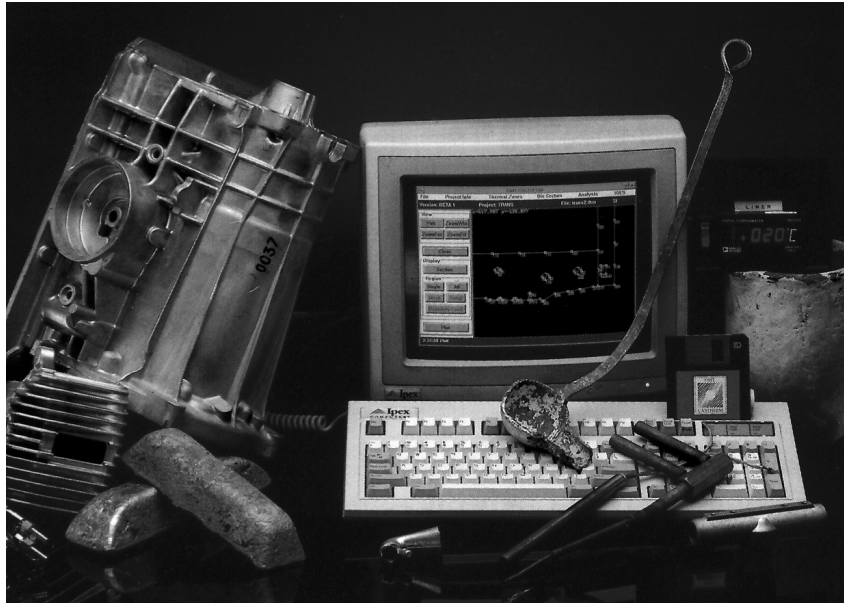




CASTHERM

Computer-aided cooling and heating design technology for pressure die casting



CASTHERM is a software package specially developed for designing cooling and heating systems in die casting dies. Using **CASTHERM**, die designers can rapidly determine the position, size, and number of cooling and/or heating channels in the die. The effect of the die sprays, thickness, construction, materials and geometry on the thermal performance of the die can be investigated. Ultimately, the designed cooling and heating system maximises the casting production rate of the die.

CASTHERM, a complementary product to the **CASTFLOW** runner and gating software, encapsulates years of research into thermal behaviour and control in the pressure die casting process by CSIRO - Australia's largest research organisation. The package applies the boundary element method (BEM) which simplifies input data preparation and allows faster and more cost effective die thermal analysis than that can be achieved by other known mathematical solution methods.

CASTHERM design technology has become internationally recognised and is now in use world wide. Castec Australia Pty. Ltd. is committed to research and development in order to update the **CASTHERM** technology and to market it worldwide.

Benefits of **CASTHERM**

Application of **CASTHERM** technology in die design has demonstrated the following benefits:

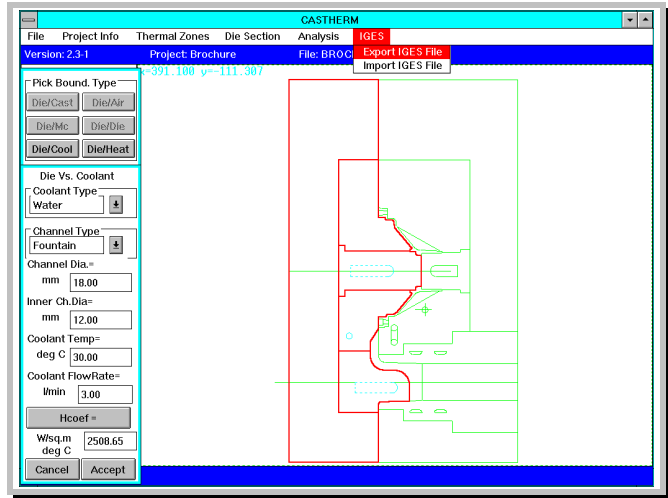
- ⇒ better temperature distribution of the die surfaces which reduces casting distortions
- ⇒ maximised casting production rate
- ⇒ minimised thermally related defects such as shrinkage porosity and cold flow
- ⇒ thinner-walled castings
- ⇒ prolonged die life
- ⇒ reduced die development time

CASTHERM is Microsoft Windows compatible and provides user-friendly menu driven features:

The die geometry can be defined using CASTHERM's drawing facilities and/or transferred from other CAD/CAM system via the IGES file transfer facilities.

CASTHERM's Thermal Zone concept provides a simple and quantitative means of analysing the effect of the three-dimensional casting geometry and heat load distribution in the die.

Using this concept, the die thermal analysis can be carried out in two dimensional sections of the die and typically only up to three sections need to be analysed, saving a considerable design time.



Casting Name: **Brochure**

Production Rate: 90.00 shots/hour

Accept Cancel

Zone Name	biscuit	SPRUE	runner	casting	
Zone Volume	100.00	24.00	31.00	264.00	cub.cm
Surface Area	128.00	50.00	105.00	1672.00	sq.cm
Pour Temp	650.00	640.00	630.00	610.00	deg C
Ejection Temp	300.00	300.00	280.00	270.00	deg C
Expected Die Temp.	250.00	250.00	250.00	250.00	deg C
Heat Load	4837	1145	1500	12590	Watts
Heat Flux	377900	228917	142810	75302	W/sq.m

Delete Zone Calculate

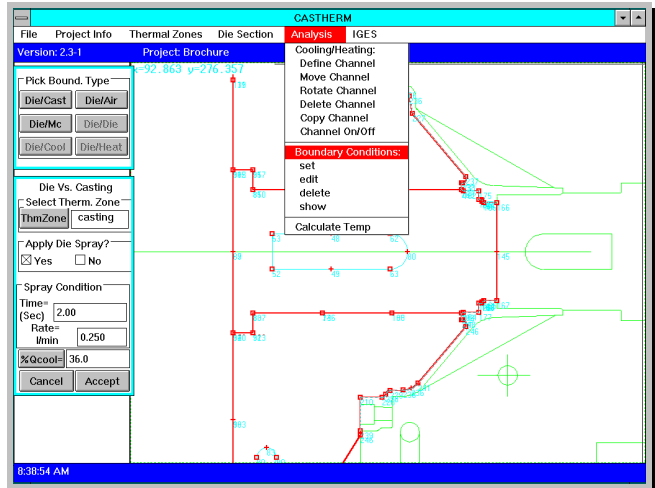
Thermal conditions on the die surfaces can be easily specified. The user can nominate the die spray's spray time and flow rate and CASTHERM automatically calculates and displays the % cooling effect.

The thermal coefficients applicable on the die casting process are automatically calculated from empirical formulae built in CASTHERM. The designer needs only to specify, say, the flow rate and temperature of the coolant. This simplifies the operation of CASTHERM allowing designers to concentrate on the design task.

Die temperature distribution can be calculated and displayed within a few seconds allowing "what if?" analyses to be done within seconds and eliminating the guess work from the design of the die cooling and heating system.

Why CASTHERM?

- ⇒ Using CASTHERM, the cooling and heating circuits can be designed and optimised within a reasonable time.
- ⇒ The CASTHERM design approach is easy to learn making it an excellent training tool to new and experienced die designers.
- ⇒ CASTHERM is a proven technology and is used to design several hundreds of dies yearly.



For further information contact:



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