

CALCULATION OF THE RESIDUAL STRESSES AND DEFORMATIONS IN CASTINGS BY THE FINITE ELEMENTS METHOD USING THE ANSYS SOFTWARE PACKAGE

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Abstract. This article represents a thermo-mechanical computer model for calculating the residual stress and distortion, forming in the casted products, produced by the method of sand casting. Calculations using an exemplary steel casting are indicated as a demonstration. The model is built up in ANSYS software package environment.

Key words: residual stress and deformation, steel, sand casting, FEM

ANSYS

1.

[1].

[1-6].

[2].
ProCast [3] MAGMA [4].

[5,6].

ANSYS,

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2.

.1.

(.2),

1 -

.1,

ANSYS

CAD-

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ANSYS.

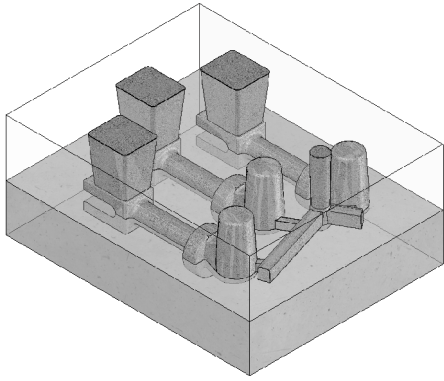
2 -

.1.

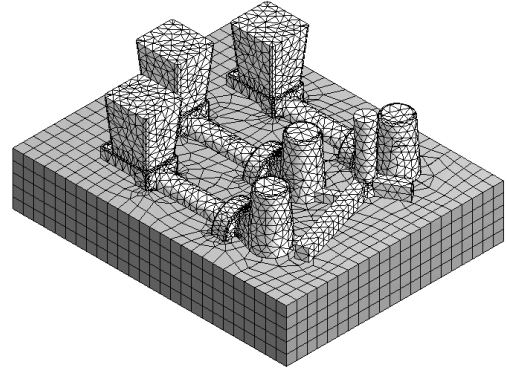
3 -
(.3).



. 1.



. 2. CAD-



. 3.

.2

30%.

50%

4 – *Steady State Thermal Analysis.*
ANSYS

5 – *Transient Thermal Analysis.*

(1-10).

10000

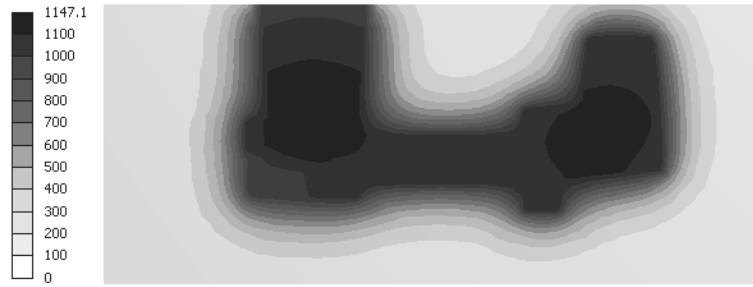
.4

.10

20000

1800

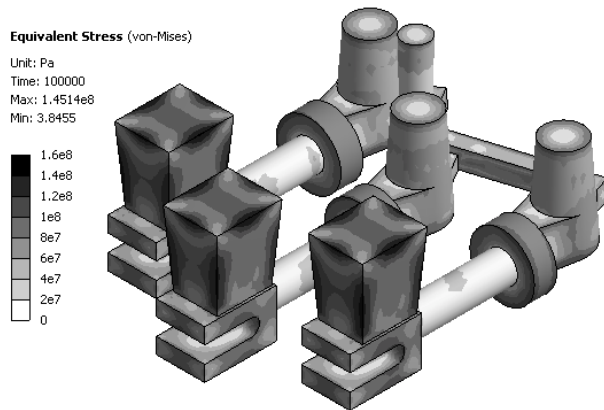
Temperature Unit: °C Time: 1800 Max: 1147.1 Min: 28.001



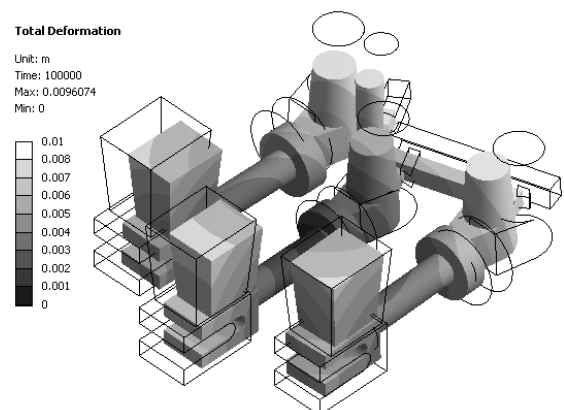
.4. 1800

6 – Flexible Dynamic Analysis.
(.5-8).

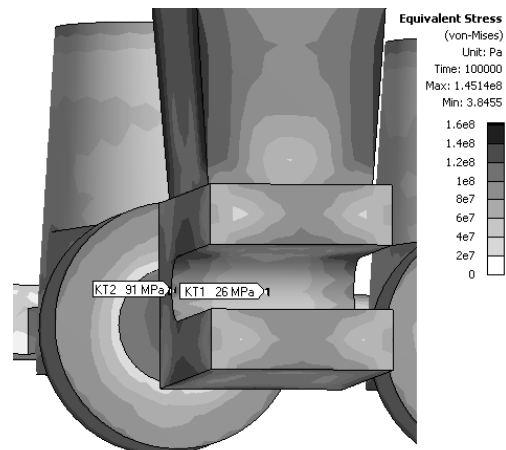
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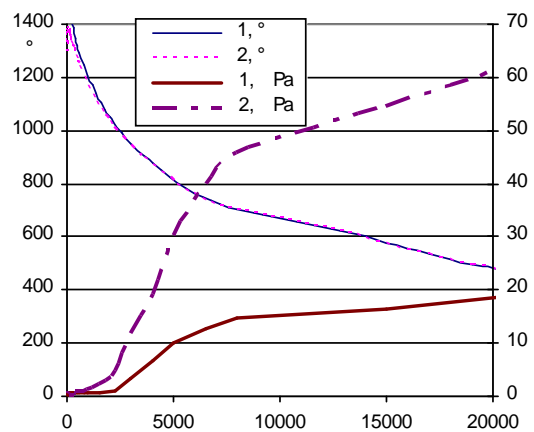
.5.



.6.



.7.



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3.

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