

## Příloha 5 – Zdrojový kód pro přirozený systém odvětrání

&HEAD CHID='hala', TITLE='Prirozene odvetrani/'

----Výpočtový čas

&TIME T\_END=120.0/

&DUMP DT\_RESTART=50.0/

----Výpočetní síť

&MESH ID='sit\_1', IJK=240,108,24, XB=0.0,80.0,0.0,36.0,0.0,8.0/

----Materiály

&MATL ID='plech',

    SPECIFIC\_HEAT=0.46,

    CONDUCTIVITY=45.8,

    DENSITY=7850.0/

&MATL ID='MV',

    SPECIFIC\_HEAT=0.88,

    CONDUCTIVITY=0.064,

    DENSITY=200.0/

&MATL ID='zelezobeton',

    SPECIFIC\_HEAT=0.88,

    CONDUCTIVITY=1.4,

    DENSITY=2300.0/

&MATL ID='PMMA',

    SPECIFIC\_HEAT=1.42,

    CONDUCTIVITY=0.19,

    DENSITY=1200.0/

&MATL ID='SKLO',

    SPECIFIC\_HEAT=0.84,

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CONDUCTIVITY=0.76,  
DENSITY=2700.0/  
&MATL ID='DVERE',  
SPECIFIC_HEAT=2.85,  
CONDUCTIVITY=0.14,  
DENSITY=640.0/  
  
&MATL ID='zdivo',  
SPECIFIC_HEAT=0.84,  
CONDUCTIVITY=0.69,  
DENSITY=1600.0/  
----Povrchy  
&SURF ID='strecha',DEFAULT=.TRUE.,  
RGB=214,225,235  
MATL_ID(1,1)='zelezobeton',  
THICKNESS=0.002/  
  
&SURF ID='SKLO',  
MATL_ID(1,1)='SKLO',  
THICKNESS(1)=0.001/  
  
&SURF ID='prepazka',  
RGB=214,225,235  
MATL_ID(1,1)='plech',  
THICKNESS(1)=0.002/  
  
&SURF ID='zdi',  
RGB=214,225,235  
MATL_ID(1,1)='plech',  
THICKNESS(1)=0.001/
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&SURF ID='sloup',

MATL\_ID='zelezobeton',

THICKNESS=0.001/

&SURF ID='tram',

MATL\_ID='zelezobeton',

THICKNESS=0.001/

&SURF ID='svetlik',

MATL\_ID='PMMA',

THICKNESS=0.006/

&SURF ID='DVERE',

RGB=185,163,210

MATL\_ID(1,1)='DVERE',

MATL\_MASS\_FRACTION(1,1)=1.0,

THICKNESS(1)=0.1/

&SURF ID='pricka',

MATL\_ID='zdivo',

THICKNESS=0.001/

----Podlaha

&VENT SURF\_ID='INERT', XB=0.0,78.7,0.0,33.6,0.0,0.0, COLOR='GRAY'/ podlaha

----Zdi

&OBST XB=0.0,0.0,0.0,33.6,0.0,6.0,

COLOR='GRAY',TRANSPARENCY=0.0,SURF\_ID='zdi'/ obvodová zeď

&OBST XB=0.0,78.7,0.0,0.0,0.0,6.0,

COLOR='GRAY',TRANSPARENCY=0.0,SURF\_ID='zdi'/ obvodová zeď

&OBST XB=2.3132,5.9245,-1.0,1.0,0.0,4.75,PERMIT\_HOLE=.FALSE.,  
SURF\_ID='DVERE', DEVC\_ID = 'timer'/vrata A

&OBST XB=12.3132,15.9245,-1.0,1.0,0.0,4.75,PERMIT\_HOLE=.FALSE.,  
SURF\_ID='DVERE', DEVC\_ID = 'timer'/vrata B

&HOLE XB=2.3132,5.9245,-1.0,1.0,0.0,4.75,/ otvor na vrata A

&HOLE XB=12.3132,15.9245,-1.0,1.0,0.0,4.75,/ otvor na vrata B

&OBST XB=0.0,78.7,33.6,33.6,0.0,6.0,  
COLOR='GRAY',TRANSPARENCY=0.0,SURF\_ID='zdi'/ obvodová zed'

&OBST XB=78.7,78.7,0.0,33.6,0.0,6.0,  
COLOR='GRAY',TRANSPARENCY=0.0,SURF\_ID='zdi'/ obvodová zed'

----Jižní vestavek

&OBST XB=18.05,18.05,0.0,4.35,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'

&OBST XB=18.05,24.3,4.35,4.35,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

&OBST XB=24.3,24.3,4.35,0.0,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

----Stěny schodiště

&OBST XB=0.0,2.29,13.37,13.37,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

&OBST XB=2.29,2.29,13.37,18.35,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

&OBST XB=2.29,3.28,18.35,18.35,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

&OBST XB=3.28,3.28,18.35,22.71,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

&OBST XB=0.0,3.28,22.71,22.71,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

----Severní vestavek

&OBST XB=57.4,57.4,29.86,32.97,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

&OBST XB=57.4,66.4,29.86,29.86,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

&OBST XB=66.4,66.4,29.86,32.97,0.0,6.0, COLOR='GRAY',SURF\_ID='pricka'/

----Sloupy

&OBST XB=5.9,6.3,16.2,16.6,0.0,6.0, COLOR='GRAY',SURF\_ID='sloup'/

&OBST XB=18.04,18.44,16.2,16.6,0.0,6.0, COLOR='GRAY',SURF\_ID='sloup'/

&OBST XB=30.18,30.58,16.2,16.6,0.0,6.0, COLOR='GRAY',SURF\_ID='sloup'/

&OBST XB=42.32,42.72,16.2,16.6,0.0,6.0, COLOR='GRAY',SURF\_ID='sloup'/

&OBST XB=54.46,54.86,16.2,16.6,0.0,6.0, COLOR='GRAY',SURF\_ID='sloup'/

&OBST XB=66.60,67.0,16.2,16.6,0.0,6.0, COLOR='GRAY',SURF\_ID='sloup'/

----Trámy

&OBST XB=5.9,6.3,33.6,0.0,5.6,6.0, COLOR='GRAY',SURF\_ID='tram'/

&OBST XB=18.04,18.44,33.6,0.0,5.6,6.0, COLOR='GRAY',SURF\_ID='tram'/

&OBST XB=30.18,30.58,33.6,0.0,5.6,6.0, COLOR='GRAY',SURF\_ID='tram'/

&OBST XB=42.32,42.72,33.6,0.0,5.6,6.0, COLOR='GRAY',SURF\_ID='tram'/

&OBST XB=54.46,54.86,33.6,0.0,5.6,6.0, COLOR='GRAY',SURF\_ID='tram'/

&OBST XB=66.60,67.0,33.6,0.0,5.6,6.0, COLOR='GRAY',SURF\_ID='tram'/

---Střecha

&OBST XB=0.0,78.7,0.0,33.6,6.0,6.0, COLOR='GRAY', TRANSPARENCY=0.5,  
SURF\_ID='strecha/'

---Požární klapky

&DEVC XYZ=14.0,5.0,5.66, ID='timer', QUANTITY='TIME', SETPOINT= 20.0,  
INITIAL\_STATE=.TRUE. / čas otevření klapek a vrat

Sekce č. 1

&HOLE XB=8.53,10.17,7.15,9.32,5.0,7.0, / otvor na klapku

&HOLE XB=20.35,21.99,7.15,9.32,5.0,7.0,/ otvor na klapku

&HOLE XB=32.5,34.14,7.15,9.32,5.0,7.0, / otvor na klapku

&HOLE XB=8.53,10.17,23.64,25.81,5.0,7.0, / otvor na klapku

&HOLE XB=20.35,21.99,23.64,25.81,5.0,7.0, / otvor na klapku

&HOLE XB=32.5,34.14,23.64,25.81,5.0,7.0, / otvor na klapku

&OBST XB=8.53,10.17,7.15,9.32,6.0,6.0, COLOR='RED', PERMIT\_HOLE=.FALSE.,  
SURF\_ID='SKLO', DEVC\_ID = 'timer'/ klapka

&OBST XB=20.35,21.99,7.15,9.32,6.0,6.0, COLOR='RED', PERMIT\_HOLE=.FALSE.,  
SURF\_ID='SKLO', DEVC\_ID='timer'/ klapka

&OBST XB=32.5,34.14,7.15,9.32,6.0,6.0, COLOR='RED', PERMIT\_HOLE=.FALSE.,  
SURF\_ID='SKLO', DEVC\_ID='timer'/ klapka

&OBST XB=8.53,10.17,23.64,25.81,6.0,6.0, COLOR='RED', PERMIT\_HOLE=.FALSE.,  
SURF\_ID='SKLO', DEVC\_ID='timer'/ klapka

&OBST XB=20.35,21.99,23.64,25.81,6.0,6.0, COLOR='RED',  
PERMIT\_HOLE=.FALSE., SURF\_ID='SKLO', DEVC\_ID='timer'/ klapka

&OBST XB=32.5,34.14,23.64,25.81,6.0,6.0, COLOR='RED', PERMIT\_HOLE=.FALSE.,  
SURF\_ID='SKLO', DEVC\_ID='timer'/ klapka

Sekce č. 2

&HOLE XB=50.56,52.2,7.15,9.32,5.0,7.0, / otvor na klapku

&HOLE XB=68.28,69.92,7.15,9.32,5.0,7.0, / otvor na klapku

&HOLE XB=56.42,58.06,12.75,14.92,5.0,7.0, / otvor na klapku

&HOLE XB=62.38,64.02,18.04,20.21,5.0,7.0, / otvor na klapku

&HOLE XB=50.56,52.2,23.64,25.81,5.0,7.0, / otvor na klapku

&HOLE XB=68.28,69.92,23.65,25.81,5.0,7.0, / otvor na klapku

&OBST XB=50.56,52.2,7.15,9.32,6.0,6.0, COLOR='RED', PERMIT\_HOLE=.FALSE.,  
SURF\_ID='SKLO'/ klapka

&OBST XB=68.28,69.92,7.15,9.32,6.0,6.0, COLOR='RED', PERMIT\_HOLE=.FALSE.,  
SURF\_ID='SKLO'/ klapka

&OBST XB=56.42,58.06,12.75,14.92,6.0,6.0, COLOR='RED',  
PERMIT\_HOLE=.FALSE., SURF\_ID='SKLO'/ klapka

&OBST XB=62.38,64.02,18.04,20.21,6.0,6.0, COLOR='RED',  
PERMIT\_HOLE=.FALSE., SURF\_ID='SKLO' / klapka

&OBST XB=50.56,52.2,23.64,25.81,6.0,6.0, COLOR='RED', PERMIT\_HOLE=.FALSE.,  
SURF\_ID='SKLO' / klapka

&OBST XB=68.28,69.92,23.65,25.81,6.0,6.0, COLOR='RED',  
PERMIT\_HOLE=.FALSE., SURF\_ID='SKLO' / klapka

----Kouřová přepážka

&OBST XB=42.02,42.35,33.6,0.0,4.0,6.0, COLOR='RED', SURF\_ID='prepazka'/

----Aktivování

&VENT MB='XMIN', SURF\_ID='OPEN' /

&VENT MB='XMAX', SURF\_ID='OPEN' /

&VENT MB='YMIN', SURF\_ID='OPEN' /

&VENT MB='YMAX', SURF\_ID='OPEN' /

&VENT MB='ZMAX', SURF\_ID='OPEN' /

----Požár

&OBST XB= 32.0,33.0,15.0,16.0,0.0,1.0, SURF\_ID = 'INERT', COLOR = 'RED' /  
umístění hořáku

&SURF ID = 'FIRE', HRRPUA = 15000, RAMP\_Q = 'fireramp' / výkon požáru  
v závislosti na rozhořívání požáru

&VENT SURF\_ID='FIRE', XB=32.0,33.0,15.0,16.0,1.0,1.0, COLOR='RED'/ umístění  
požáru

&REAC FUEL='PROPANE', SOOT\_YIELD=0.025, CO\_YIELD=0.02,  
HEAT\_OF\_COMBUSTION=46460.0/ palivo pro hoření

----Rozhořívání požáru

&RAMP ID = 'fireramp', T = 0.0, F = 0.1 /

&RAMP ID = 'fireramp', T = 5.0, F = 0.15 /

&RAMP ID = 'fireramp', T = 10.0, F = 0.2 /

&RAMP ID = 'fireramp', T = 15.0, F = 0.25 /

&RAMP ID = 'fireramp', T = 30.0, F = 0.3 /

&RAMP ID = 'fireramp', T = 40.0, F = 0.35 /

&RAMP ID = 'fireramp', T = 50.0, F = 0.4 /

&RAMP ID = 'fireramp', T = 60.0, F = 0.5 /

&RAMP ID = 'fireramp', T = 70.0, F = 0.6 /

&RAMP ID = 'fireramp', T = 85.0, F = 0.8 /

&RAMP ID = 'fireramp', T = 90.0, F = 0.9 /

&RAMP ID = 'fireramp', T = 100.0, F = 1.0 /

----Prostorové řezy

&BNDF QUANTITY = 'WALL TEMPERATURE'/

&BNDF QUANTITY='GAUGE HEAT FLUX'/

&ISOF QUANTITY = 'TEMPERATURE', VALUE (1)=68.0, VALUE(2)=200.0,  
VALUE(3)=400.0, VALUE(4)=500.0/

&ISOF QUANTITY = 'TEMPERATURE', VALUE (1)=68.0/

&ISOF QUANTITY = 'TEMPERATURE', VALUE (1)=200.0/

&ISOF QUANTITY = 'TEMPERATURE', VALUE (1)=400.0/

&ISOF QUANTITY = 'TEMPERATURE', VALUE (1)=500.0/

&SLCF PBX = 9.0, QUANTITY = 'TEMPERATURE', VECTOR = .TRUE./

&SLCF PBX = 32.5, QUANTITY = 'TEMPERATURE', VECTOR = .TRUE./

&SLCF PBX = 50.0, QUANTITY = 'TEMPERATURE', VECTOR = .TRUE./

&SLCF PBX = 9.0, QUANTITY = 'VELOCITY', VECTOR = .TRUE. /

&SLCF PBX = 32.5, QUANTITY = 'VELOCITY', VECTOR = .TRUE. /

&SLCF PBX = 50.0, QUANTITY = 'VELOCITY', VECTOR = .TRUE. /

&SLCF PBY = 15.5, QUANTITY = 'TEMPERATURE', VECTOR = .TRUE./

&SLCF PBY = 20.0, QUANTITY = 'TEMPERATURE', VECTOR = .TRUE./

&SLCF PBY = 15.5, QUANTITY = 'VELOCITY', VECTOR = .TRUE. /

&SLCF PBY = 20.0, QUANTITY = 'VELOCITY', VECTOR = .TRUE. /

&SLCF PBZ = 2.0, QUANTITY = 'TEMPERATURE', VECTOR = .TRUE./

&SLCF PBZ = 3.0, QUANTITY = 'TEMPERATURE', VECTOR = .TRUE./

&SLCF PBZ = 6.0, QUANTITY = 'TEMPERATURE', VECTOR = .TRUE./

&SLCF PBZ = 2.0, QUANTITY = 'VELOCITY', VECTOR = .TRUE. /

&SLCF PBZ = 3.0, QUANTITY = 'VELOCITY', VECTOR = .TRUE. /

&SLCF PBZ = 6.0, QUANTITY = 'VELOCITY', VECTOR = .TRUE. /

----Měřené hodnoty nárůstu kouřové vrstvy a teploty na spodním líci kouřové vrstvy

&DEVC ID='LAYER HEIGHT', QUANTITY='LAYER HEIGHT',

XB=15.0,15.0,25.0,25.0,0.0,6.0/

&DEVC ID='LOWER TEMPERATURE', QUANTITY='TEMPERATURE',

XB=15.0,15.0,25.0,25.0,0.0,6.0/

&TAIL /