January 2002

HEAT2

Version 5.0

Heat conduction in two dimensions

HEAT2 is a PC-program for two-dimensional transient and steady-state heat conduction. The program can be used for analyses of thermal bridges, heat transfer through corners of a window, heat loss from a house to the ground, floor heating, to mention but a few applications. The program is along with the three-dimensional version HEAT3 used by more than 80 universities and research institutes worldwide. The program is validated against the standard EN ISO 10211-1.

Features

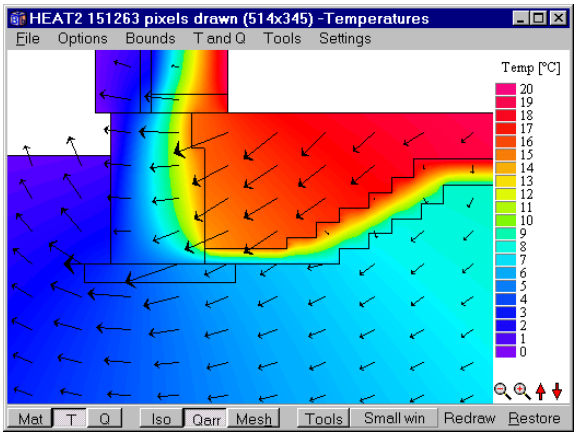
- Well tested with over one thousand users. Well documented. The manual contains many examples and a succinct theory. Easy to learn to use by interactive examples. Handy and rapid input due to the rectangular mesh restriction.
- An integrated pre-processor facilitates the input procedure. Extensive graphical capabilities: figures showing geometry, materials, numerical mesh, boundary conditions, temperature field, heat flow arrays isotherms. Features: zoom, panning, rotation, color/gray-scale, high resolution (600 DPI) printing. Arbitrary heat flows and temperatures can be recorded and shown during the simulation.
- Any structure consisting of adjacent or overlapping rectangles with any combination of materials may be simulated. Up to 62500 (250·250) nodes may be used.
- Boundary conditions may be a given heat flow, or a temperature with a surface resistance. Temperatures and heat flows may vary in time (sinusoidal, stepwise constant, stepwise linear). Several formats with climatic data such as TRNSYS, DOE, METEONORM, HELIOS, TMY2, SUNCODE, MATCH, and EXCEL can be imported for dynamic calculations
- Available modifications: heat sources/sinks, internal boundaries of prescribed temperature, internal regions containing air or fluid of a single temperature, internal resistances, radiation inside cavities.

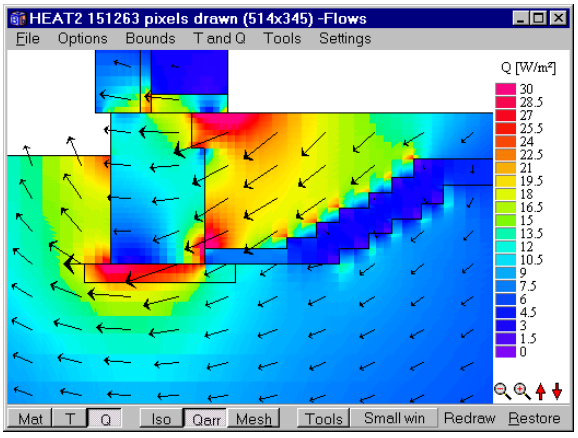
System requirements

HEAT2 requires a PC running Windows 95/98/NT/2000/XP with 32 MB RAM.

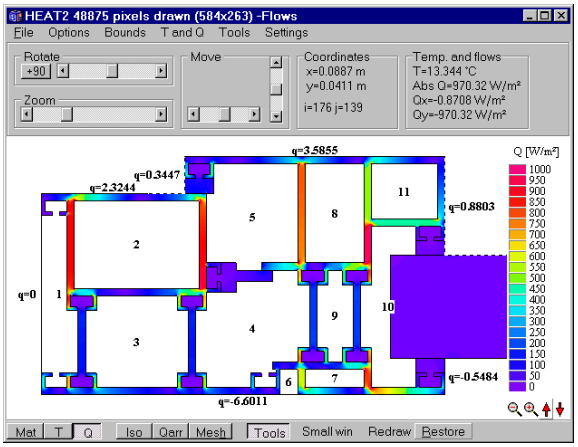
Developers

Lund Group for Computational Building Physics, Dept. of Building Physics, Lund University, Sweden.
Order info: www.buildingphysics.com, email: info@blocon.se





Slab on the ground. Top figure shows temperature field. Bottom figure shows heat flow intensity with large thermal bridge effects indicated by red color. Heat flow arrays are also shown.



Window frame with 11 cavities. This steady-state problem with 10000 numerical nodes takes a few seconds to solve with a Pentium 3.