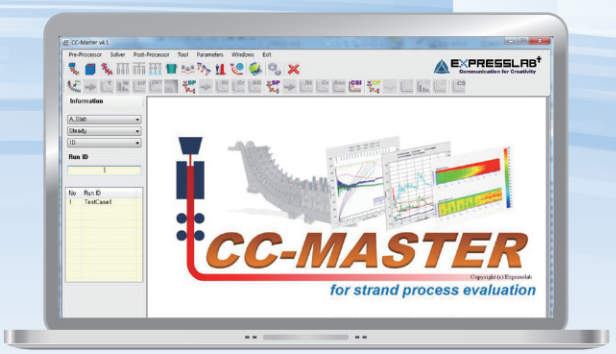
Advanced Simulating Software for Continuous Casting

CC-MASTER

Professional Tool for Process Design, Process Optimization and Quality Estimation in Continuous Casting Strand

CC-MASTER is the professional tool developed for the optimization of continuous casting process. Extensive material database based on reliable failure-limit analysis of strands enables realistic and accurate simulation of continuous-casting process and defect evaluation in strands. Its flexible and powerful graphical user interface makes preparation of input data and examination of result data easy to accomplish.

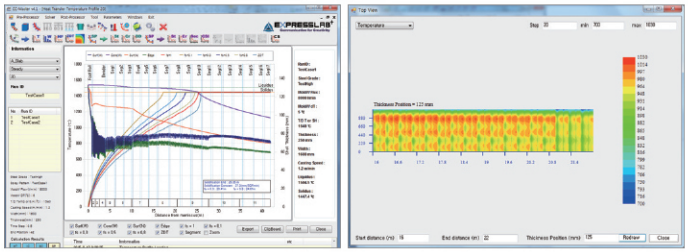
Easy-to-Use / Competitiveness / User-friendly environment



HEAT TRANSFER MODULE

Heat Transfer Module in CC-MASTER enables to predict the temperature/solidification behaviors and this works in coordination with other modules.

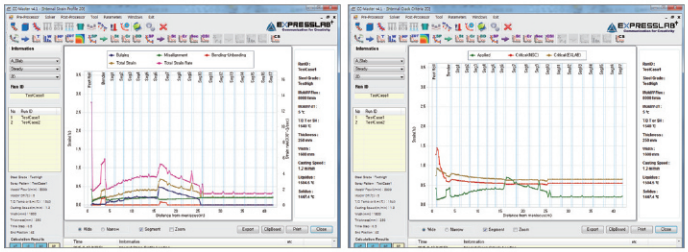
- Accurate and Fast Prediction
- Linked with Extensive Material Database
- Flexible Geometry / 2D Dimension
- Easy-to-Tune



INTERNAL CRACK MODULE

Internal Crack Module enables to predict and suppress internal cracking during continuous casting. This work is very important in optimization of operation process and segment design such as roll geometry.

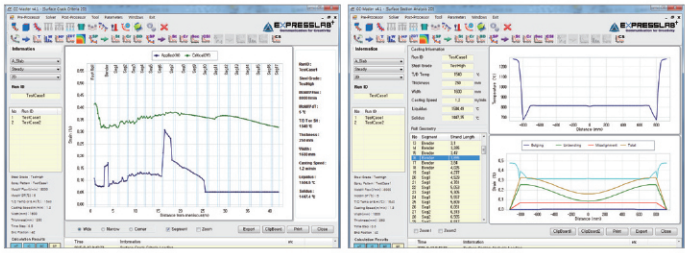
- Calculation of Applied Strain and Critical Strain at Solidification Interface
- Reliable Critical Strain Model
- Roll Pitch Design to Prevent Internal Crack
- Easy-to-Tune based on Field Experiences

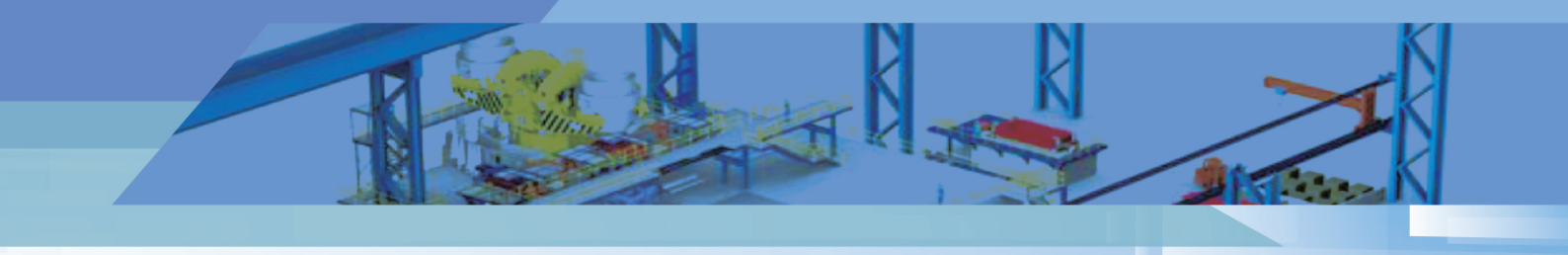


SURFACE CRACK MODULE

Evaluation of critical strain(depending on steel composition and temperature profile) at strand surface and its comparison with the applied strain at surface enables for users to judge whether the given surface temperature profile is proper to prevent surface cracking.

- Coupled with Heat Transfer Module
- Quantitative Calculation to Prevent Surface Crack
- 2ndary Cooling Optimization
- Calculation of Applied Strain and Critical Strain at Strand Surface

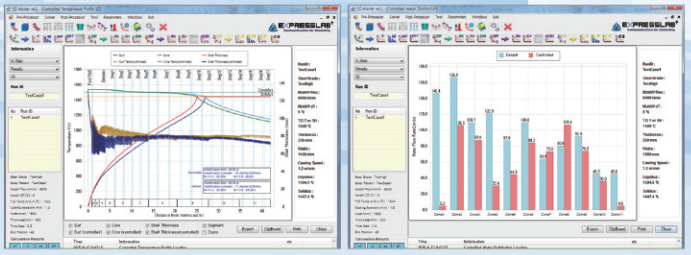




WATER FLUX CALCULATION MODULE

CC-MASTER offers a automatic calculation of the secondary-cooling pattern once users set the target temperatures within the cooling zones based upon the results from the Surface Crack and Internal Crack Modules simulated for preventing cracking.

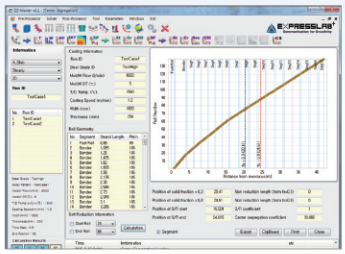
- Calculating water flow rate based on target temperature of each cooling zone
- Iterative method for finding water flow rate
- Flexible temperature tolerance defined by user



CENTER-SEGREGATION MODULE

CC-MASTER includes the model developed based on phenomenological equations composed of several parameters affecting central segregation.

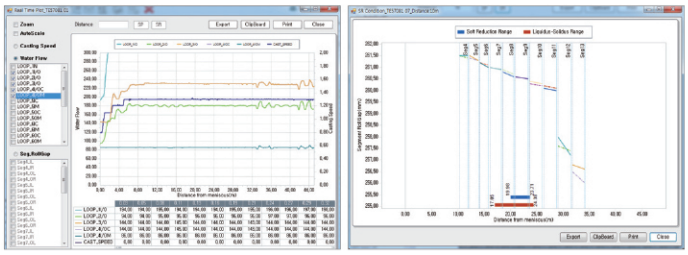
- Phenomenological Model for Practical Use
- Statistical Fitting to Experimentally Determined Segregation Index
- Quantitative Estimation of Segregation
- Evaluating degree of correspondence between soft-reduction range and solidification completion

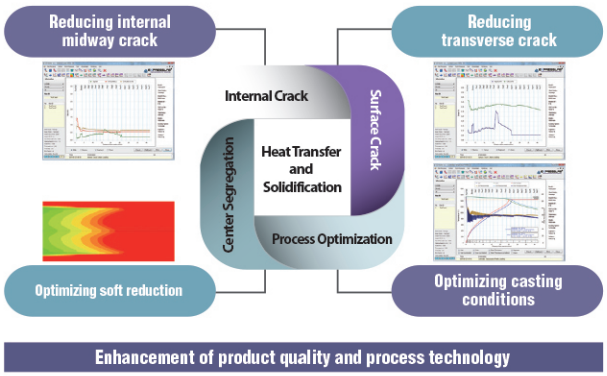


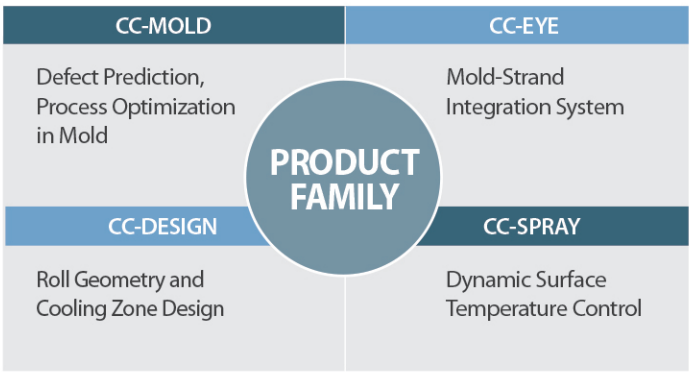
REAL CONDITION MODULE

Real Condition Module is for the unsteady real casting, combining the heat transfer module, internal crack module and surface crack module with real casting data. And off-line monitoring of casting parameters is included.

- Using real casting data for unsteady casting analysis
- Finding a soft reduction range using roll gap data
- Off-line monitoring of casting conditions







EXPRESSLAB+
Communication for Creativity

Expresslab Co., Ltd.
1006 Jeongja I-Park,100, Baekhyeon-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
Tel. 82-31-785-7094 Fax. 82-31-785-7091 www.expresslab.co.kr