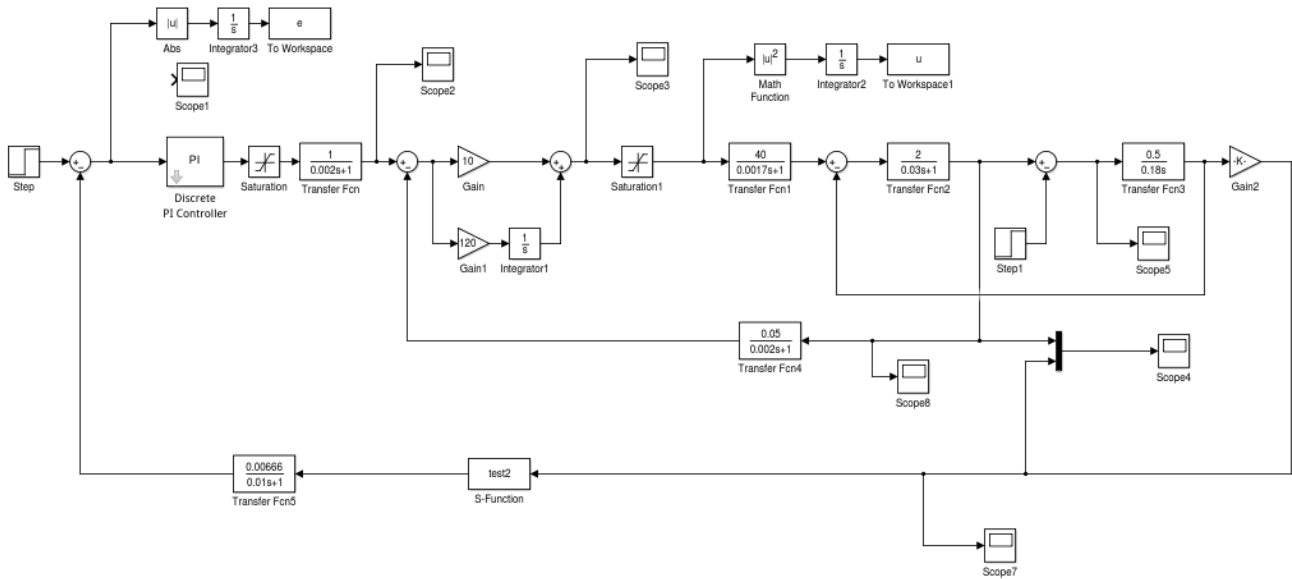


控制电流的S函数



```
function [sys,x0,str,ts,simStateCompliance] = sfundsc1(t,x,u,flag)
% $Revision: 1.1.6.2 $

dperiod = 10;
doffset = 0;

switch flag,

    %%%%%%%%%%%%%%%
    % Initialization %
    %%%%%%%%%%%%%%%
    case 0,
        [sys,x0,str,ts,simStateCompliance]=mdlInitializeSizes;

    %%%%%%%%%%%%%%%
    % Update %
    %%%%%%%%%%%%%%%
    case 2,
        sys = mdlUpdate(t,x,u);

    %%%%%%%%%%%%%%%
    % Output %
    %%%%%%%%%%%%%%%
    case 3,
        sys = mdlOutputs(t,x,u,doffset,dperiod);

    %%%%%%%%%%%%%%%
    % Terminate %
    %%%%%%%%%%%%%%%
    case 9,
        sys = [];

    otherwise
        DASTudio.error('Simulink:blocks:unhandledFlag', num2str(flag));
end
```

```
function [sys,x0,str,ts,simStateCompliance]=mdlInitializeSizes
```

```

sizes = simsizes;

sizes.NumContStates = 0;
sizes.NumDiscStates = 1;
sizes.NumOutputs = 1;
sizes.NumInputs = 1;
sizes.DirFeedthrough = 0;
sizes.NumSampleTimes = 1;

sys = simsizes(sizes);

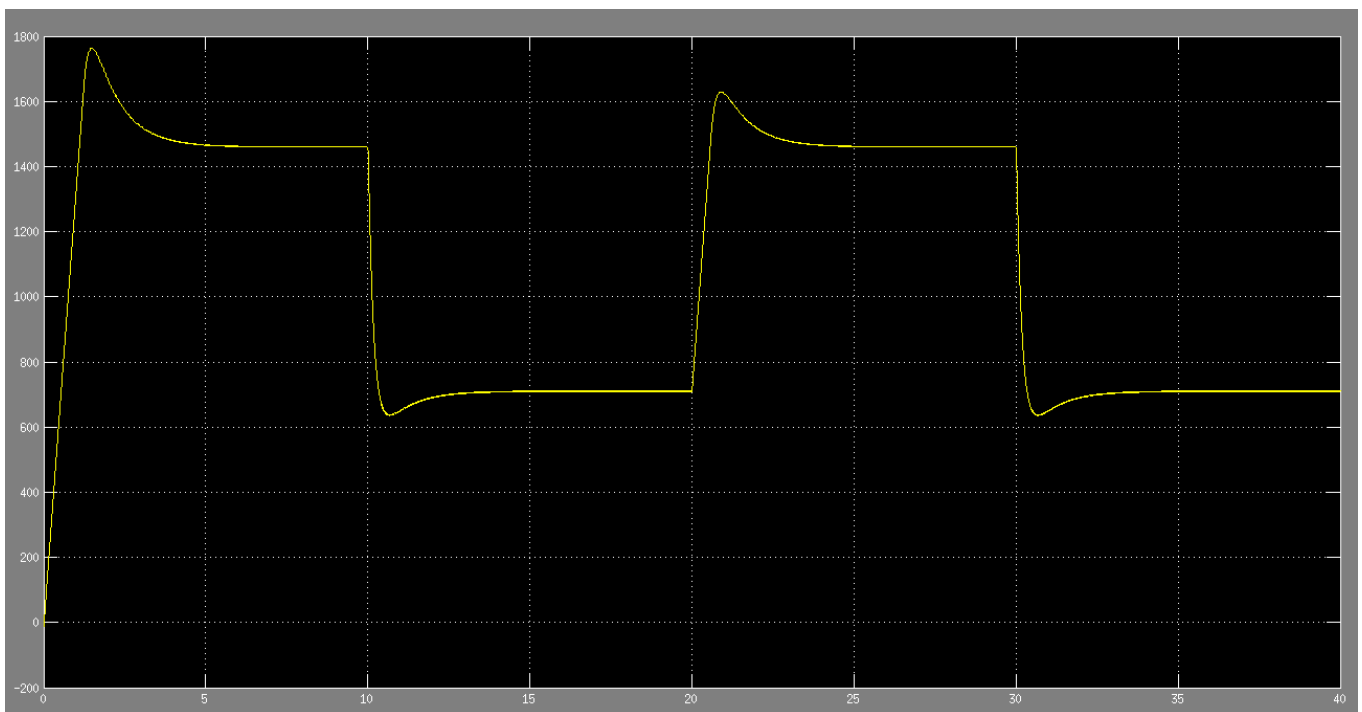
x0 = 0;
str = [];
ts = [-1 0]; % Inherited sample time

simStateCompliance = 'DefaultSimState';

function sys = mdlUpdate(t,x,u)
sys = u;

function sys = mdlOutputs(t,x,u,doffset,dperiod)
if mod(fix( t / dperiod),2) == 1 & t > dperiod
    sys = x + 750;
else
    sys = x;
end

```



电流与温度仿真

电枢表面单位长度上的安培导体数称为电机的线负荷 A ， $A=Nia/(\pi Da)$ 。

$$A = (2 \times m \times N \times I) / (\pi \times D)$$

式中:W 为每相的线圈匝数 ; m 为相数 ; I 为相电流 ; D 为定子内圆直径 .

$$A = N_c Z I / \pi D i_a$$

电流密度 J (电流强度 I 与导体截面 S 的比值) 为

$$J = I / S$$

```
function [sys,x0,str,ts,simStateCompliance] = dianliu(t,x,u,flag)

%W = 12 %每相的线圈匝数
%m = 3%相数
D = 23.8%定子内圆直径
Ac = 7.71
S = 8.4%导体截面
T = 4.448%定子铁心的齿距
X = 0.5%绝缘厚度
zhouchang = 114%槽的周长
Pfe = 571.4%空载运行时铁心的损耗

la = 23.6%电枢铁心长度
lcp = 34.92%电枢绕组半匝长度
Pcu = 446.1748%电枢绕组的铜损耗
Pcuc = Pcu * la/lcp

K = 1.2 %损耗系数
Da = 17%电枢铁心内孔的圆周长
alpha_1 = 0.0057%发热表面再平静空气中的散热系数
alpha_2 = 0.00133
v1 = 13.20%转子外径的圆周速度
k0 = 0.1 %气流吹拂效率系数
k1 = 0.07 %端部气流吹拂效率系数
lend = 5.5%电枢绕组端部
T1 = 2%参数C/aS
global tmp

switch flag,
    %%%%%%%%%%%%%%%
    % Initialization %
    %%%%%%%%%%%%%%%
    case 0,
        [sys,x0,str,ts,simStateCompliance]=mdlInitializeSizes(tmp);
        %%%%%%%%%%%%%%%
        % Update %
        %%%%%%%%%%%%%%%
    case 2,
        sys = mdlUpdate(t,x,u,Ac,S,T,X,zhouchang,K,Pfe,Pcuc,Da,la,k0,v1,k1,lend,T1,alpha_1,alpha_2,tmp);
        %%%%%%%%%%%%%%%
        % Output %
        %%%%%%%%%%%%%%%
    case 3,
        sys = mdlOutputs(t,x,u);
        %%%%%%%%%%%%%%%
        % Terminate %
        %%%%%%%%%%%%%%%
    case 9,
        sys = [];
    otherwise
        DASTudio.error('Simulink:blocks:unhandledFlag', num2str(flag));
```

end

```
function [sys,x0,str,ts,simStateCompliance]=mdlInitializeSizes(tmp)
```

```
sizes = simsizes;
```

```
sizes.NumContStates = 0;
```

```
sizes.NumDiscStates = 1;
```

```
sizes.NumOutputs = 1;
```

```
sizes.NumInputs = 1;
```

```
sizes.DirFeedthrough = 1;
```

```
sizes.NumSampleTimes = 1;
```

```
sys = simsizes(sizes);
```

```
x0 = 0;
```

```
str = [];
```

```
ts = [0 0];
```

```
global tmp;
```

```
tmp = 0;
```

```
simStateCompliance = 'DefaultSimState';
```

```
function sys = mdlUpdate(t,x,u,Ac,S,T,X,zhouchang,K,Pfe,Pcuc,Da,la,k0,v1,k1,l  
end,T1,alpha_1,alpha_2,tmp)
```

```
%A = (2 * W * I * m) / (pi * D )
```

```
A = u * Ac;
```

```
J = u / S;
```

```
theta1 = (A * J * T* X) / (6.4 * zhouchang);
```

```
alpha1 = K * (Pfe + Pcuc)/ (pi * Da * la);
```

```
theta2 = alpha1/ (alpha_1 * (1 + k0 * v1));
```

```
alpha2 = A * J * T / (400 * zhouchang);
```

```
theta3 = alpha2 / (alpha_2 * (1 + k1 * v1));
```

```
if u > 0
```

```
    theta = ((theta1 + theta2) * la + (theta1 + theta3) * lend) / (la + lend)
```

```
;
```

```
else
```

```
    theta = 0;
```

```
end
```

```
wensheng = (x + (theta -x) * (1 - exp(-1 / T1 * (t - tmp)))) ;
```

```
global tmp ;
```

```
tmp = t;
```

```
sys = wensheng;
```

```
function sys = mdlOutputs(t,x,u)
```

```
sys = x;
```

```
%end mdlOutputs
```

