

Model transformatoru 2019

Purpose

Model transformátoru pro cvičení KEE/PJS.

Description

Testování modelu sestaveného rovnicemi v chodu nakrátko.

System Parameters

$$\begin{aligned}
 U_n &= 400 \cdot 10^3 && [\text{V}] \\
 f &= 50 && [\text{Hz}] \\
 S_n &= 1000 \cdot 10^6 && [\text{VA}] \\
 u_K &= 9 && [\%] \\
 i_0 &= 1 && [\%] \\
 \Delta P_K &= 1 && [\%] \quad \text{dPk} = \text{dPcu} \\
 \Delta P_0 &= 0.3 && [\%] \quad \text{dP0} = \text{dPfe}
 \end{aligned}$$

Data

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*: Model transformatoru 2019
*SYSTEM;

SYSVAR I1, I2;

: Obecne parametry
Un=400E3;      :: [V]
Um=Un/sqrt(3)*sqrt(2);
f=50;         :: [Hz]
Omega=2pi*f;

: Parametry transformatoru
Sn=1000E6;    :: [VA]

: Nasledujici parametry zadany v procentech

Uk=9;         :: [\%]
I0=1;         :: [\%]
dPk=1;        :: [\%] dPk = dPcu
dP0=0.3;      :: [\%] dP0 = dPfe
dPcu=dPk;
dPfe=dP0;

: Odvozene parametry nahradniho schematu
Rk=(dPk/100)*(Un*Un/Sn);

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Zk=(Uk/100)*(Un*Un/Sn);
Xs=sqrt(Zk*Zk-Rk*Rk);
Ls=Xs/Omega;
Gfe=(dP0/100)*(Sn/(Un*Un));
Rfe=1/Gfe;
Yg=(I0/100)*(Sn/(Un*Un));
Xh=1/sqrt(Yg*Yg-Gfe*Gfe);
Lh=Xh/Omega;

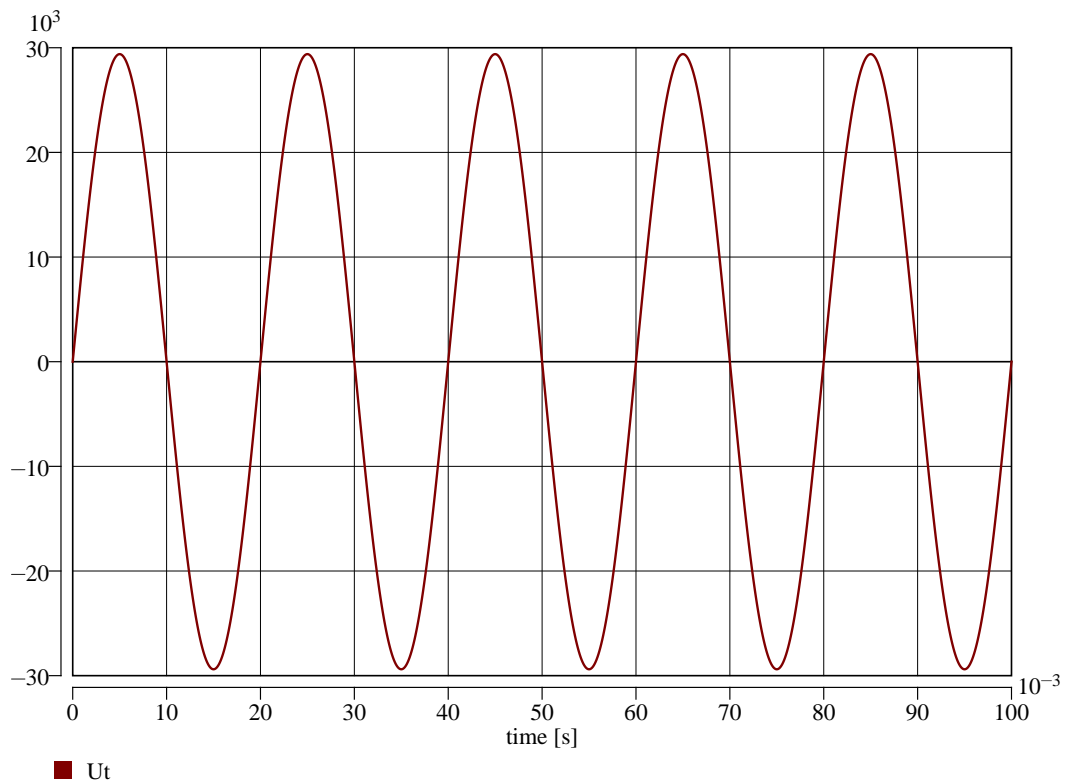
Ut=Uk/100*Um*sin(Omega*TIME);

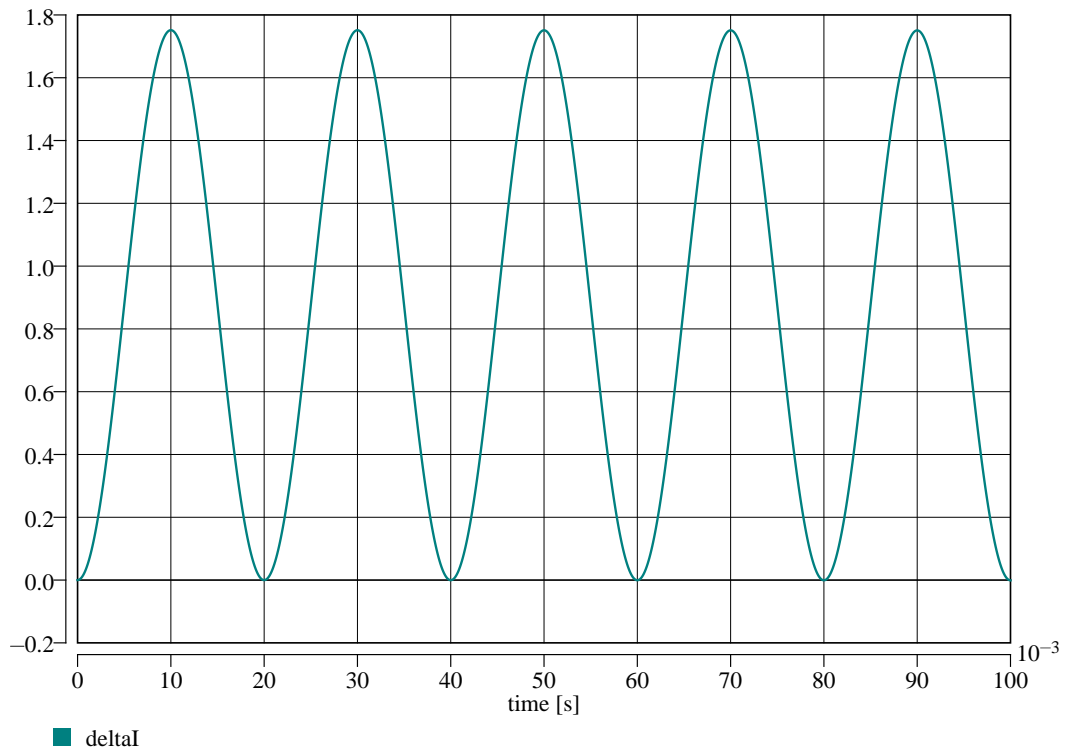
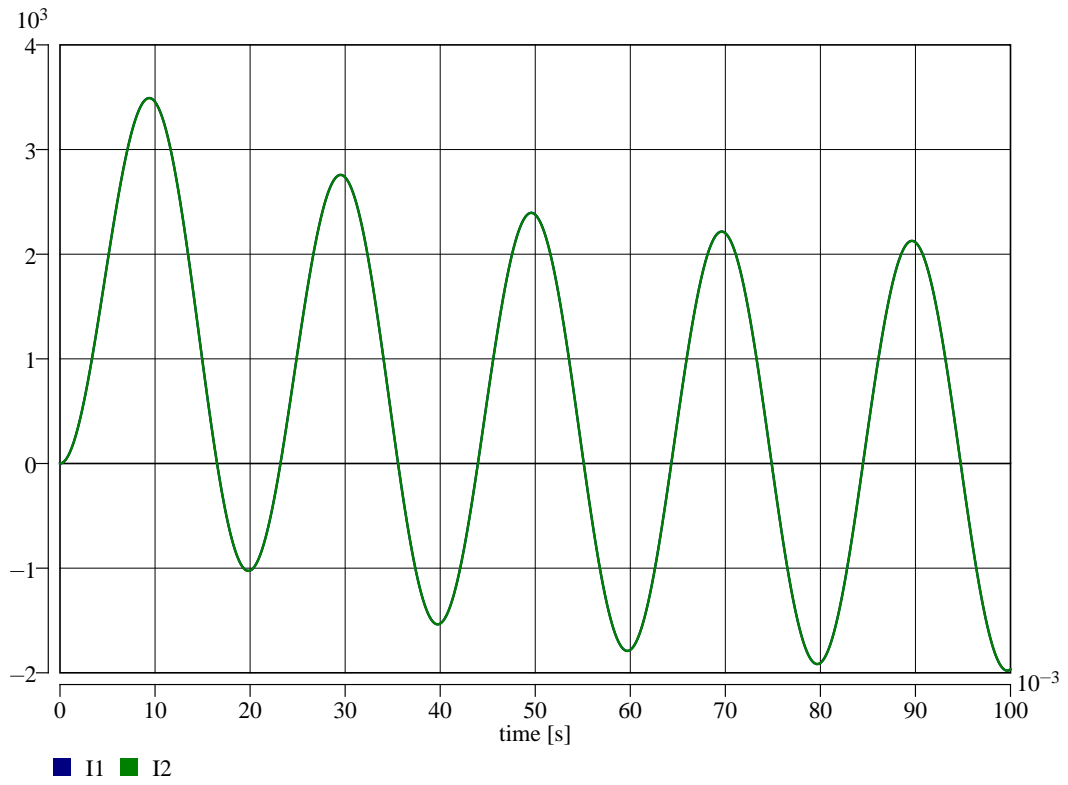
0=Ls/2*VD.I1+I1*Rk/2+Lh*VD.I1-Lh*VD.I2-Ut;
0=-Lh*VD.I1+Lh*VD.I2+Ls/2*VD.I2+I2*Rk/2;

deltaI=I1-I2;

*TR;
TR 0 0.1;
PRINT(1001) I1, I2, Ut, deltaI;
INIT I1=0, I2=0;
RUN;
*END;

```





Origin

Karel Nohá , KEE, FEL, Z U v Plzni

Last Update

October 21, 2020