## E-Core Actuator Force Calculation Command Input File

/ Programme : Calculating the Force in Actuator

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/\* \*

/\* This programme uses the Key Board Entry function in Opera software \*

/\* to calculate the electromagnetic force in the actuator specified by \*

/\* the Sortex Company. It operats postprocess to integal the magnetic \*

/\* fields along the closed loop in the gap area, according to the \*

/\* Law Ampere. \*

/\* \*

/\* \*

/\* \*

/\* Constitutive Parameters: \*

/\* \*

/\* #I: circuit input current \*

/\* #NS: number of coil turns \*

/\* #mus: relative permeability \*

/\* #sigs: conductivity \*

/\* \*

/\* \*

/\* \*

/\* Geometry Parameters: \*

/\* \*

/\* #WCO #WP #WCL #tco #gap \*

/\* #HCO #HP #HC #HV \*

/\* (as given in the drawing) \*

/\* \*

/\* \*

/\* Coordinate Parameters: \*

/\* \*

/\* #D1 #D3 #N1 #N2 #N4 #N6 \*

/\* \*

/\* \*

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

READ FILE=ecore\_vp05\_finemesh.st,CASE=1

/\*\*\*\*\* Setting up parameters \*\*\*\*\*

/Setting up parameters

$para #D1 40

$para #D3 250

$para #N1 5

$para #N2 2

$para #N3 1

/

$para #I 2.312

$para #NS 50

$para #mus 6300

$para #sigs 6.66666E+06

/

 / $ASK #HCO

$para #HCO 9.00

$para #WCO 23.55

$para #WPL 2.78

$para #WPR 2.78

$para #WPM 5.56

$para #HP 6.22

$para #gap 0.05

$para #HC 0.65

$para #WCL 6.215

$para #HV 2.50

$para #tco 2.20

/\*\*\*\*\* Calculating the force value \*\*\*\*\*

$ open 1 force.dat append

INTL ACCUMULATE=ZERO,

INTL X1=#D3/2-(#WCO/2+#gap/2),Y1=#D3/2-(#HCO/2+#gap/2),

X2=#D3/2+#WCO/2+(#gap/2),Y2=#D3/2-(#HCO/2+#gap/2),

CURV=0,ERRO=1000

$ constant #fx1 fx

$ constant #fy1 fy

INTL ACCUMULATE=ADD,

INTL X1=#D3/2+#WCO/2+(#gap/2),Y1=#D3/2-(#HCO/2+#gap/2),

X2=#D3/2+#WCO/2+(#gap/2),Y2=#D3/2-(#HCO/2+#gap/2+#gap+#HV),

CURV=0,ERRO=1000

$ constant #fx2 fx

$ constant #fy2 fy

INTL ACCUMULATE=ADD,

INTL X1=#D3/2+#WCO/2+#gap/2,Y1=#D3/2-(#HCO/2+#gap/2+#gap+#HV),

X2=#D3/2-(#WCO/2+#gap/2),Y2=#D3/2-(#HCO/2+#gap/2+#gap+#HV),

CURV=0,ERRO=1000

$ constant #fx3 fx

$ constant #fy3 fy

INTL ACCUMULATE=ADD,

INTL X1=#D3/2-(#WCO/2+#gap/2),Y1=#D3/2-(#HCO/2+#gap/2+#gap+#HV),

X2=#D3/2-(#WCO/2+#gap/2),Y1=#D3/2-(#HCO/2+#gap/2),

CURV=0,ERRO=1000

$ constant #fx4 fx

$ constant #fy4 fy

$ constant #fxt #fx1+#fx2+#fx3+#fx4

$ constant #fyt #fy1+#fy2+#fy3+#fy4

$ constant #cur #I

$ constant #hdev #HCO

$ constant #hpol #HP

$ constant #thv #HV

$ constant #ft #fyt\*(-#tco)

/\*\*\*\*\* Saving calculated force data to file 'force.dat' \*\*\*\*\*

$ form 1 expo

$ form 2 string string=' '

$ form 3 string string=' '

$ assi 1 3 1 3 1 2 1 2 1

$ write 1 #ft #thv #hpol #hdev #cur

$ close 1