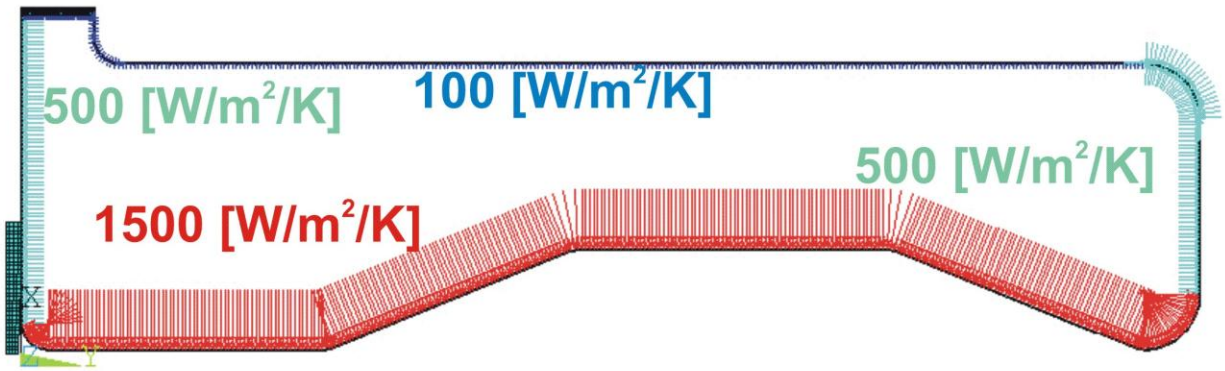
Thermo-mechanical analysis of front plate supported horn

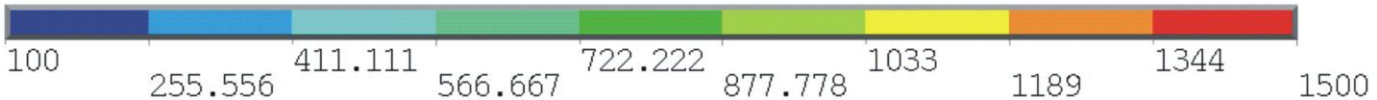
Revision of temperature induced stress level – update information

Jan Bielski

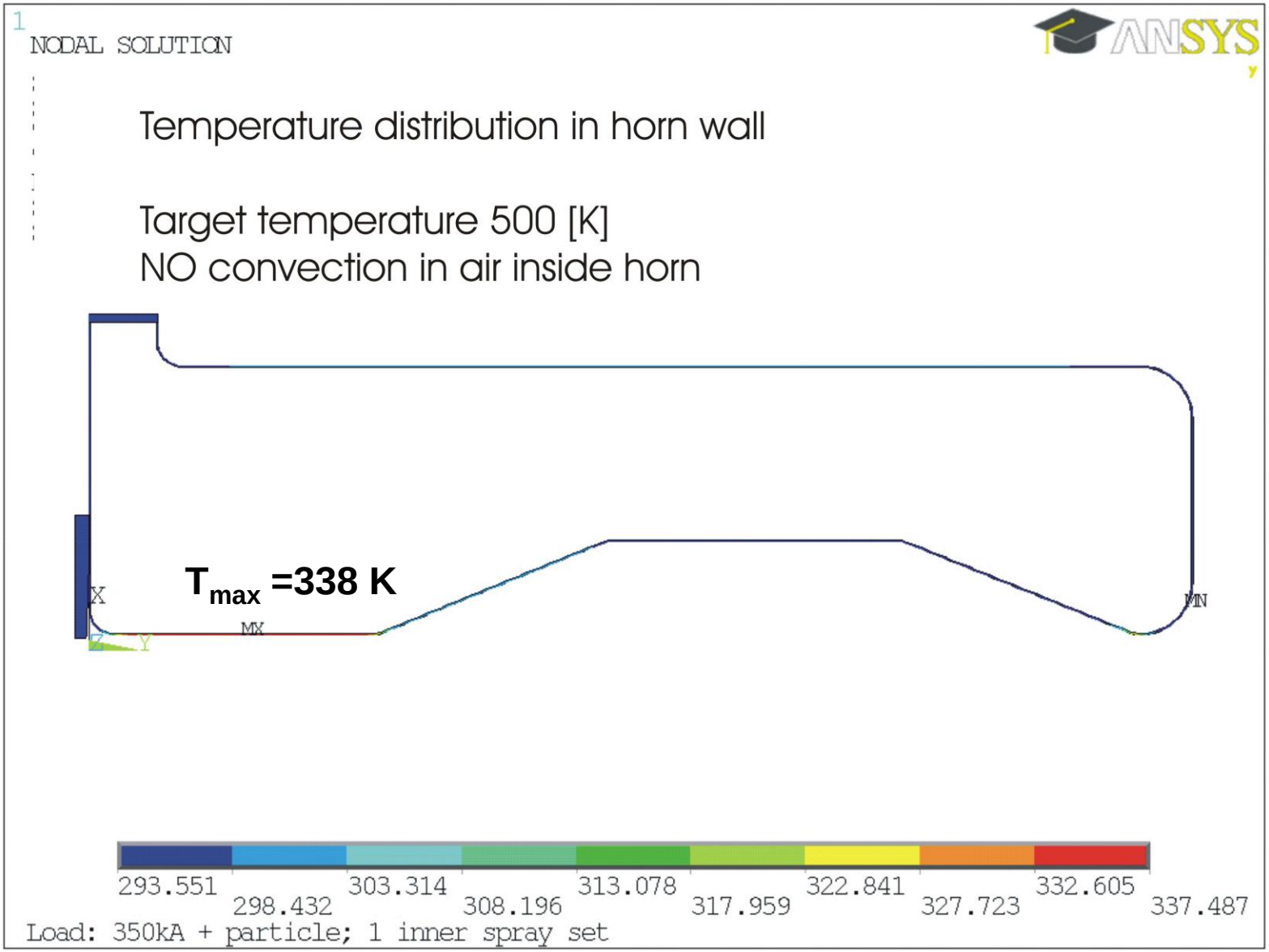
1
ELEMENTS
CONV-HCOE

Assummed convection coefficients due to internal spray system

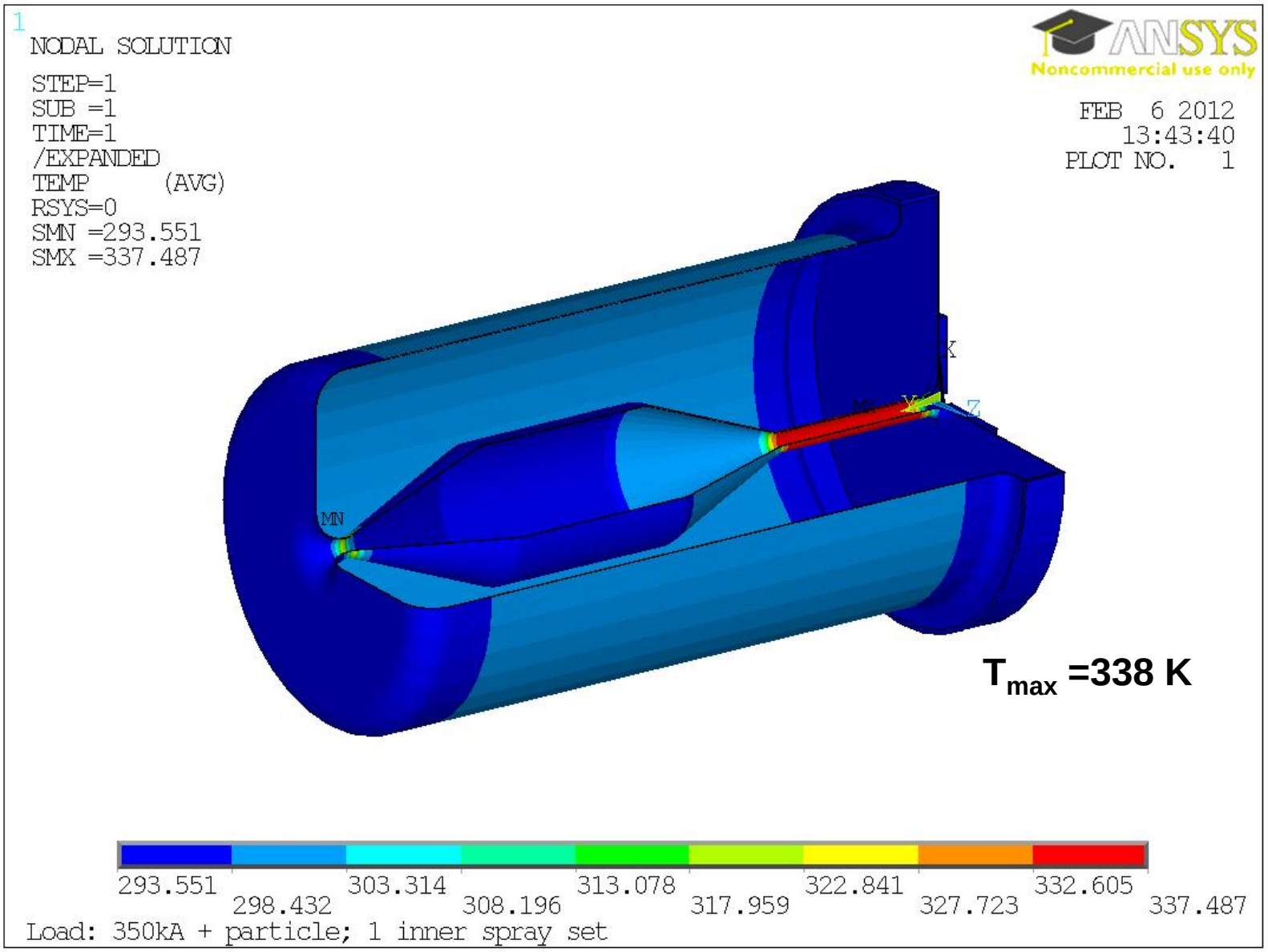




Load: 350kA + particle; 1 inner spray set

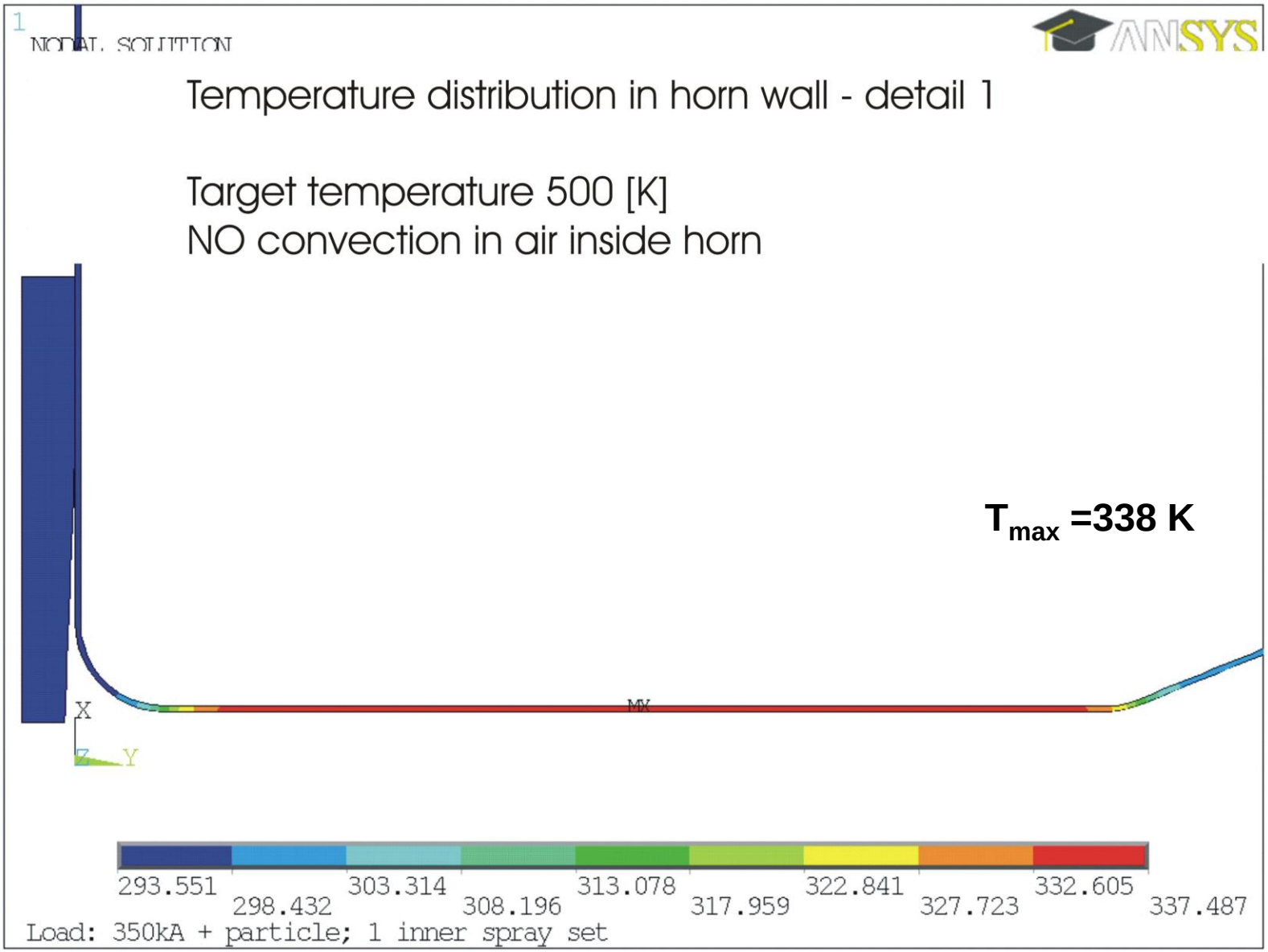


Temperature distribution due to current impulse of 350kA + secondary particle energy



T_{max} =338 K

Temperature distribution due to current impulse
of 350kA + secondary particle energy



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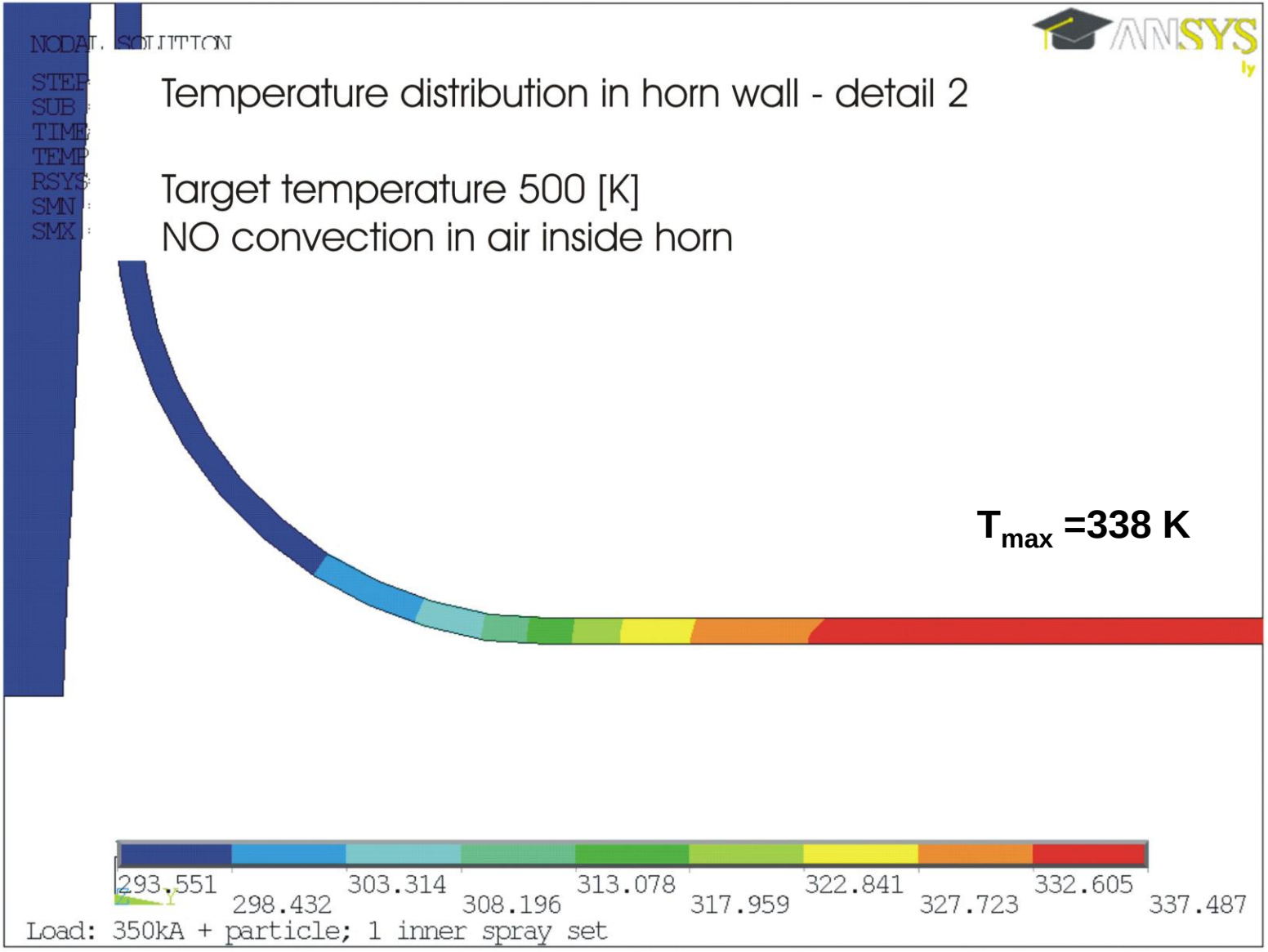

Temperature distribution due to current impulse
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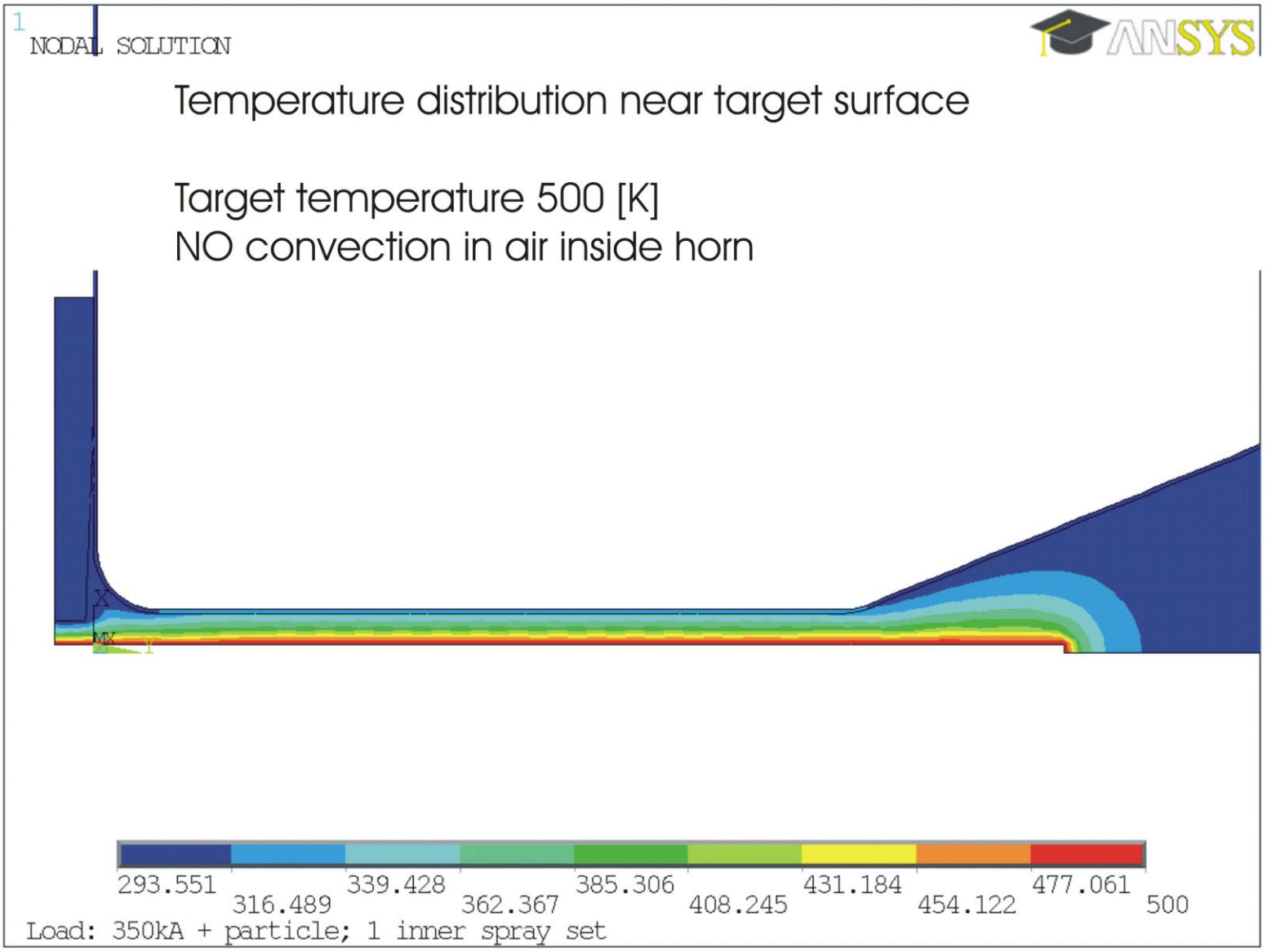
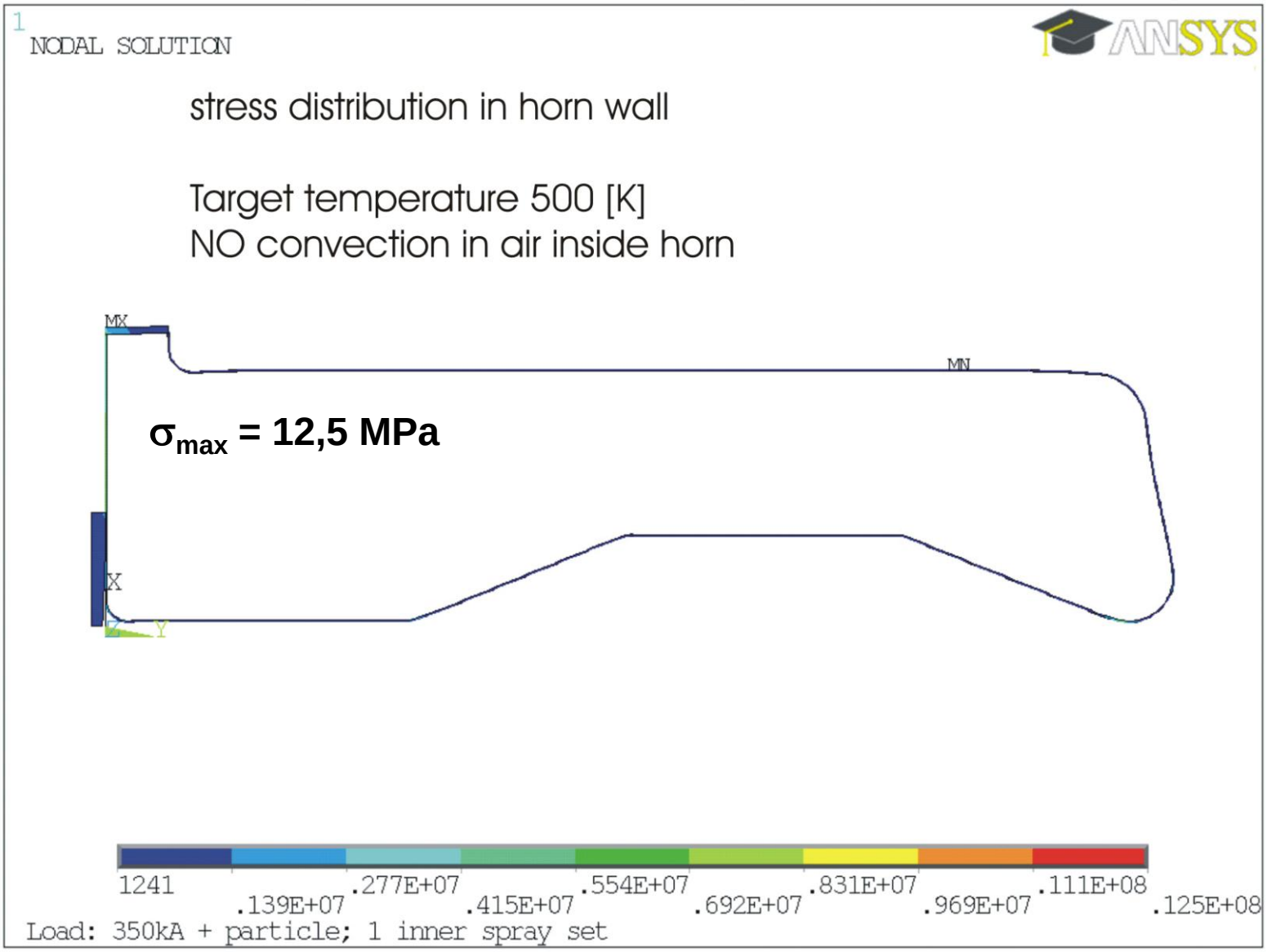
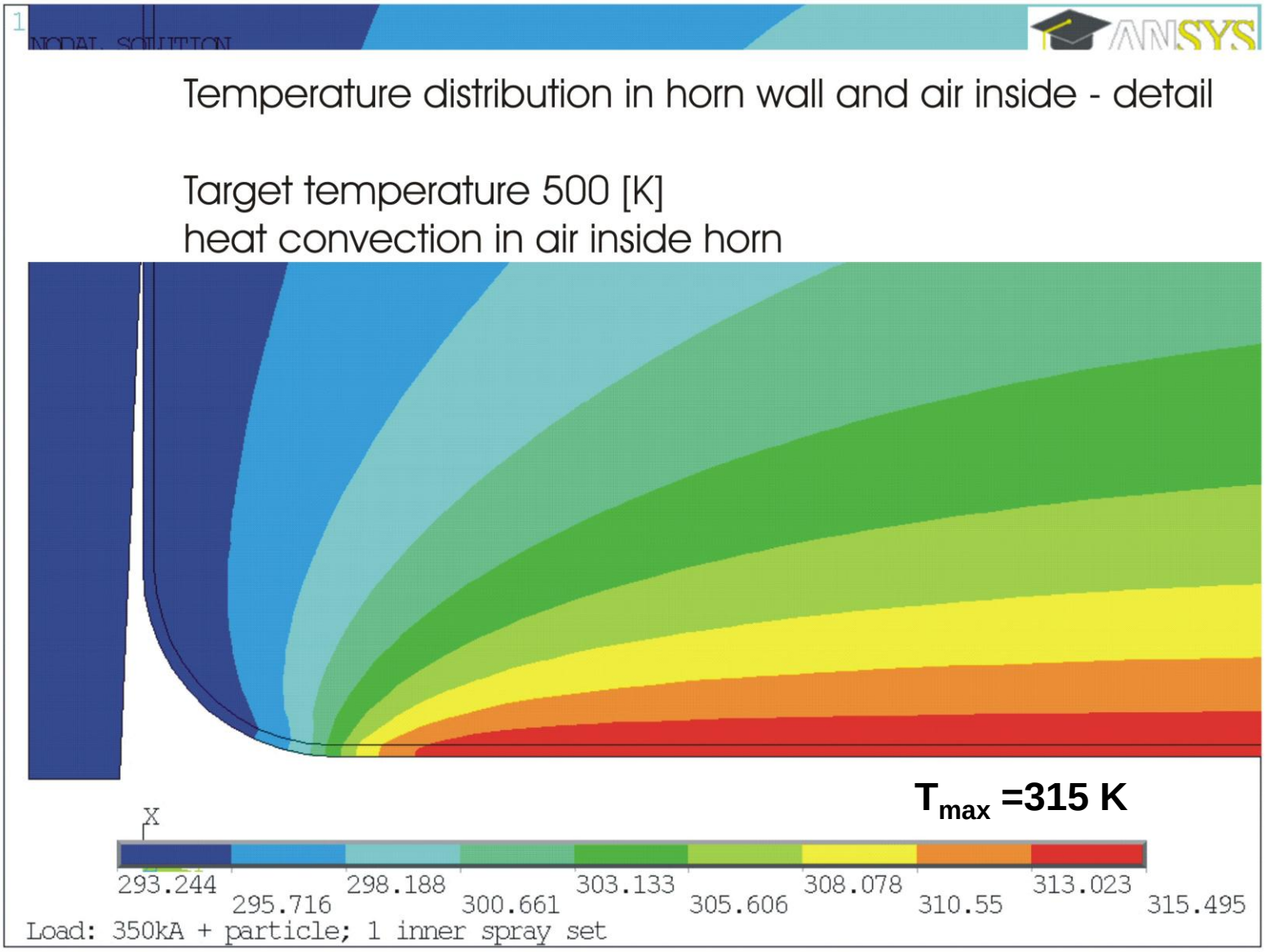


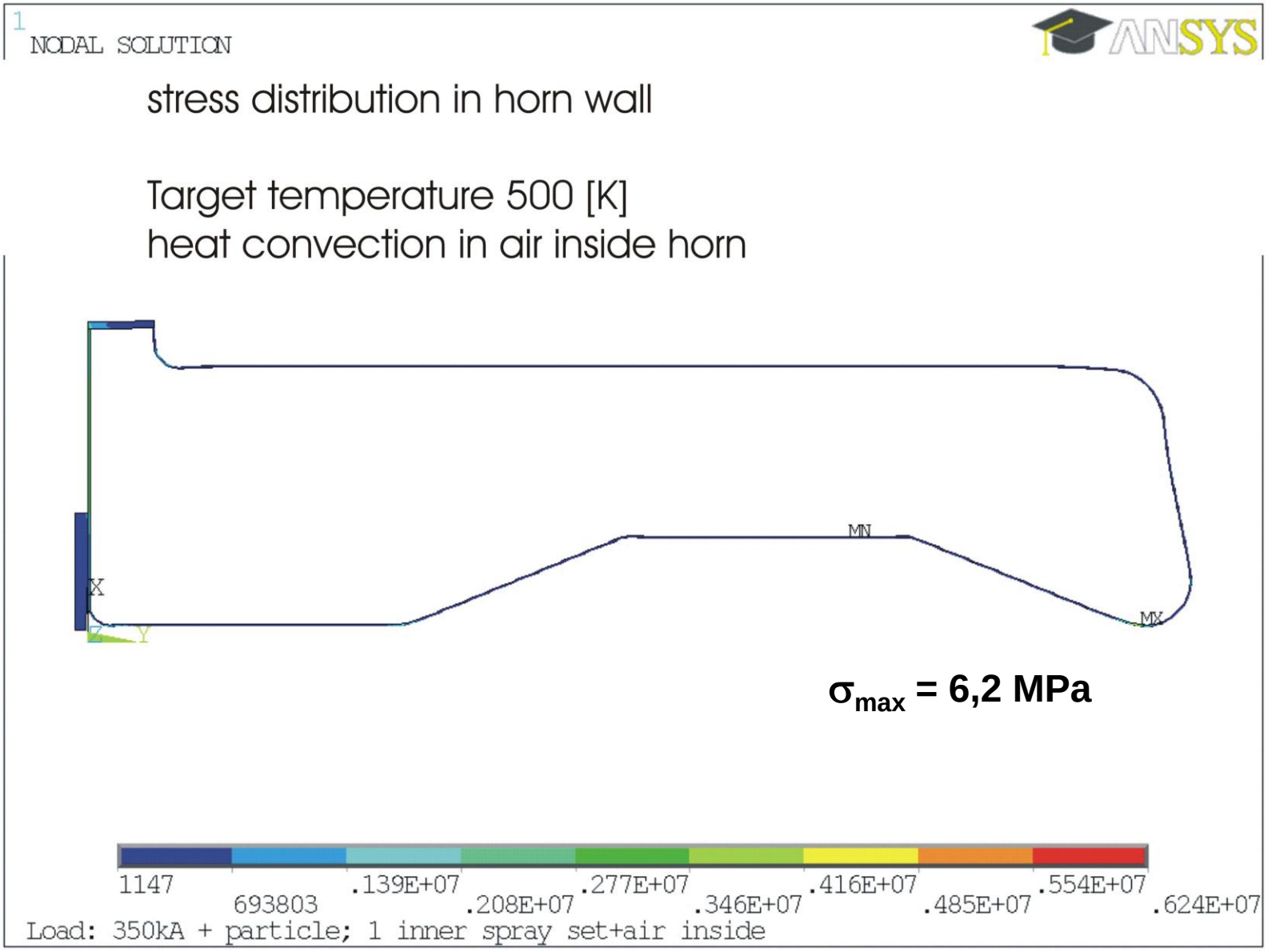
Temperature distribution due to current impulse
of 350kA + secondary particle energy



Equivalent thermal stress distribution due to current impulse of 350kA + secondary particle energy



Temperature distribution due to current impulse
of 350kA + secondary particle energy



Equivalent thermal stress distribution due to current impulse of 350kA + secondary particle energy

	Air inside horn	NO air inside horn
Maximal **temperature** in horn wall	315 K	338 K
Maximal equivalent thermal **stress** in horn wall	6.2 MPa	12.5 MPa

T_{max}<380 K; σ_{max}<240 MPa