

- Casting Process : Z-cast

| About | Case Study | Testimonial | Package |

▣ About   

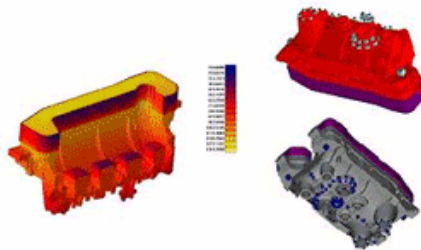
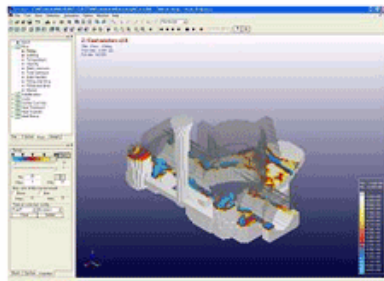
Z-CAST

▣ Introduction

Z-CAST is..

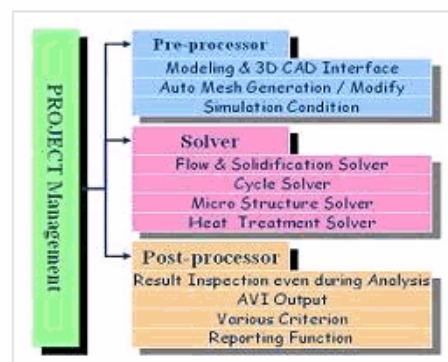
The first Casting Process CAE system for Windows in Korea, which was co-developed by KITECH(developing solver since 15 years ago and it has been certification in the real casting production) and Cubictek(developing the first CAD/CAM in Korea).

- Casting Process Simulation Software specified for Casting Process Analysis
- Tool for optimized casting process design and die design
- Total process simulation of metal's flow, filling, solidification
- Rapid and exact result for casting company
- Comfortable user interface based on all Window technology



▣ Features

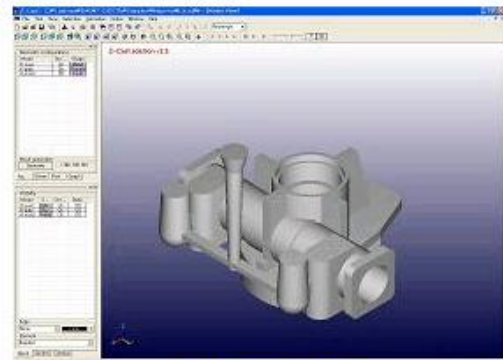
- Project management
- CAD DATA INTERFACE(STL,IGES)
- CATIA,PRO/E,MDT,IDEAS,UG
- Modeling for the casting design
- Automatic mesh generation and modifying
- Determining of inlet/thermocouple
- Solidification,flow,cyclic casting module
- Heat treatment/Microstructure module
- Material DB management
- Saving of animation
- Shrinkage display
- GUI for user's convenience



- Pre-Process

Project management

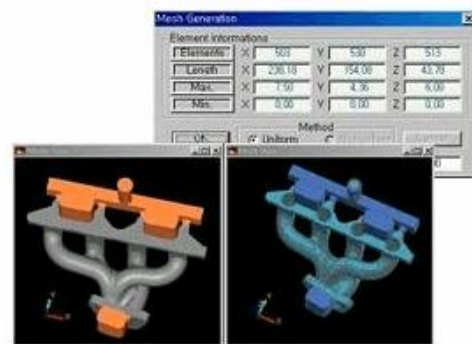
- Casting design and modeling using Primitive
- CAD DATA INTERFACE(STL,IGES)



•STL Interface•

Auto-Mesh Generation

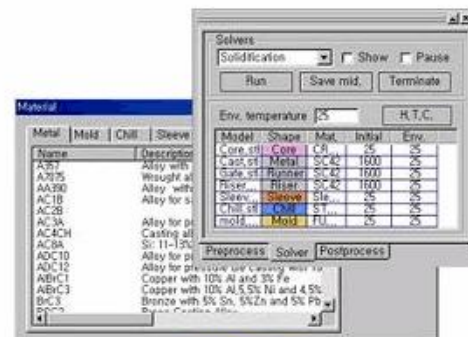
- Speedy and easy mesh generation(4million/4sec)
- Automatic mesh generation and modifying
- Unlimited number of mesh generation(100million)
- Be able to define inlet/thermocouple



•Mesh Generation•

DATA Base Management

- Easy and handy material selection
 - To append and modify
 - cast : Aluminum,Copper,Magnesium,Zinc,Cast
 - Steel,Cast Iron,Cr/Ni Base etc.
 - mold : SKD6,SKD61,Steel,Green_Sand
 - Furan,CR_sand,ZR_Sand,Ceramin etc.
 - the others : Sleeve,Insulation,Core,Chill etc.

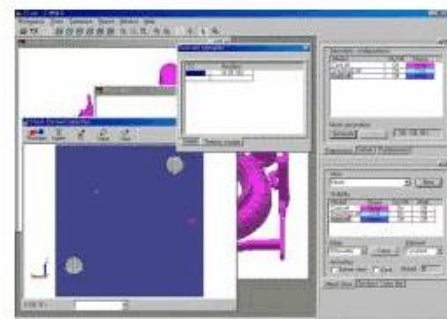


•Data Base•

- Solver

Fluid Flow Analysis Module

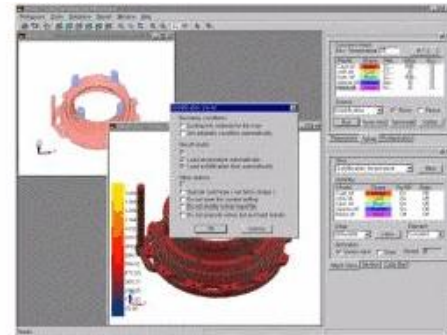
- Incompressible Viscous Fluid
- Transient Analysis considering Inertia
- Continuity Equation,Kinematics Equation, Energy Equation,Sola-Vof method



•Flow Analysis•

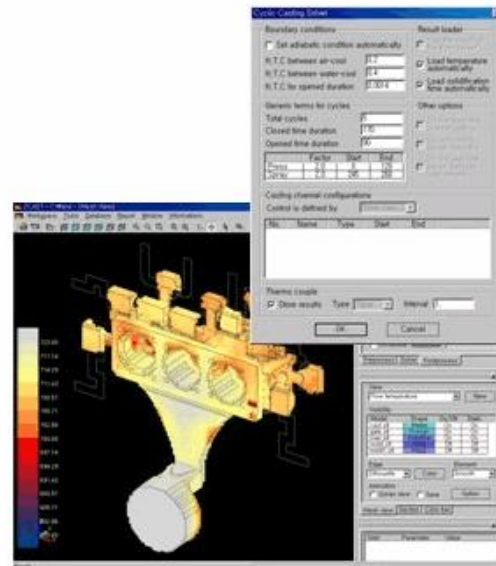
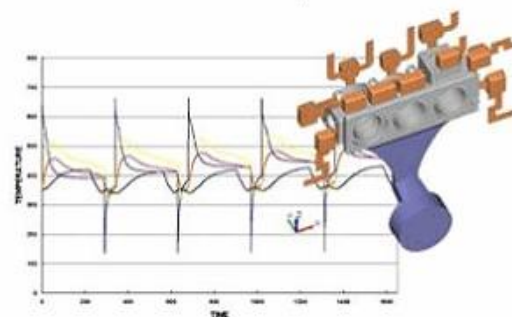
Solidification Analysis Module

- 3D Transient heat transfer and solidification analysis
- Direct Finite Difference Method(DFDM)
- Temperature Recovery Method(Latent heat)
- General sand Casting and investment casting



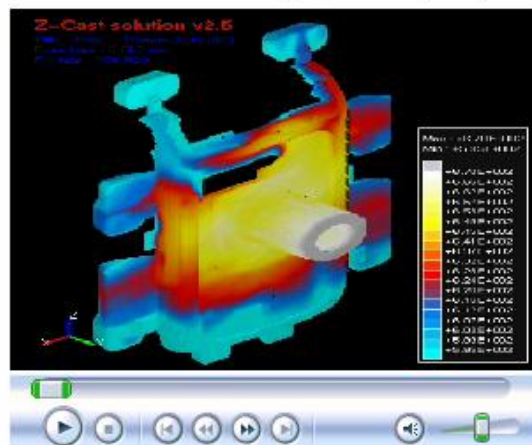
Cycle Analysis Module

- 3D Transient heat transfer and solidification analysis
- Direct Finite Difference Method(DFDM)
- Temperature Recovery Method(Latent heat)
- Cooling line design of casting mold(Gravity Casting, Low pressure casting)
- High pressure die casting and squeeze casting
- Decision of cycle time
- Forecast and control of mold temperature

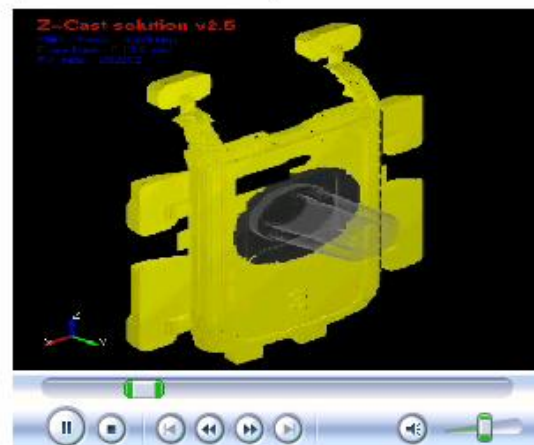


Fluid Flow Analysis

- Z-CAST shows molten metal filling procedure analyzed by flow analysis and shows also unfilled region



Flow

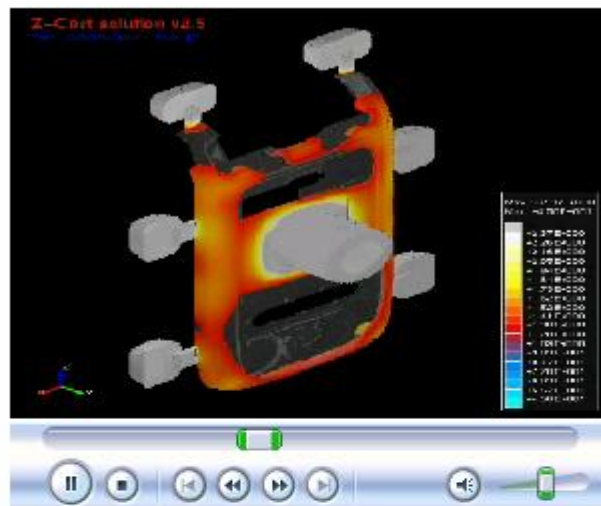


Un-filling



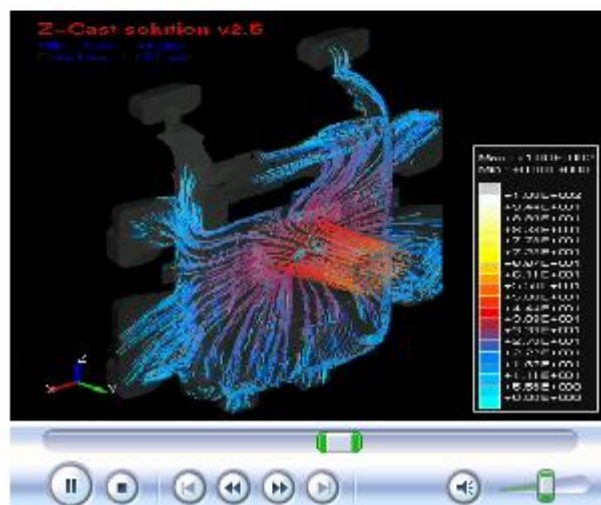
Product

Fluid Flow Analysis



Flow

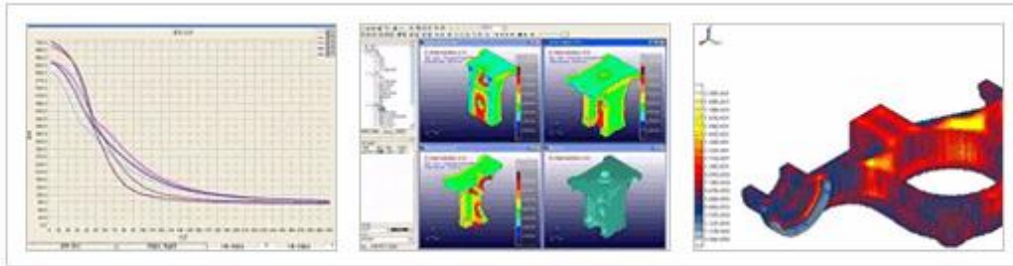
Maker



- Z-Heat Module

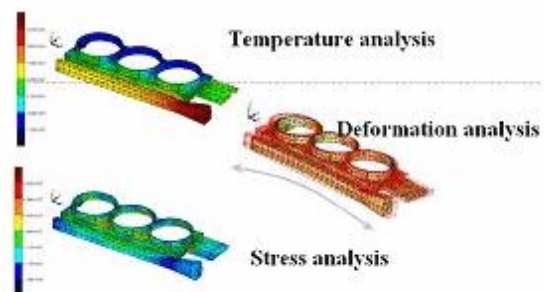
Heat Treatment

- Optimal Condition for Heat Treatment
- Time reduce
- Hardness/Residual Stress Predict
 - Quenching/Annealing/Normalizing
 - Tempering Temperature
 - Various TTT/CCT Data



- Z-Stress Module

- Thermal stress Non-linear analysis
- Residual Stress Predict
- Hot Tearing & Cracking Position Predict
- Die Fatigue & Crack Predict



▣ Applied field

- Sand mold casting : automatic casting line, green sand, CO₂, furan, ...
- Permanent mold casting
- High/Low pressure die casting
- Squeeze casting
- Tilt casting
- Centrifugal casting
- Investment casting
- Single crystal investment
- Lost wax foam, evaporative pattern

▣ Effect

- Prediction of casting defect
- To protect from casting fault
- To reduce trial making and development cost
- To accumulate casting process design technology
- Scientific cooling line design
- To protect from overheat of die and to prolong die life
- To improve productivity of die and to short cycle time for production

▣ System requirements

	Basic Spec	Recommended
CPU	Pentium III/500Mhz	Above Pentium V 2Ghz
OS	Microsoft Windows 2000/XP	
Memory	512MB	Above 1G
Display	1280X1027 16 Million Color Above 32MB, OpenGL	1280X1027 16 Million Color Above 64MB, OpenGL
HDD	500MB	Above 500MB