

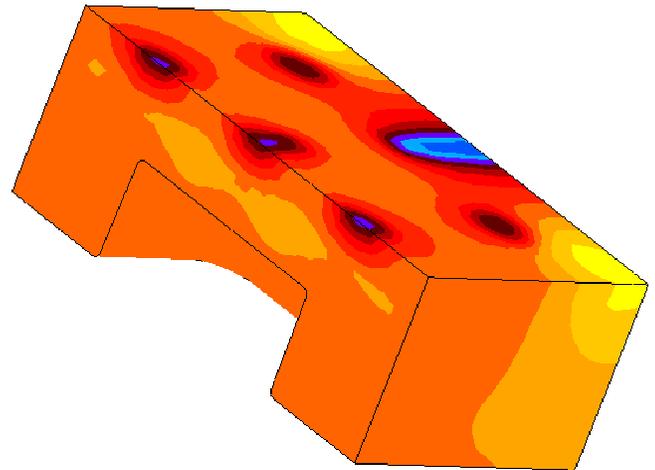
# PASSAGE®/DieThermal Software

**PASSAGE®/DieThermal** is a PC / Workstation based CAE software for modeling and thermal analysis of dies used in stamping, casting, injection and compression molding and related processes. It provides analysis of the heating/cooling of the die and optimizes the location of the heating/cooling elements and their operating schedule.

The capabilities of **PASSAGE®/DieThermal** software are:

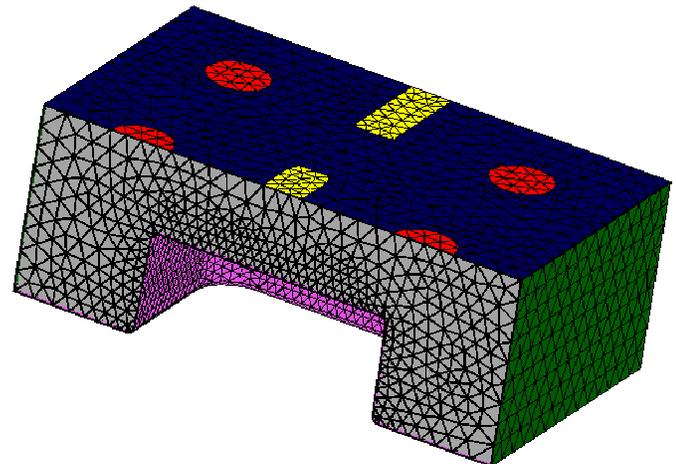
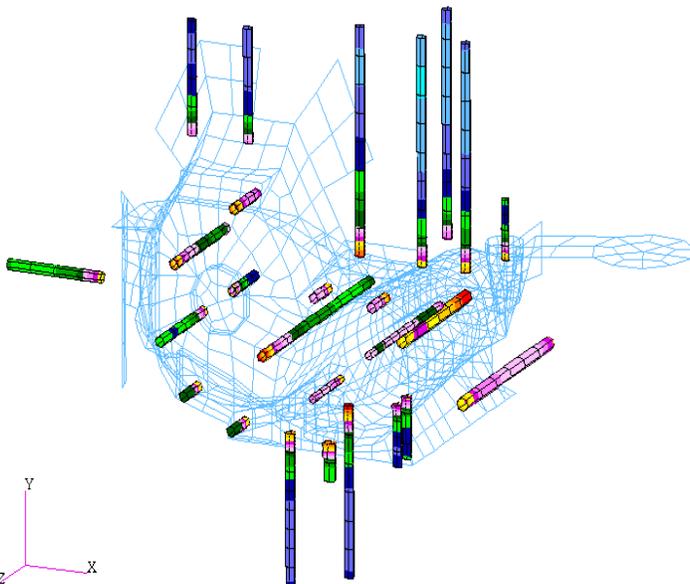
- **Thermal analysis** of the die, including full coupling with of heat transfer with heating/cooling lines,
- **Optimization of Cooling Lines**, including schedule to turn it on/off.
- **Die Temperature Distribution and Distortion**, including non-uniform thermal expansion, and uneven contact between die components.

Heating Line Design for a Stamping Die



Temperature Distribution

Cooling Line Design for a Die-cast Part



Finite Element Mesh

## PASSAGE<sup>®</sup>

- **PASSAGE<sup>®</sup>** software is a collection of finite element programs for flow, heat transfer and related analyses in 3-D geometries.
- **PASSAGE<sup>®</sup>** software consists of the following stand-alone programs:
  - **PASSAGE<sup>®</sup>/FLOW** flow and heat transfer analysis.
  - **PASSAGE<sup>®</sup>/SYSFLOW** one-dimensional simulation of flow networks.
  - **PASSAGE<sup>®</sup>/DEM** flow of small particles in electrical and magnetic fields.
  - **PASSAGE<sup>®</sup>/DieThermal** modeling and thermal analysis of dies used in stamping, casting, injection and compression molding.
  - **dieCAS<sup>®</sup>** filling, solidification, and distortion analysis of die-cast parts.
  - **PASSAGE<sup>®</sup>/PowerCAST** filling and solidification of casting processes.
  - **PASSAGE<sup>®</sup>/COMPRESSION** compression molding analysis of thin-walled plastic parts.
  - **PASSAGE<sup>®</sup>/FreezeDrying** primary and secondary freeze-drying modeling using coupled mass and heat transfer analyses.
- All programs are supported by pre-processors for geometry, mesh, flow/process conditions definition; and post-processors for color results display as x-y graphs, vector and contour plots.

## FEATURES

- Heat transfer equations with a variety of nonlinear material properties and boundary conditions.
- Graphical user interface enables review of complex unsteady flow fields in detail.
- Software has been tested for the solution of many real world problems, and supported by numerous case studies.
- Runs on PC based workstations
- **PASSAGE<sup>®</sup>/DieThermal** software was developed and is offered exclusively by Technalysis, Inc.

## BENEFITS

- **PASSAGE<sup>®</sup>/DieThermal** software can minimize the cost and time of traditional prototype building and testing, thus shortening product design cycles.
- Designs can be analyzed and modified on the computer before expensive and time consuming design decisions are finalized.
- Technalysis offers software customization of **PASSAGE<sup>®</sup>/DieThermal** software to meet specific customer needs.