



Controls

A company of the ARO Group

INTEGRATED WELD PROCESS CONTROLLER



iBox

FORCE & CURRENT

MASTERING RESISTANCE WELDING

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FORCE REGULATION

The resistance welding process made tremendous progress in the early 90's with the introduction of current regulation. Now is the turn for the welding force to be mastered perfectly.

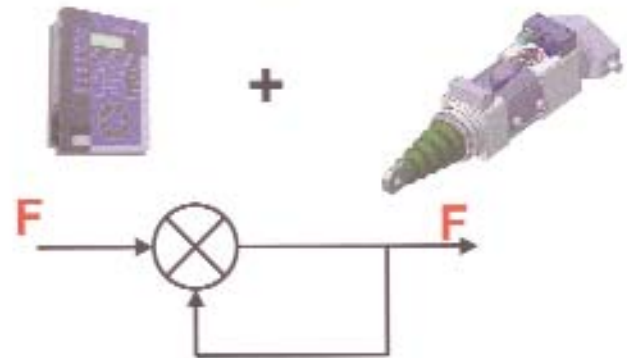
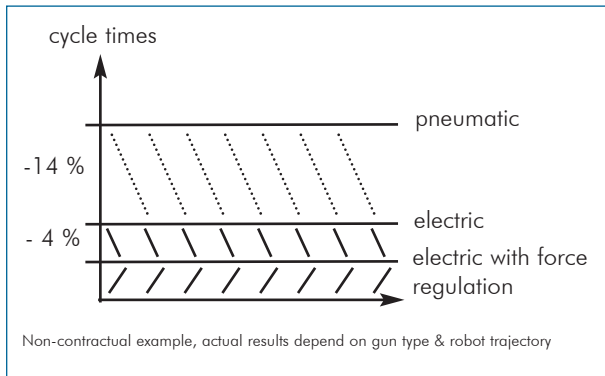
Problems associated with unstable force values, such as:

- ☞ stucked spots
- ☞ expulsions (splatters)
- ☞ stucked electrodes
- ☞ irregular nugget diameters
- ☞ marked sheet

can be reduced significantly.

Excellent force repeatability can be achieved and documented, both for welding and tip dressing.

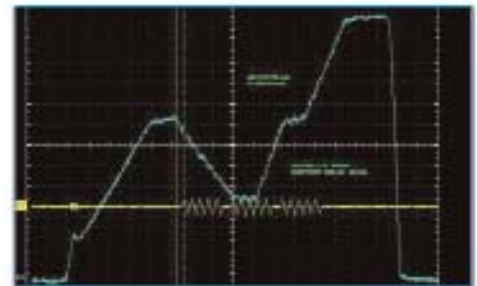
Force regulation also allows cycle times reduction:



FORCE PROFILES

Fast and accurate force management opens up new possibilities, such as:

- 1 Force profiles
 - ☞ Reduction of porosities and cracks in aluminum welding
 - ☞ Better sheet contact
 - ☞ Increased weld quality on carbon steel
 - ☞ Better weld quality on high thicknesses
- 2 Force ramps
 - ☞ Increased weld nugget density
 - ☞ Better metallurgical structure of weld nugget
 - ☞ Better electrode contact through elimination of glue, filler paste, joints, etc...
 - ☞ Control of sheet contact
- 3 Perfect synchronization of force and current profiles
 - ☞ Cycle time reduction
 - ☞ Increased weld quality





THE SAME WELDING SOLUTION WITH ANY ROBOT

iBox centralizes all resistance welding parameters into one process controller: current, force, time.

Programming, networking, traceability, training, are dramatically simplified, which provides:

- ☞ better process control
- ☞ reduced costs
- ☞ easier and faster maintenance

Almost any 6-axis robot (handling, pneumatic welding, etc...) can be upgraded to servo-actuated welding, without heavy modification.



SERVO-ACTUATED MACHINES

With iBox, stationary machines can also benefit from the numerous advantages of servo motors:

- Speed (cycle time)
- Perfect squeezing and part contact
- Perfect force
- Absence of hammering
- Noise reduction
- Elimination of compressed air, therefore reduced costs and air pollution
- Range of welding forces completely usable
- Monitoring of part thickness:
 - . missing part detection
 - . bad part stacking detection

Servo-actuated manual guns can also be managed.



MODULAR ARCHITECTURE

iBox integrates welding force and current. For the latter, power can be:

- AC or MFDC technology
- Air or water cooled (depending on power level)
- Precisely dimensioned for the application (18 to 550 kVA)



Communication with the environment (robot, PLC, machine, tip dresser, etc...) is done via digital I/O's and/or Fieldbus (any type).

Networking is done over Ethernet with the standard ARONET software.

The truly modular architecture allows rapid design of solutions perfectly adapted to each application's requirements.

iBox

- ⇒ Comprehensive management of welding Force / Current / Time
- ⇒ Force regulation
- ⇒ Optimized cycle times
- ⇒ Clear supplier responsibilities for welding
- ⇒ One welding solution whatever the robot

⇒ (BETTER WELD QUALITY
REDUCED COSTS



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