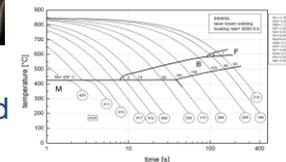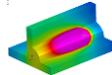## Application sample

HSLA steel for mobile cranes
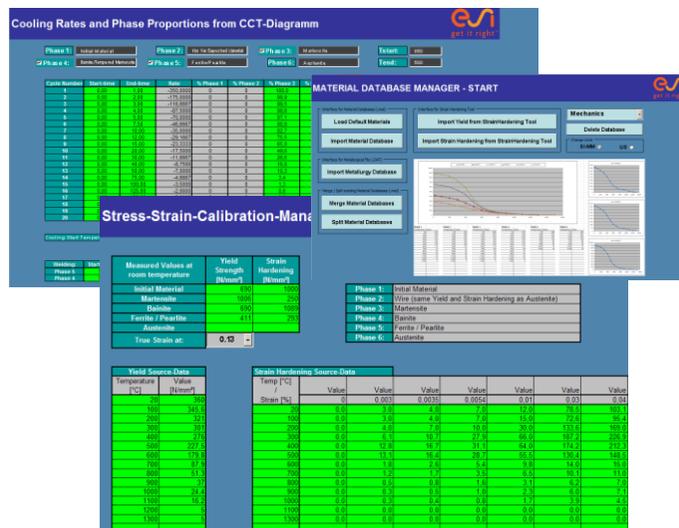

Technology decision:
SAW vs. Laser-GMAW-Hybrid

Welding structure simulation

WeldWare**®** is used for the adaptation of material data to determine the influence of the heat composition.

YOUR ADVANTAGES

- Fast decisions in production and repair
- Optimisation of costs with covering of product quality
- A system based on the world wide biggest collection of material data for welding simulation
- Scientifically founded results

WeldWare® serves…

- the calculation of the heat management before welding
- the calculation of microstructure and mechanical properties in the HAZ
- the determination of necessary preheating temperatures at real components
- the supply of data for FEM

WeldWare® uses…

- heat comprehensive regression equations
- welding-cct-diagrams measured by SLV Mecklenburg-Vorpommern GmbH
- corresponding material data
- cooling time equations

Distribution address for WeldWare®:

Dr.-Ing. Arite Scharff (IWE)

Web: www.slv-rostock.de
E-Mail: scharff@slv-rostock.de
Mobile: +49 174 921 77 33
Phone: +49 381 811 50 23
Fax: +49 381 811 50 99
Adr.:   Alter Hafen Süd 4
                D-18069 Rostock

WeldWare®

Welding advisory system of

GSI SLV
Mecklenburg-Vorpommern

Research across decades combined in one software:

Heat management during welding of steel – structure transformations and properties in the heat effective zone

Materials and their properties

- General construction, ship building, tube steel,
- Fine grain steel, HSLA steel,
- Steel tough at sub-zero temp. or heat-resisting,
- Steel resistant due to pressured hydrogen,
- Case hardening steel, tempering steel,
- Model steel, cast steel un- and low alloyed,
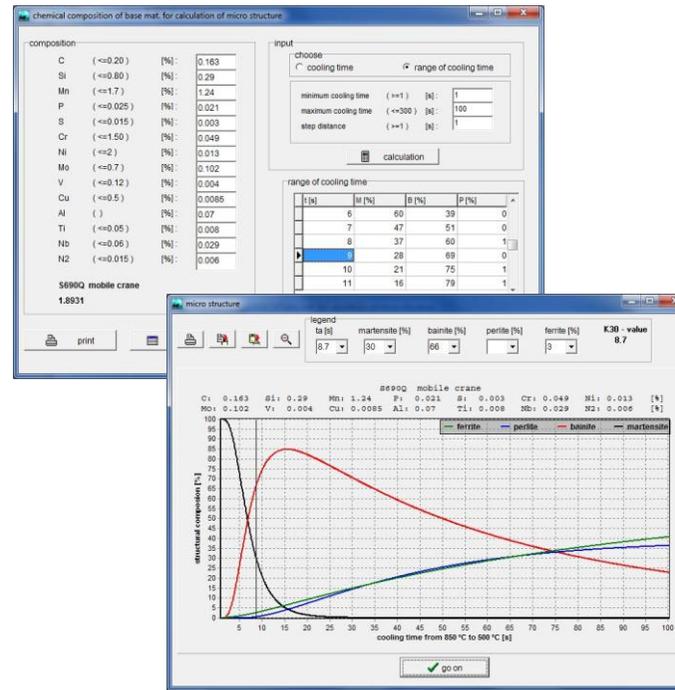- GMA weld metal.
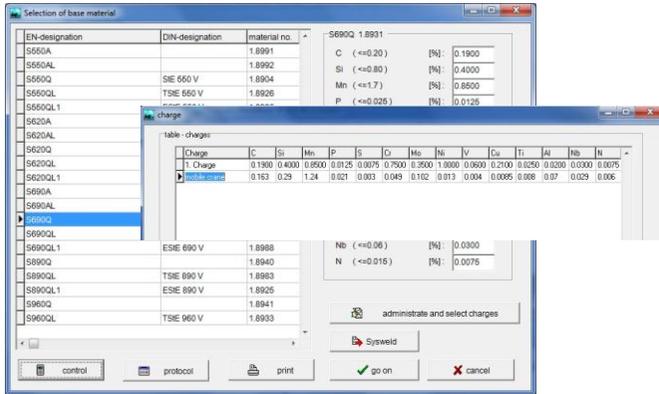
WeldWare® determines the mechanical properties in the HAZ for individual heats depending on the chosen cooling time:
- Hardness, yield strength and tensile strength
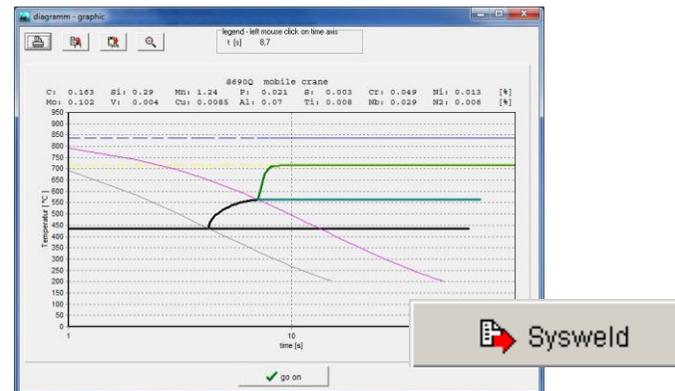- Elongation and reduction of area
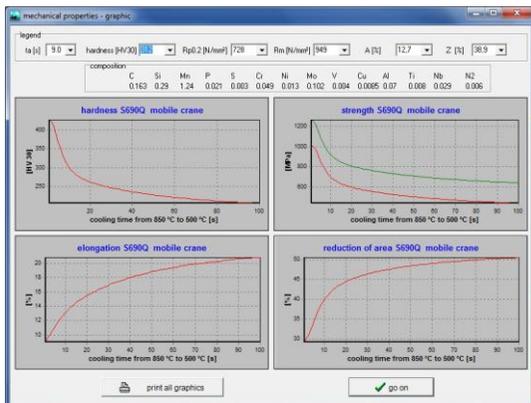
Microstructure and welding-cct-diagram

WeldWare® calculates the microstructure composition for any selectable cooling times.


WeldWare® displays the diagram clearly organized and exports the material data via the WWD-format into the welding structure simulation.

Calculation modules for all welding supervision persons

Basic version:
- Materials with individual heat administration
- Cooling time
- Minimum heat input
- Welding parameters
- Preheating temperature
- Multi wire welding
- Carbon equivalent
- Welding-cct-diagram
- Structure composition
- Mechanical properties
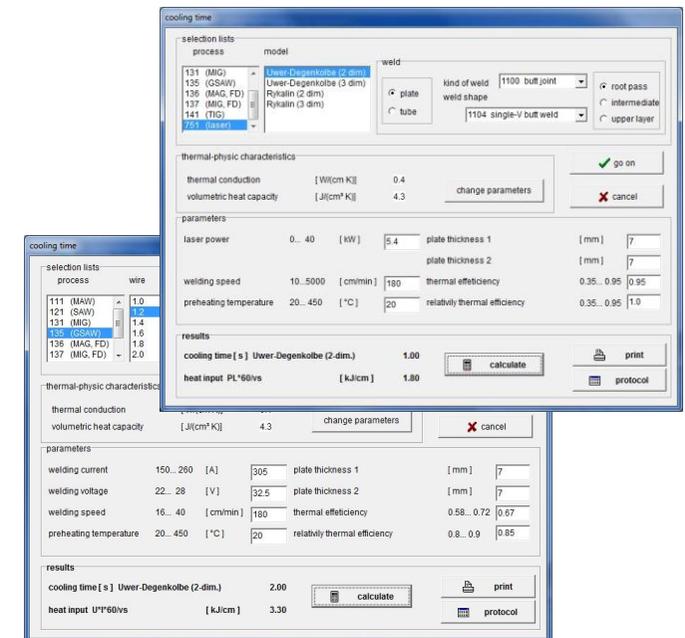
Additional in the full version:
- Temperature cycle
- Post heating
- Maximum hardness
- Heat scattering
- Affinity to cold cracks
- Geometry
- Strength fracture