



Project „Flexible Assembly Processes for the Car of the Third Millennium (MyCar)“

Methodology Description (High Level)

Intelligent algorithm for rapid setup of new welding parameters



Rapid Setup System

Combined hardware + software system for rapidly finding of welding parameters for new materials and material combinations.

Rapid Setup System benefits

- **Cost savings** due to **drastic reduction** of efforts in parameter finding
- **Better time to market ratio** for new production
- **Optimal welding quality** due to material and machine tailored welding setup
- Potential **reduction of energy costs** and **production cycle time** due to optimized welding parameters
- **Reduction of tests**, and hence material (test sheets) and energy savings (less consumption), promote positive impact to the environment.

Rapid Setup System advantages

- Easy finding of optimal welding parameters with **minimum setup requirements** and **minimum configuration effort**
- Integrated **database** for welding parameters; basic parameters
- **Only two to three steps** are required for machine-tailored parameter sets
- **No additional hardware** (e.g. measurement system) is required
- **Fully integrated** into Harms & Wende Genius welding timer and XPegasus programming environment

Rapid Setup User Interface (examples)

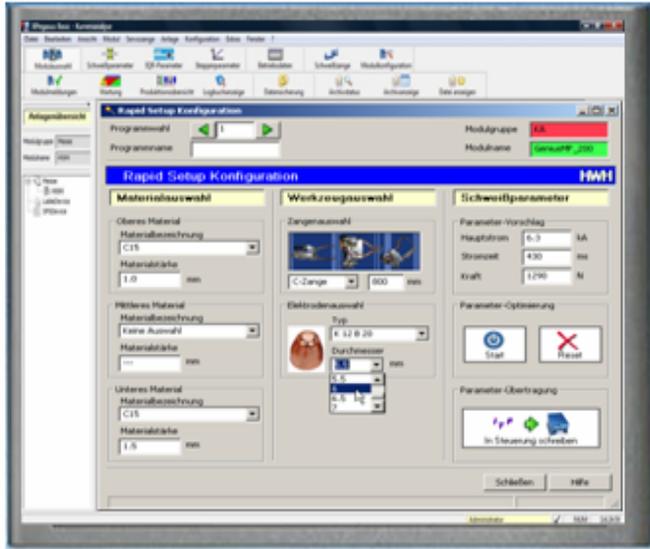
The image displays four overlapping screenshots of the Rapid Setup User Interface (UI) for a welding process. Each window has a title bar with 'RapidSetupTab' and a status bar with 'OK'.

- Top-left window (Material selection):** Shows configuration for three material layers.
 - Upper material: QSt 32-3, 1.00 mm
 - Middle material: QSt 36-3, 1.50 mm
 - Lower material: no selection, 0.00 mm
 - Glue selection: Terostat 5194
- Middle window (Tool selection):** Shows tool and electrode configuration.
 - Gun selection: C Servopneumatisch
 - Gun protrusion: 50 cm
 - Electrode selection: Shape A, Material AZ/2 CuCrZr, Diameter 20 mm, Auflagefläche 3.00 mm
- Bottom window (Find welding parameters):** Shows proposed welding parameters.
 - Haupt-Strom: 8.50 kA
 - Strom-Zeit: 770 ms
 - Kraft: 380.0 daN
 - Buttons: Start, Reset, Apply to module
- Right window (Material selection dialog):** A detailed dialog for material selection.

Material groups	Material names
Kaltfließpressstähle	C4C
Baustahl	QSt 32-3
Feuerverzinkte weiche Güte zum Kaltumformen	10303
eloverzinkte weiche Güten zum Kaltumformen	C4
Oberfl.veredelte weiche Güten mit def. Re zum Kaltumformen	C10C
höherfester Bake Hardening Stahl	QSt 36-3
höherfester phosphorlegierter Stahl	10214
höherfester mikrolegierter Stahl	C10
höherfester isotroper Stahl	C15C
höherfester IP-Stahl	QSt 38-3
hochfester kaltgewalzter DP Stahl	10234
warmg. DP-Stahl	C15
hochfeste kaltgewalzte CP- und PM Stähle	C17C
hochfeste warmgewalzte CP- und MS- Stähle	C17
hochf. kaltg. Trip-Stähle	C17
CrNi Stahl	
Mangan Bor Stahl warmumgeformt	
Mangan Bor Stahl warmumgeformt feueraluminierter	

Rapid Setup integration

Harms & Wende XPegasus programming software



Welding gun with cable for voltage measurement



Power supply cable

Harms & Wende Genius welding timer