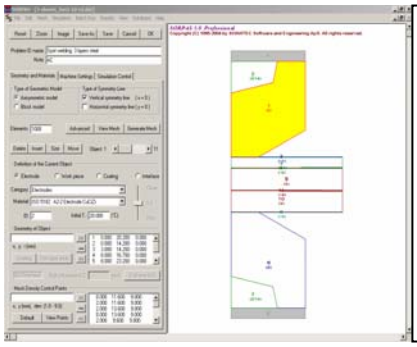
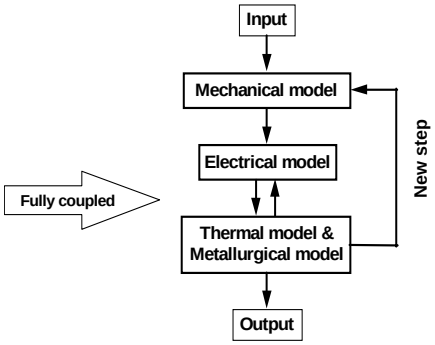
Huys Technical Library #12

OPTIMIZING WELD PARAMETERS

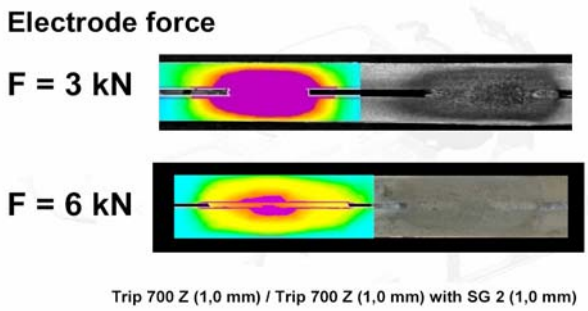
New materials (such as TRIP and DP steels), short lead times, complex joints and the need for zero defects are making efficient optimization of the welding 'window' essential. SORPAS software assists in setting and optimizing welding parameters.

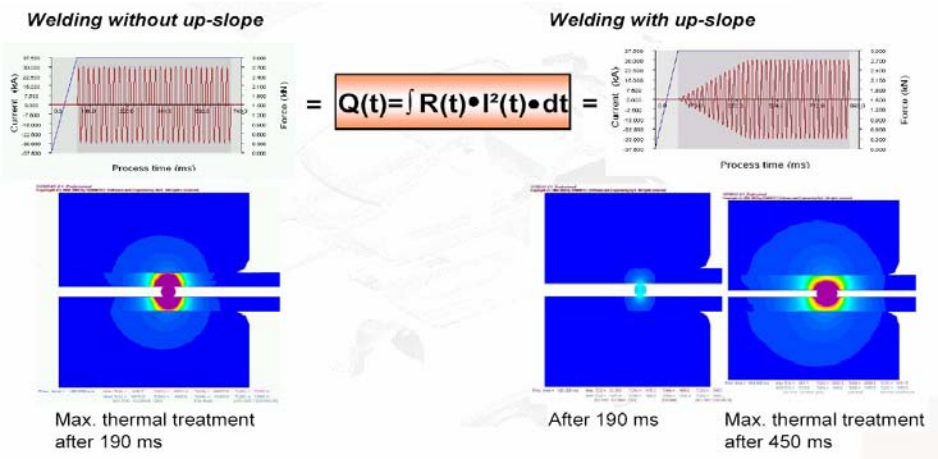


The user inputs into the template the electrode type, the characteristics of the materials being welded, the force, current variables and the machine characteristics. SORPAS software processes the mechanical, electrical, thermal and metallurgical variables to generate detailed weld animations & graphs.



It is easy to change your simulation by changing the inputs for force, time, materials, etc. At right, the force is changed, and the predictions are shown next to the cross sectioned weld that was achieved. In a similar fashion, the operable weld nugget range can be enlarged, the weld nugget formation evaluated, and the results of multiple pulses of current analyzed. Even the effective cooling rate can be managed with current down-slope.





At left, a simulation shows how to reduce expulsion and increase weld nugget size. The customer chose to employ up-slope to better manage the melt behaviour in a projection welding application. There was slower heating, more time for heat transfer, and a larger weld nugget. Solving this problem extended electrode lifetime, improved quality, reduced testing and has led to six patents.

- **Lower development costs; speed up production running-in time**
- **Optimize current process parameters for different welding materials, coatings, surface preparation and for the variability of "fit-up" in production**
- **Evaluate new and complex joints, designs and combinations for weldability**
- **Improve weld quality and production stability; assist troubleshooting**

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