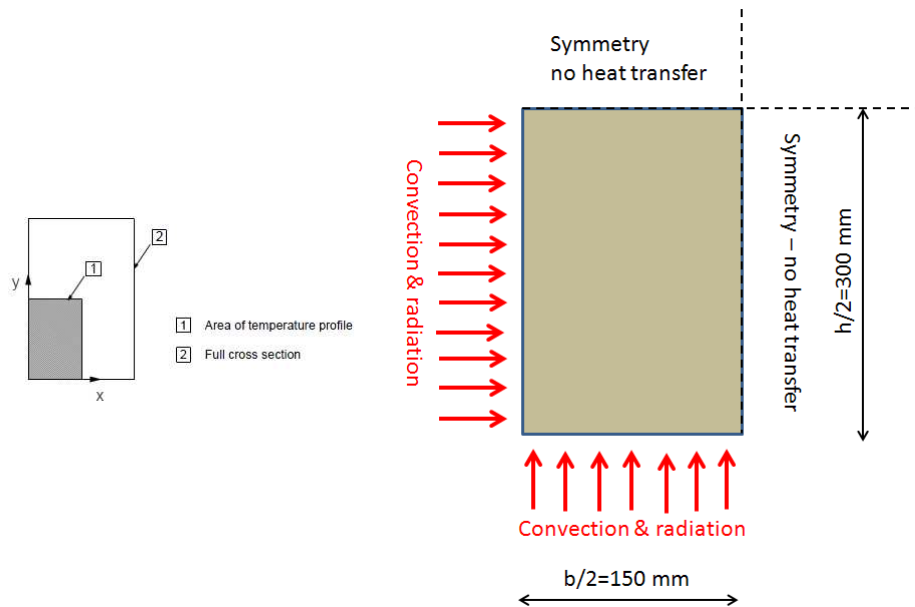


UNITS

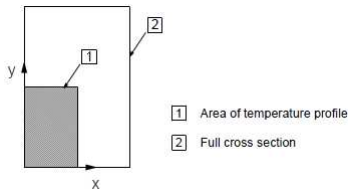
		UNIT SYSTEM				
		mm, s, t		m, s, kg		
Property	Example property	Quantity	Unit	Quantity	Unit	
Length			[mm]		[m]	
Time			[s]		[s]	
Mass			[tonne]		[kg]	
MECHANICAL	Force	1kN	1000	[N]	1000	[N]
	Stress	Elastic modulus of steel	2.10E+05	[MPa]	2.10E+11	[Pa]
	Density	Density of steel	7.85E-09	[t/mm ³]	7.85E+03	[kg/m ³]
	Velocity	80km/h	22.22 E3	[mm/s]	22.22	[m/s]
	Acceleration	gravity	9.81E+03	[mm/s ²]	9.81	[m/s ²]
	Energy	1 kJ	1.00E-06	[mJ]	1000	[J]
	Power	1 kW	1.00E+06	[mW]	1000	[W]
THERMAL	Specific Heat	SH of steel at T=0°C	4.25E-04	[mJ/tK]	425	[J/kgK]
	Thermal conductivity	TC of steel at T=0°C	5.40E+01	[mW/mmK]	54	[W/mK]
	Stefan–Boltzmann constant		5.67E+01	[mW/mm ² K ⁴]	5.67E-08	[W/m ² K ⁴]
	Convection factor	CF of concrete	2.50E-02	[mW/mm ²]	25	[W/m ²]

EXAMPLE 1 Transient heat transfer in the concrete beam (EC2 Annex A)



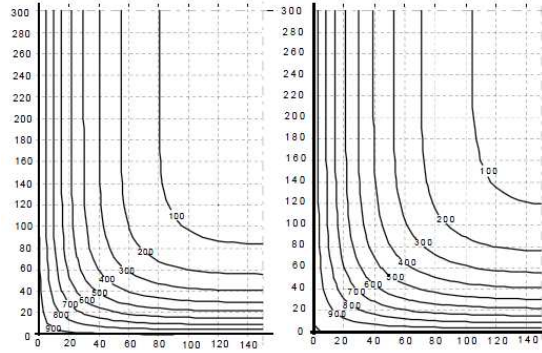
EXAMPLE 1

Transient heat transfer in a concrete beam (EC2 Annex A)



Temperature profiles for a beam $h \times b = 600 \times 300$ - R120
According EC2 Annex A (Fig. A.8)

EN 1992-1-2:2004 (E)



a) R60 b) R90
Figure A.7: Temperature profiles (°C) for a beam $h \times b = 600 \times 300$

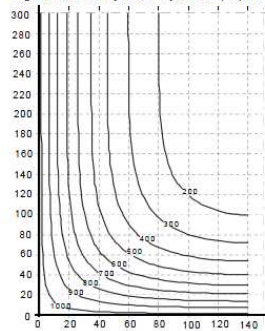
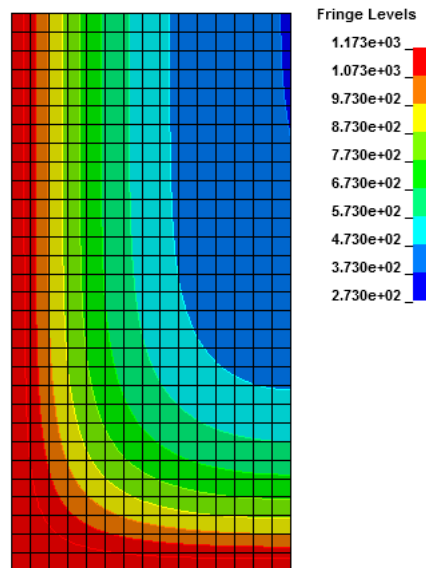
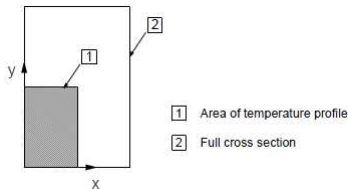


Figure A.8 Temperature profiles (°C) for a beam $h \times b = 600 \times 300$ - R120

EXAMPLE 1

Transient heat transfer in a concrete beam (EC2 Annex A)



Calculated temperature profile for a beam $h \times b = 600 \times 300$ - R120