Thermal Conduction Verification

Sample document with complete example values. It shows the report the purchased export produces for YOUR input - it is not itself a report for any part.

Project: Sample project | Part/Position: no real part | Prepared by: Sample, not released

Geometry and boundary conditions

Geometry	Flat wall (multi-layer)
Area A	10 m²
Temperature difference ΔT	20 K
Number of layers	1

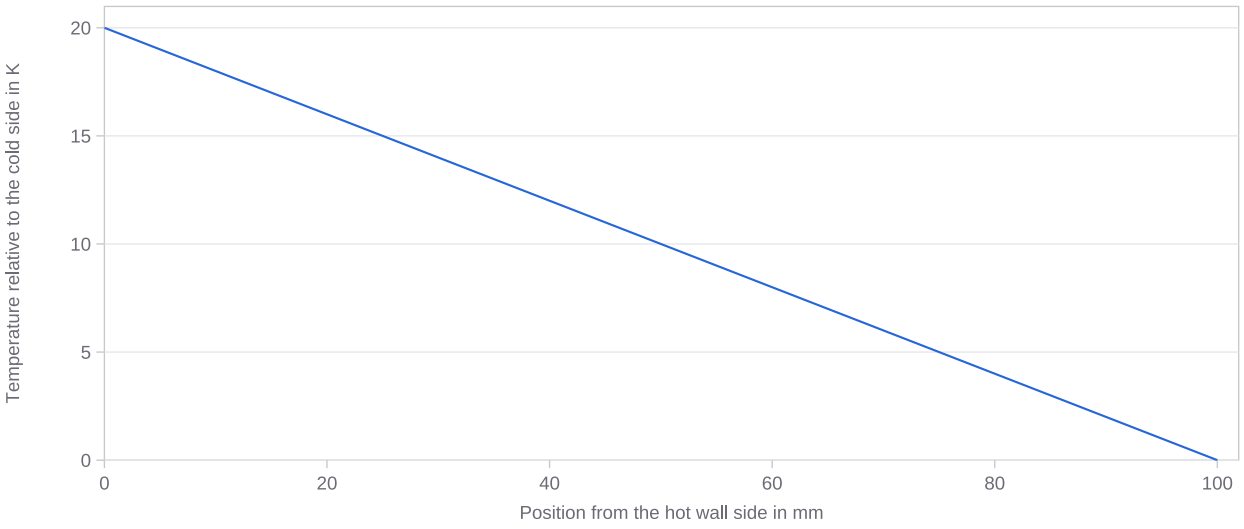
Layer build-up (inside/hot to outside/cold)

Layer	s [mm]	λ [W/m·K]	R [K/W]	ΔT [K]
1	100	0.04	0.25	20

Results

Total thermal resistance R_total	0.25 K/W
Heat flow Q	80 W
Heat flux q''	8 W/m²

Temperature profile across the layers



Calculation basis

Steady-state heat conduction per Fourier with thermal resistances in series: Q = ΔT/R_total. For the flat wall, each layer follows R = s/(λ·A) and Q = λ·A·ΔT/s; for the hollow cylinder, R = ln(ra/ri)/(2π·λ·L) and Q = 2π·λ·L·ΔT/ln(ra/ri). The temperature drop across a layer is ΔT_i = Q·R_i; the interface temperatures are stated relative to the cold side. Convective boundary layers and thermal radiation are not taken into account.

About this sample

All values on these pages come from a freely chosen example calculation and belong to no real part. The purchased export contains the same sections with your input, your header data (project, part, prepared by) and as searchable text. Pricing and scope: maschinenbaurechner.de/en/pricing