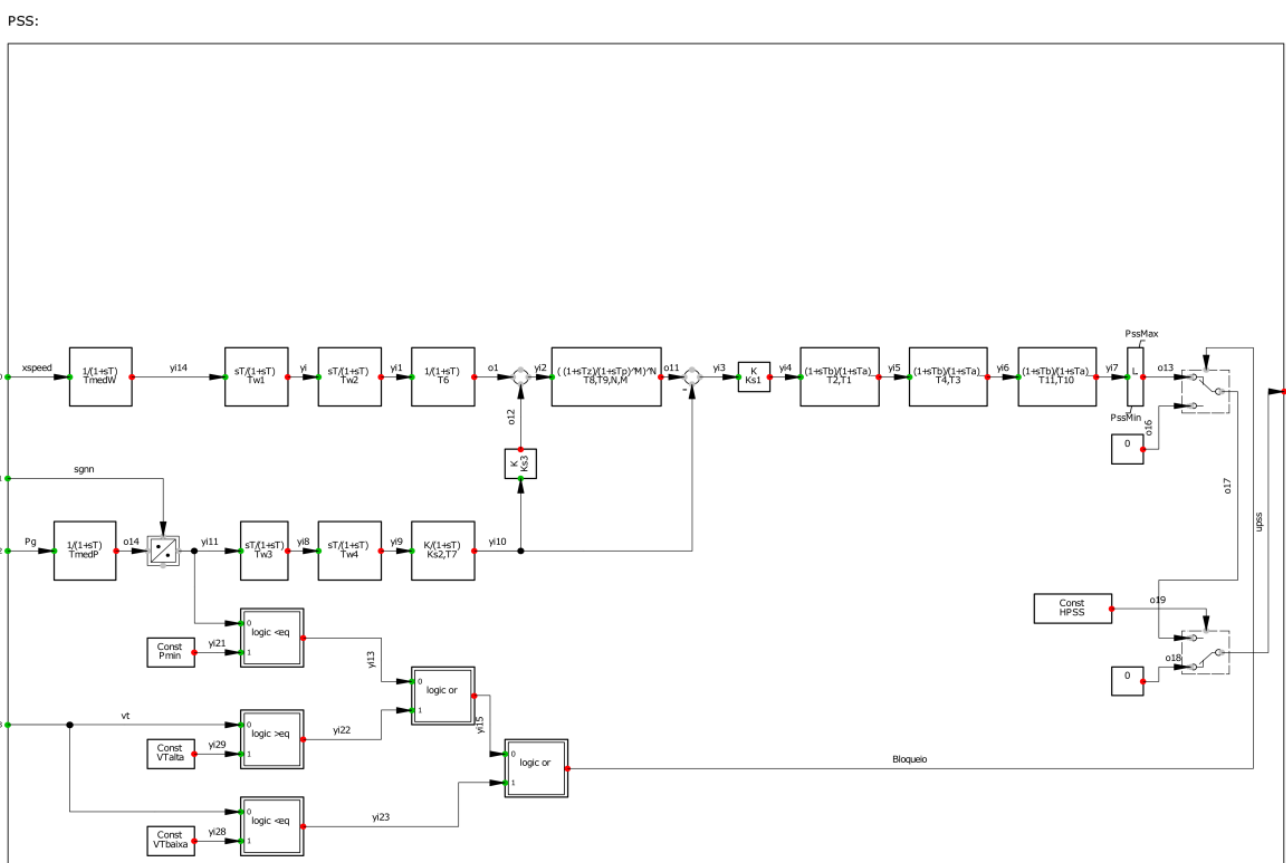


17. Parámetros del limitador SCL

|          |       |
|----------|-------|
| TmedIR   | 0,02  |
| TmedIX   | 0,02  |
| Tfilt_IR | 0,01  |
| Tfilt_IX | 0,01  |
| ITmax    | 1,03  |
| Tltmax   | 0,005 |
| KIX      | 0,4   |
| Ki       | 0,2   |
| Kp       | 0,1   |

|            |      |
|------------|------|
| HAB        | 0    |
| LimMinIR   | 0,01 |
| LimMin_IX  | -1   |
| LimMin_INT | 0    |
| LimMinLCE  | 0    |
| LimMaxIR   | 10   |
| LimMax_IX  | 1    |
| LimMax_INT | 10   |

18. Diagrama de bloques del Estabilizador de Sistema de Potencia.



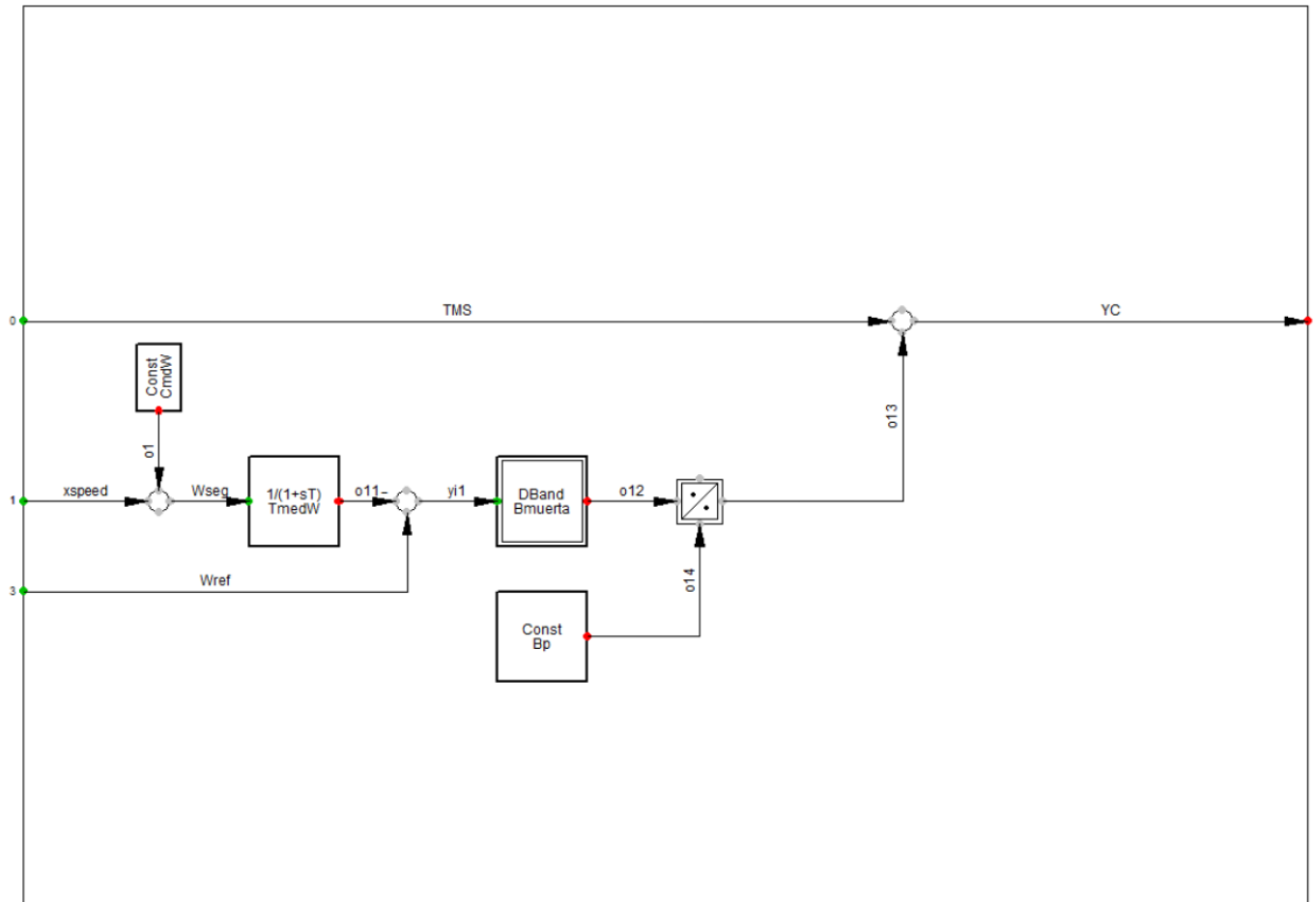
19. Parámetros del Estabilizador de Sistema de Potencia.

|            |                 |
|------------|-----------------|
| <b>Tw1</b> | <b>2,000000</b> |
| <b>Tw2</b> | 2,000000        |
| <b>T6</b>  | 0,000000        |
| <b>Tw3</b> | 2,000000        |
| <b>Tw4</b> | 1000,000000     |
| <b>Ks2</b> | 0,245000        |
| <b>T7</b>  | 2,000000        |
| <b>Ks3</b> | 1,000000        |
| <b>T8</b>  | 0,400000        |
| <b>T9</b>  | 0,100000        |
| <b>N</b>   | 1,000000        |
| <b>M</b>   | 4,000000        |

|                |           |
|----------------|-----------|
| <b>Ks1</b>     | 5,000000  |
| <b>T2</b>      | 0,030000  |
| <b>T1</b>      | 0,470000  |
| <b>T4</b>      | 0,030000  |
| <b>T3</b>      | 0,470000  |
| <b>T11</b>     | 2,000000  |
| <b>T10</b>     | 0,470000  |
| <b>TmedW</b>   | 0,005000  |
| <b>TmedP</b>   | 0,005000  |
| <b>Pmin</b>    | 0,300000  |
| <b>VTalta</b>  | 1,100000  |
| <b>VTbaixa</b> | 0,900000  |
| <b>HPSS</b>    | 1,000000  |
| <b>PssMin</b>  | -0,050000 |
| <b>PssMax</b>  | 0,050000  |

## 20. Diagramas de bloques y parámetros del Control de Velocidad.

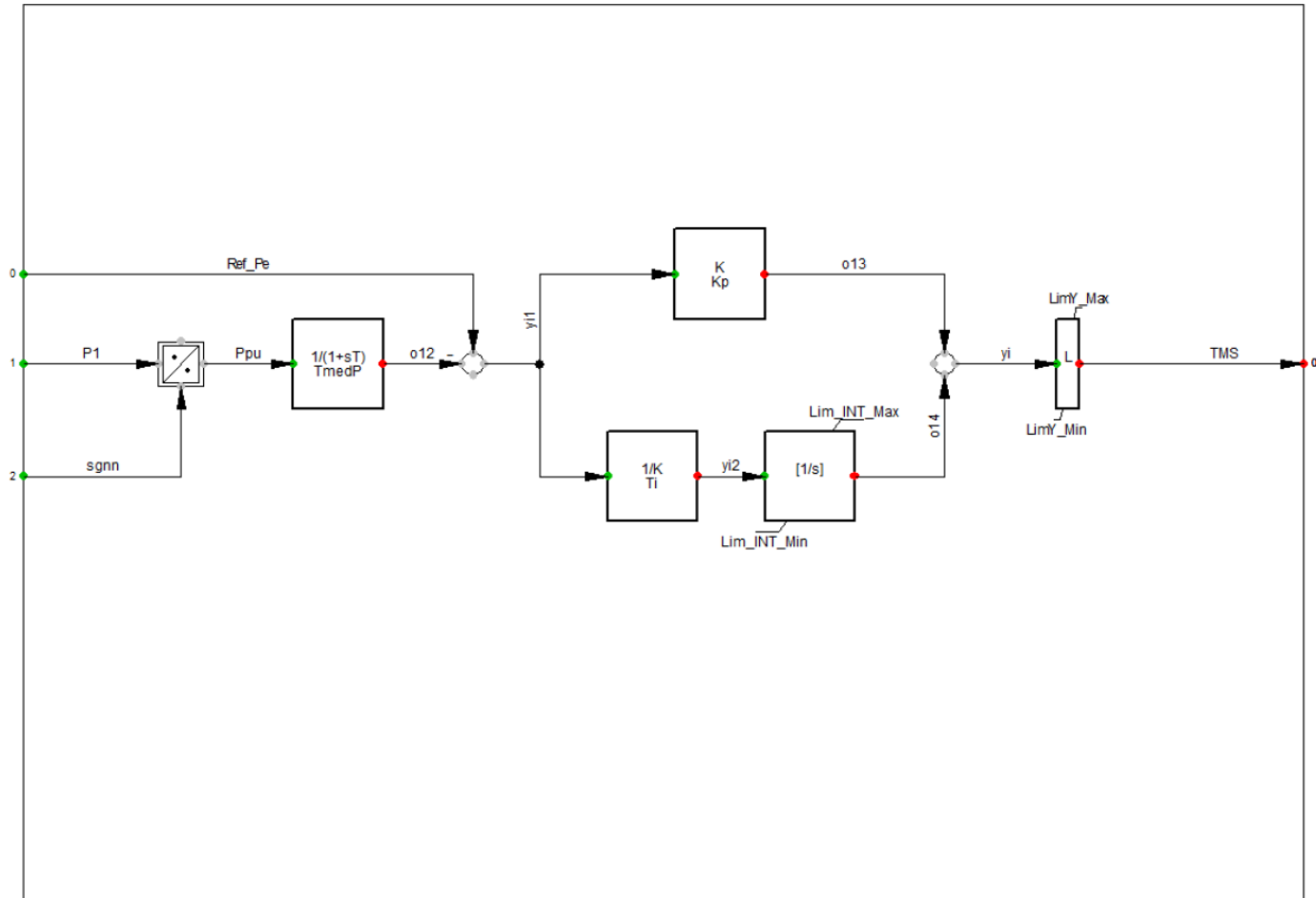
IMP\_CONTROLLER:



|                |                 |
|----------------|-----------------|
| <b>TmedW</b>   | <b>0,050000</b> |
| <b>Bmuerta</b> | 0,000833        |
| <b>Bp</b>      | 0,050000        |
| <b>CmdW</b>    | 0,000000        |

## 21. Diagramas de bloques y parámetros del Control de Potencia.

TURBINA\_MASTER:

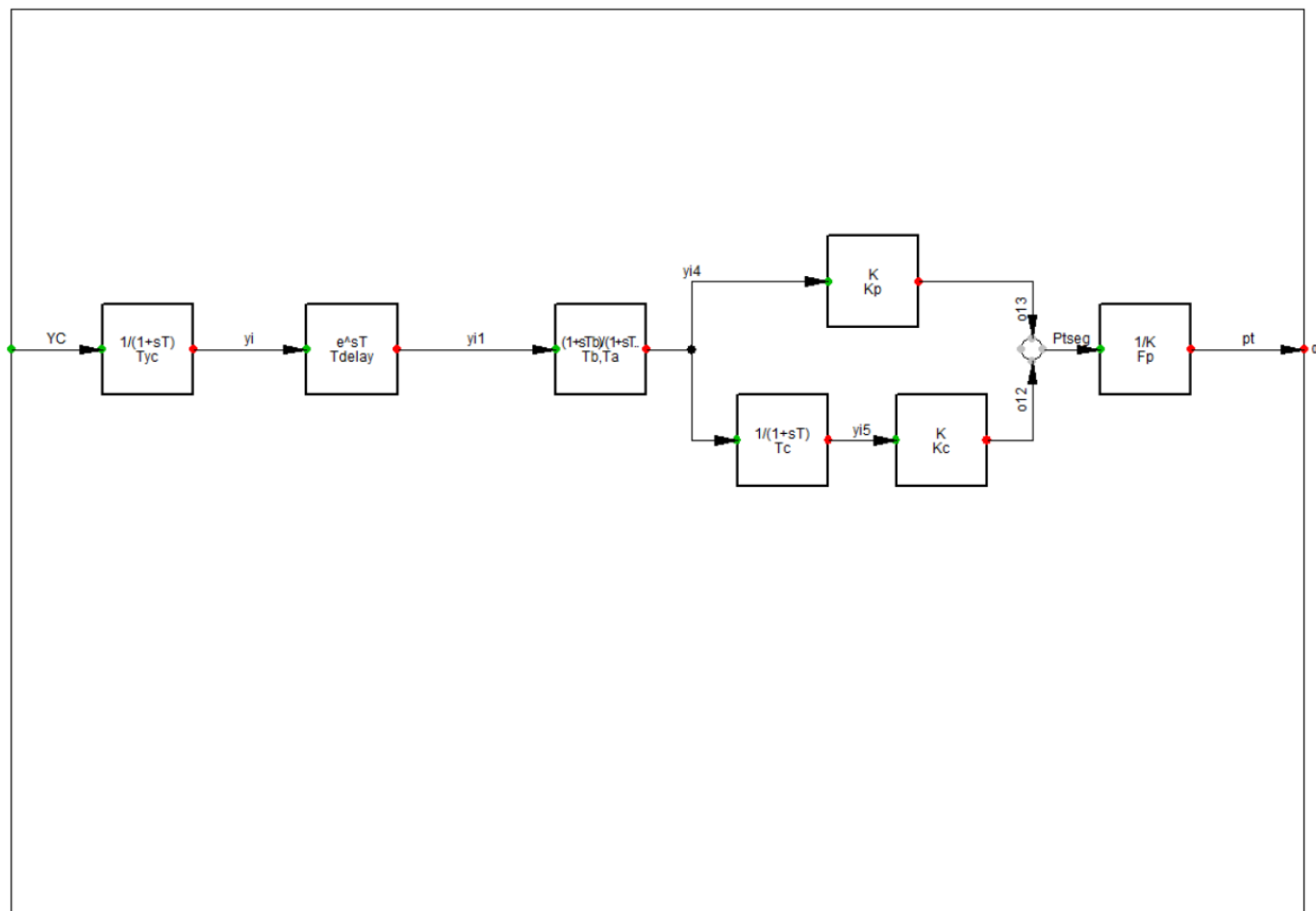




|                    |                   |
|--------------------|-------------------|
| <b>TmedP</b>       | <b>0,000000</b>   |
| <b>Kp</b>          | <b>0,150000</b>   |
| <b>Ti</b>          | <b>60,000000</b>  |
| <b>Lim_INT_Min</b> | <b>-10,000000</b> |
| <b>LimY_Min</b>    | <b>0,000000</b>   |
| <b>Lim_INT_Max</b> | <b>120,000000</b> |
| <b>LimY_Max</b>    | <b>0,860000</b>   |

22. Diagrama de bloques y parámetros de la Turbina.

TURBINA1:



|               |                 |
|---------------|-----------------|
| <b>Tyc</b>    | <b>1,750000</b> |
| <b>Tdelay</b> | 0,300000        |
| <b>Tb</b>     | 20,000000       |
| <b>Ta</b>     | 30,000000       |
| <b>Kp</b>     | 0,700000        |
| <b>Tc</b>     | 3,000000        |
| <b>Kc</b>     | 0,300000        |
| <b>Fp</b>     | 0,850000        |