

WeldCalc – Den tredje generationen

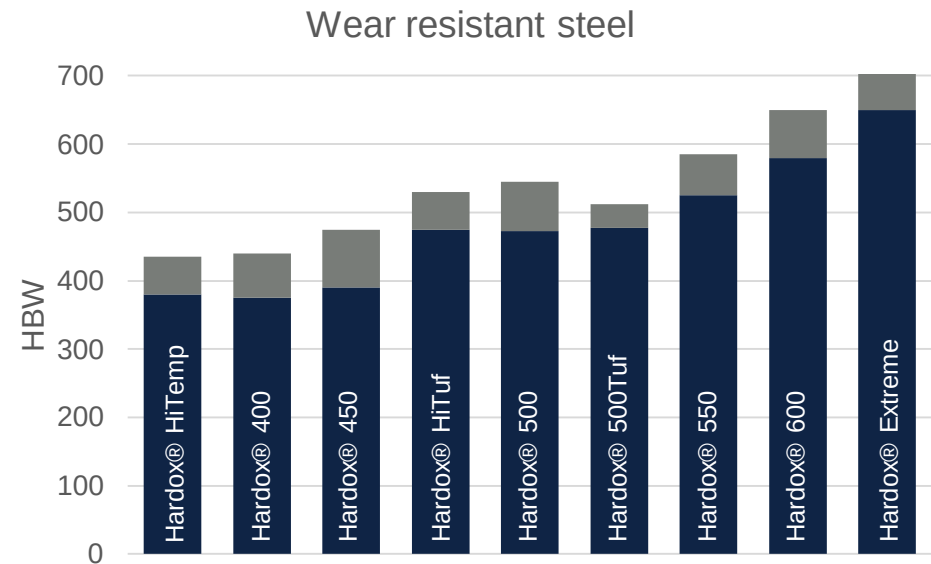
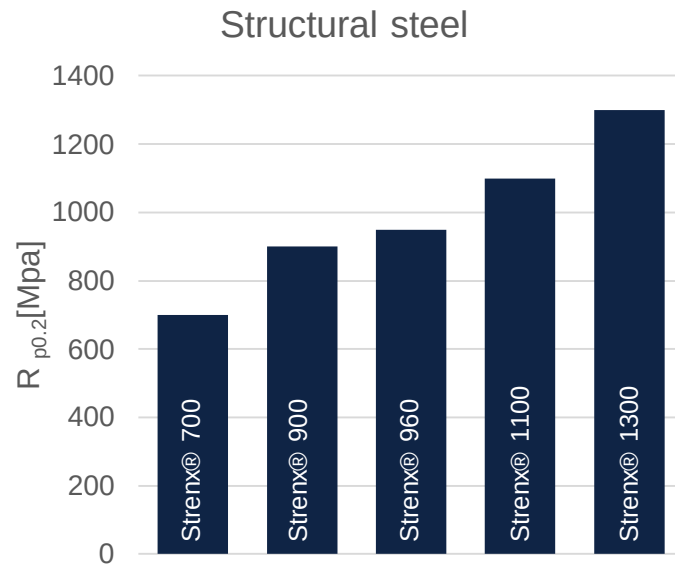
Daniel Stemne
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SSAB



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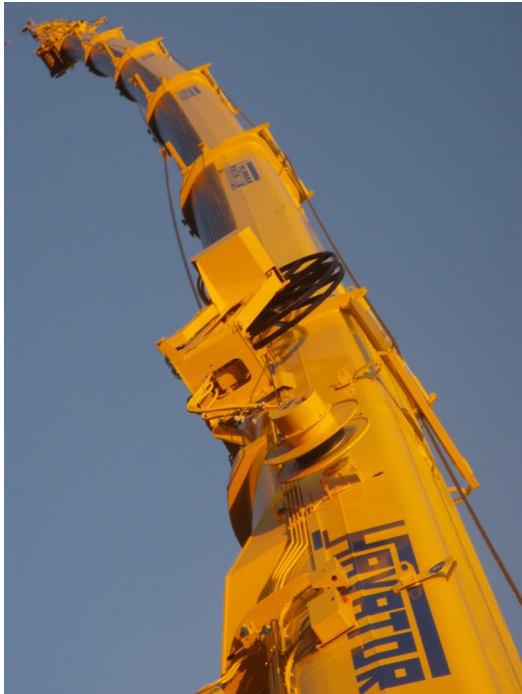
Agenda

- The purpose and features with WeldCalc 3.0
- Definition of welding parameters



Application example, high strength structural steels (Strenx)

Strenx



Hardox

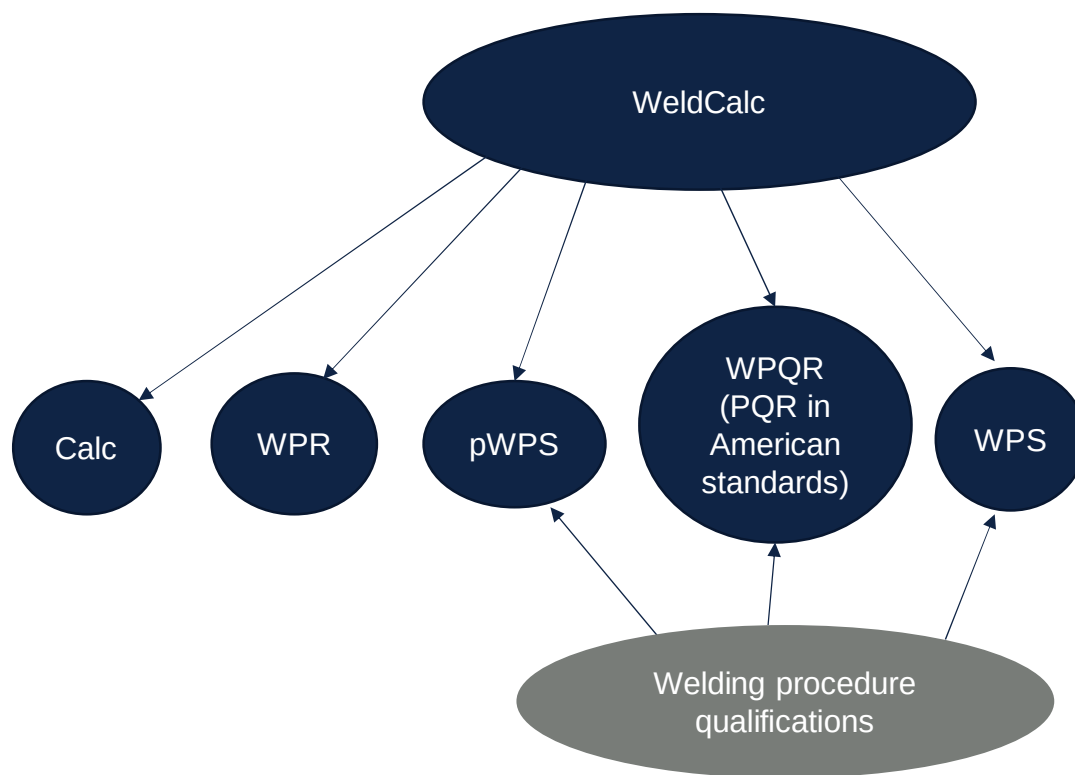


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WeldCalc – The third generation

WeldCalc is now developed e.g for:

- Calculations and optimizations of almost all types of welding performances present at customers to SSAB
- All created documentations including instructions to welders can be downloaded to a library
- Technicians, Engineers and Welders



WPR (Welding Procedure Record)

- A tool for attaining optimal mechanical properties in the welded structure
- Supports development of cost-efficient welding performances



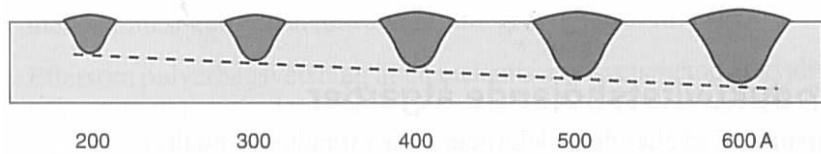
WeldCalc – The third generation

Examples of feasible advantages:

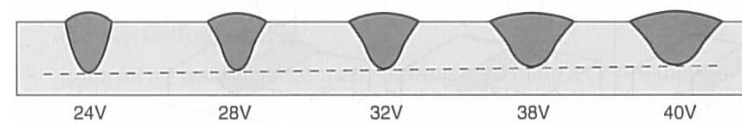
- A higher general, and more even, product quality
- Reduction of the amounts of repair welding and claims

Welding parameters

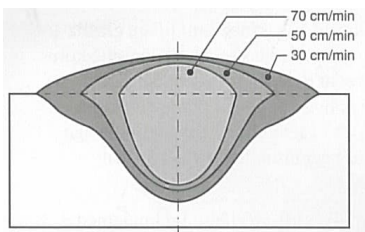
Current



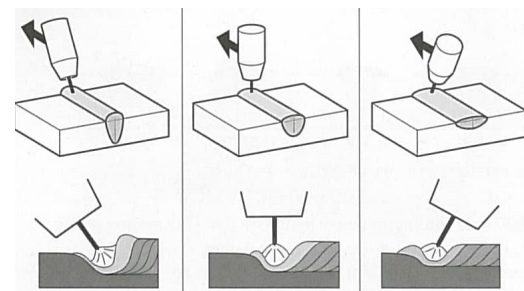
Voltage



Travel speed



Torch angle



Pull technique

Vertical

Push technique



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Features

Simplified instructions to welders:

PARENT METALS

Strenx 1100	Plate Thickness [mm]: 5-10
Strenx 1100	Plate Thickness [mm]: 5-10

JOINT

Single-V preparation



Welding pass	Method	Preheat [°C]	Stickout [mm]	Current type	Current Polarity	Current [A]	Voltage [V]	Travel Speed [cm/min]	Heat input [kJ/mm]
1:1 (T1)	MAG/MIG, all types	20-100	15-18	DC	POS	280-320	24.0-27.0	30-37	0.87-1.38
1:2 (T1)	MAG/MIG, all types	20-100	15-17	DC	POS	280-320	25.0-27.0	37-42	0.8-1.12

Example

Strenx 700 shall be welded with a single-V butt weld. The plate thickness range is between 20-30 mm for both plate members. Equal plate thickness through out each joint applies. Welding method: MAG, with semi automatic performance.

C	Si	Mn	P	S	Cr	Ni	Mo	V	Ti	Cu	Al	Nb	B
.13	.28	1.21	.005	0.001	.25	.02	.15	.028	.01	.02	.05	.02	.0014

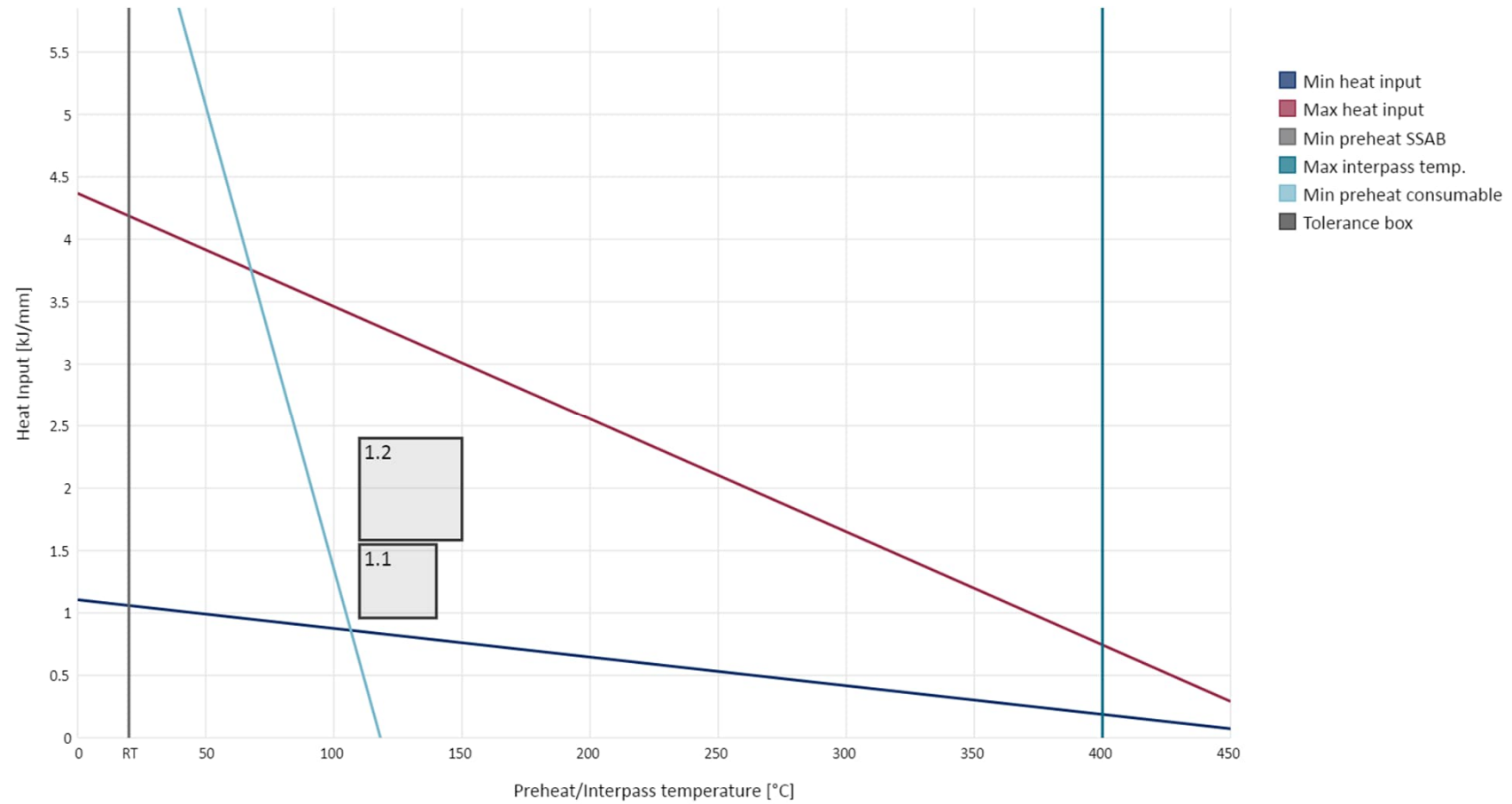
A solid wire ESAB OK Autrod 69 is used that has $R_{p0.2}$ of 730 MPa. Chemical composition, wire (weight-%):

C	Si	Mn	Cr	Ni	Mo
0.08	0.60	1.60	0.30	1.40	0.30

The shielding gas composition is set to 18%CO₂, rest argon.

Determine suitable welding performances for the situation above.

Tolerance boxes



General aspects

- *The primary benefits can be reached if the user applies the program to an extent that suits their business*
- Further optimization may be feasible later on by defining more parameters and/or tightening the allowed interval for each parameter

WeldCalc

File Edit View Window Help

SSAB WeldCalc 3.3.5

Calc WPR pWPS WPQR WPS

Strenx 700 v joint 20-30 ... Download Case Upload Case Custom logo

General aspects regarding performing a WPR
Marked sections with "Required information" are needed in order to calculate the most essential parameters.
The term "Recommended information" is information that is highly beneficial to be noted. However, these values will not affect the calculations in WeldCalc.

Reset Copy from Download WPR Download WPR Simplified

DOCUMENT INFORMATION - WPR
Recommended information to be added

Reg.no. 101		Prepared by Karl Larsson	Approved by Peter Fridell
Edition 3	Date 2024-01-03	Prepared date 2024-01-04	Approved date 2024-01-05

Download

The third stand alone version of WeldCalc can be downloaded free of charge to this group from our web-sight:

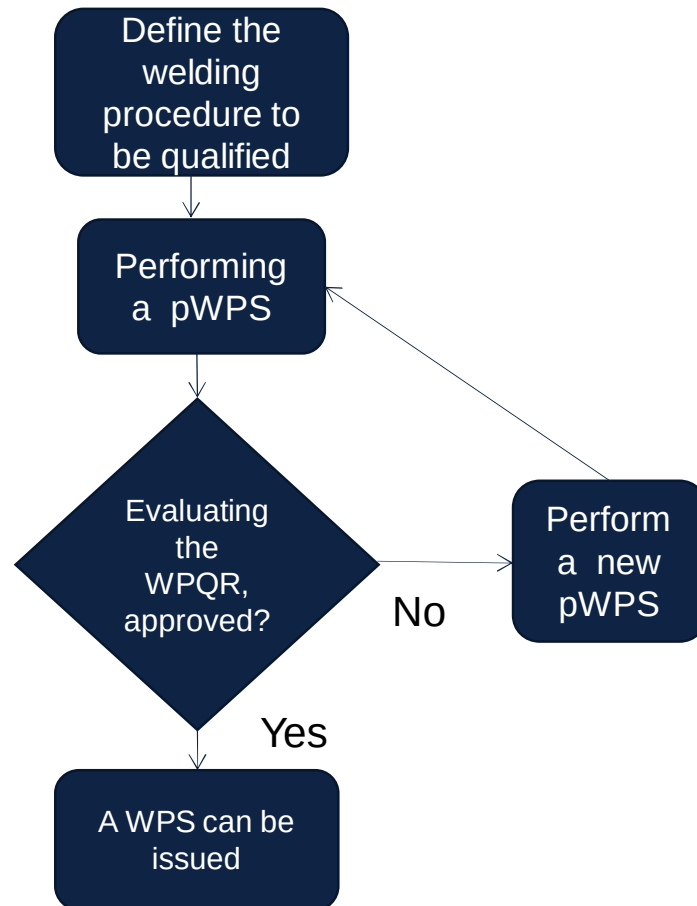
<https://www.ssab.com/Support/Calculators-and-Tools/WeldCalc>

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WeldCalc 3.0 från SSAB gör årtionden av svetsningserfarenhet tillgänglig i en interaktiv webbaserad applikation för att hjälpa tillverkare att optimera och dokumentera svetsprestanda.

Åtkomst till WeldCalc

Question from the audience: Welding procedure qualifications



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