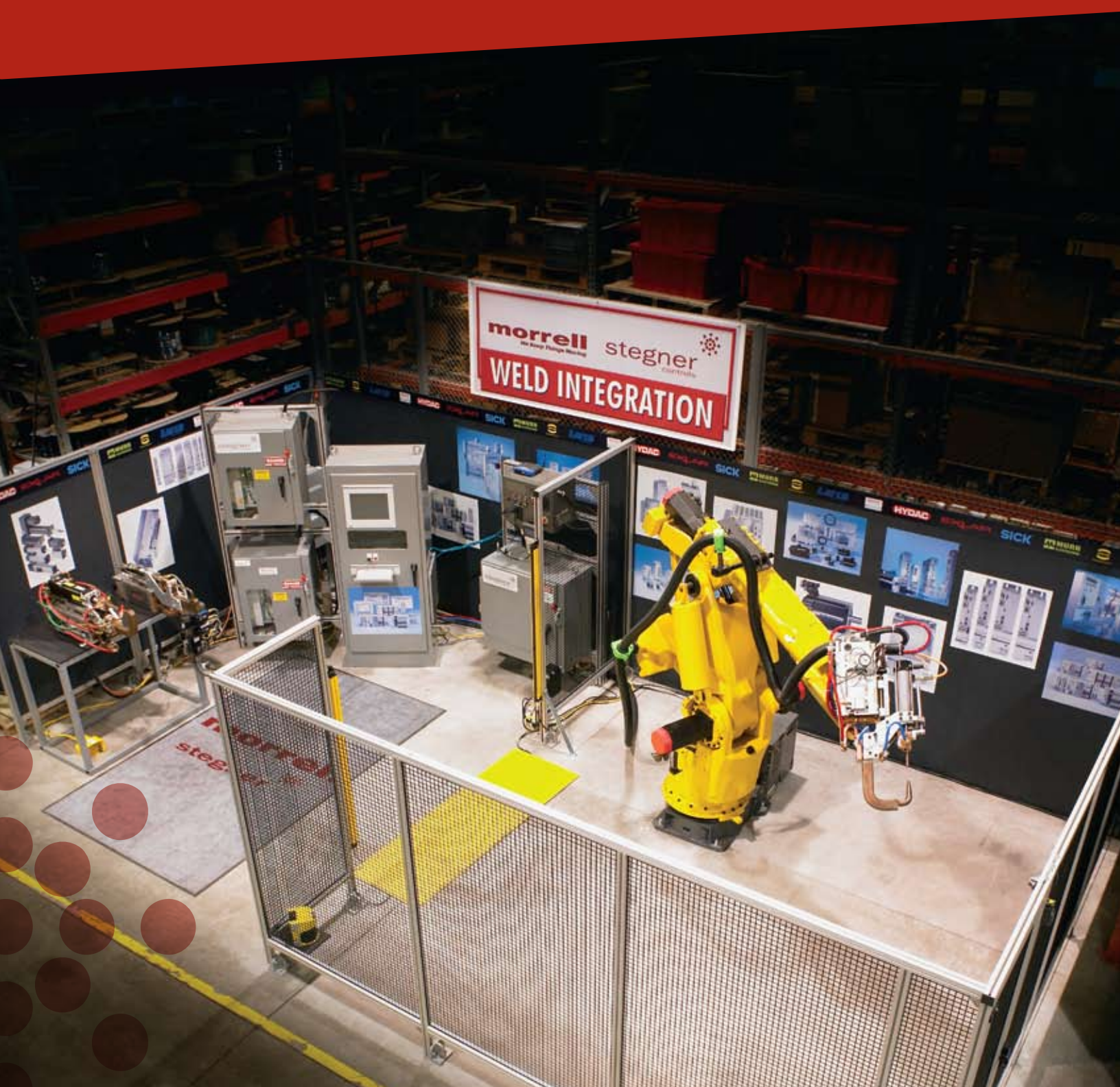


**AC and MFDC
welding products**



Welding Lab:

To assist our customers with their welding applications, **Stegner Controls maintains a completely operational welding and robotic lab** capable of providing weld schedule development for difficult to weld metals. The lab is capable of providing **AC or MFDC welding currents, pneumatic or servo operated weld guns, and adaptive welding** utilizing BoschRexroth's groundbreaking UIR Module. With this equipment our experienced welding specialists have numerous tools at their disposal to **provide accurate and specific weld parameters for many unique applications.**



stegner
controls

Overview:

Stegner Controls is the Midwest's leading systems integration company.

Our reputation is built on a solid foundation on consistently providing our customers with cost-effective and technically superior control solutions. Strict adherence to efficiency, performance, longevity, and quality is ensured through the implementation of our ISO-9001 Certified Quality Systems.

For over fifty years, we have nurtured and maintained outstanding relationships with manufacturers synonymous with outstanding performance in the motion control industry. We are a trusted resource for customers needing to Integrate components from BoschRexroth, GE Fanuc, Siemens, Allen-Bradley, Parker, Vickers, Numatics, MAC, Festo, Hydac, MAGNOM, Vogel, Trabon, and many more.

Weld Controls:

As specialists of designing and implementing motion control systems, we develop solutions to accommodate a diverse mix of new and existing components. Our team routinely links operations via Profibus, INTERBUS, Device-Net, and Ethernet. Because upgrading the control of your processes is the first step to increasing efficiency, customers depend on Stegner Controls to simplify and condense their existing controls.

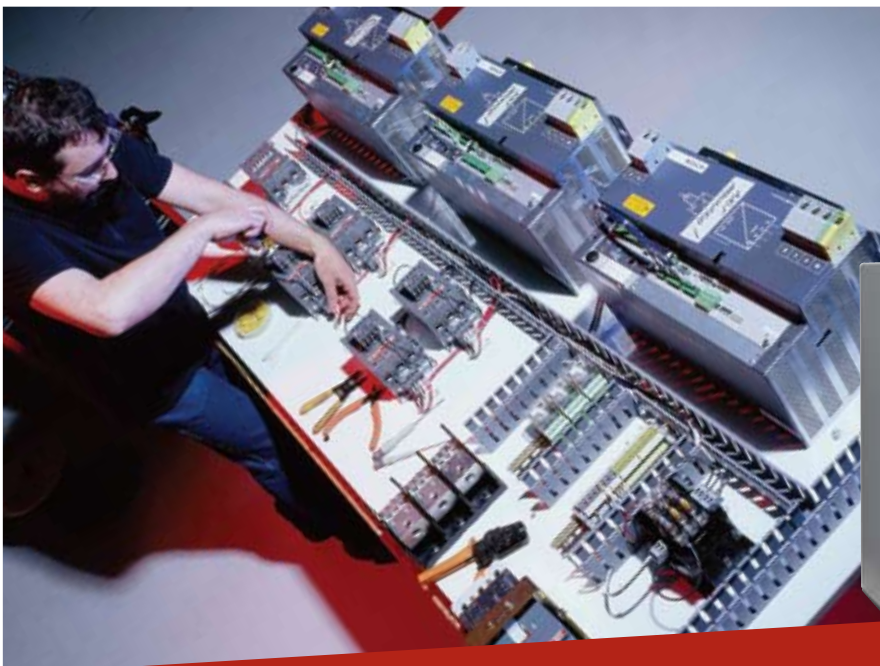
If your process relies on AC welding or the innovative high-quality DC inverters, our product and service portfolio is defined by the diversity of all of the options available in the market today. From water-cooled units to our tailor-made assembled cabinets, our experienced staff has the components and skill set to meet your specifications to keep your weld operations performing at their highest levels.

Your Single-Source Automation Solution:

- weld control integration
- electrical integration
- panel build
- software programming
- CAD services (e plan)
- field service & support

Resistance Weld Control Integration Experts:

- precision spot welding
- general purpose resistance welding
- short duty/high current applications
- aluminum welding
- seam welding
- projection welding
- high current flash welding or flash/butt welding
- press welding
- advanced alloys



AC Weld Controls:

Stegner offers a complete line of traditional AC weld controls utilizing the BoschRexroth thyristor module as the main component of the control. The following is a description of both the full featured AC modules as well as the recently introduced Compact modules for more simple applications.

Welding Functions

- same standard functions as the PST 6000 series (weld schedules, single spot/repeat/seam modes)
- discrete 16 Inputs/12 Outputs
- slot for fieldbus module for central programming
- primary current measurement, regulation and monitoring
- analogue pressure output 0 - 10V.

Universal I/O for manual and machine applications, functions selected by dip-switch for:

- manual welders with 1 or 2 guns 4 programs each
- machine application with 1 gun 64 programs.

Compact AC Modules



PST 610E

Nominal current up to
130A - 95kVA transformers

PST 610EL

- Air Cooled

PST 610EW

- Water Cooled



PST 625E

Nominal current up to
230A - 155kVA transformers

PST 625EL

- Air Cooled

PST 625EW

- Water Cooled



PST 650E

Nominal current up to
900A - 500kVA transformers

PST 650EW

- Water Cooled

Full Feature AC Modules

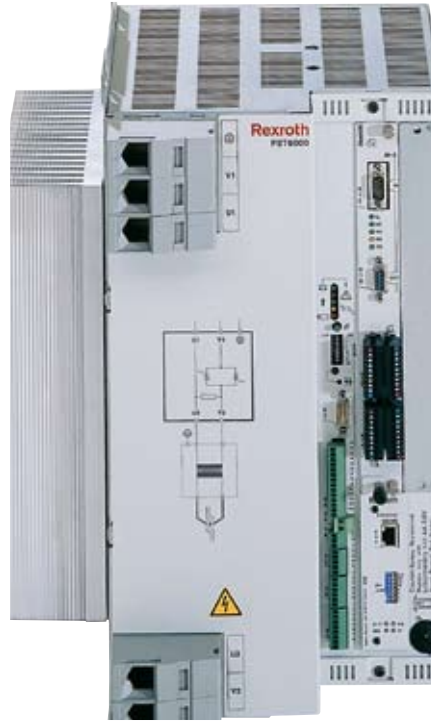


PST 6100

Air Cooled
For transformers up to 75 kVA

Basic Functions

- 256 programs
- current profile
- pressure profile
- freely programmable outputs
- progr. weld complete contact
- control modes: PHA, KSR, KUR
- current types: AC
- time base: cycles
- current stepper
- pressure stepper
- tip dressing, tip dressing stepper
- wear counter, parts



PST 6250

For transformers up to 250 kVA
Air-cooled with ventilator fan,
limited thermal rating

Operation Features

- installation diagram
- spot selection
- pre - warning table
- fault table
- diagnostics
- data logging
- backup auto backup
- restore
- compare
- copy
- timer replacement
- start simulation
- offline - programming
- global stepper

Periphery

- Discrete
- Profibus DP
- Devicenet
- Interbus S
- V24

Fieldbus Profibus FMS

- Profibus FMS
- Interbus PMS
- Ethernet
- Profinet

MFDC Weld Controls

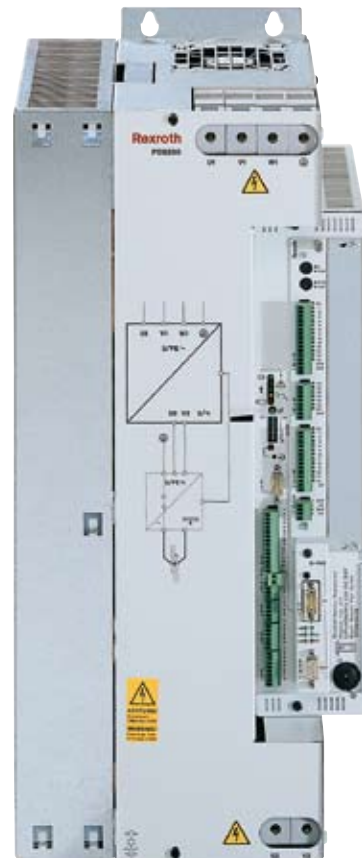
Stegner also offers a complete line of **1,000 Hz medium frequency DC weld controls** utilizing the BoschRexroth line of inverters as the main component of the control. Advantages of the MFDC process include: balanced demand across three phases, weld quality improvement by more dynamic current control, weldability of difficult to weld metals due to better control of the current, expulsion reduction due to programmability of timing in milliseconds, and smaller and lighter transformers for robotic transgun use.



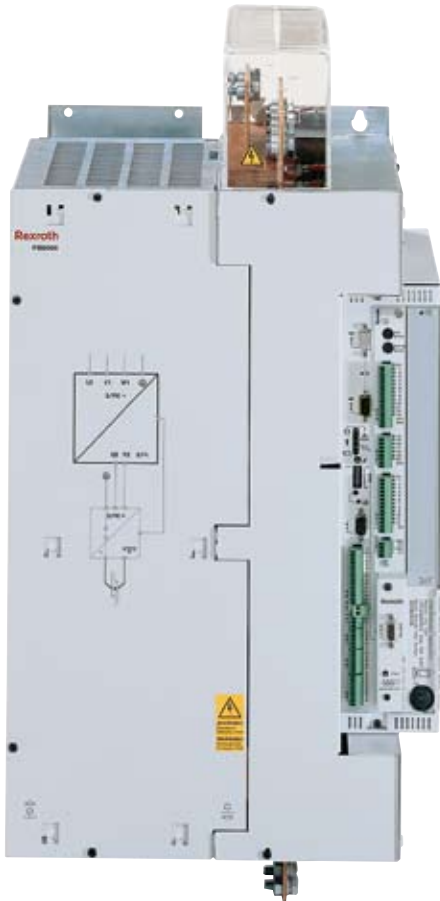
- PSI 6100 L1/L2** - Air Cooled
- 110 amps continuous input
 - 400 amps continuous output
 - 3-20 kA welding current range
 - Light duty welding application



- PSI 6300 L1/L2** - Air Cooled
PSI 6300 W1 - Water Cooled
- 110 amps continuous input
 - 800 amps continuous output
 - 6-36 kA welding current range
 - General purpose applications



- PSI 6200 W1** - Water Cooled
- 220 amps continuous input
 - 1,200 amps continuous output
 - 9-54 kA welding current range
 - Projection and seam welding applications



PSI 6500 W1 · Water Cooled

- 660 amps continuous input
- 2,400 amps continuous output
- 9-120 kA welding current range
- High Current Projection and seam welding applications
- Ability to configure into a Master/Slav arrangement to be able to provide up to 360k Amps



Basic Functions

- 256 programs
- current profile
- pressure profile
- freely programmable outputs
- progr. weld complete contact
- control modes: PHA, KSR, KUR
- current types: DC
- time base: milliseconds
- current stepper
- pressure stepper
- tip dressing, tip dressing stepper
- wear counter

Operation Features

- installation diagram
- spot selection
- pre - warning table
- fault table
- diagnostics
- data logging
- backup/auto backup
- restore
- compare
- copy
- timer replacement
- start simulation
- offline - programming
- global stepper

Periphery

- I/O Profibus DP
- Interbus S
- DeviceNet
- V 24
- Discrete

Field bus Profibus FMS

- Interbus PMS
- Ethernet Profinet
- Spot reference
- Pressure control digital/analogue

Options/Accessories

BOS 6000 User Interface

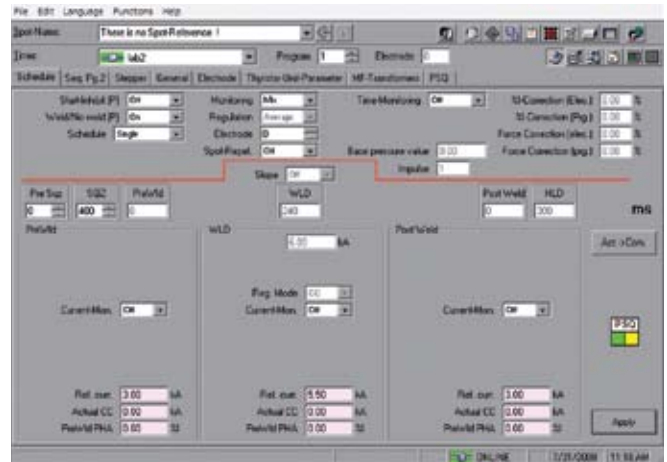
The BOS 6000 software user interface is the standard concept for user friendly operation and monitoring, running in the 32 bit Windows environment with integrated SQL database functionality. **The BOS 6000 allows joint operation of the weld control system, process module, and servo gun control in one standard interface.** Data is input into the program via three methods, a compact operator terminal (BT-6), and industrial PC, or through an Ethernet connection, a notebook computer.



BT-6 Hand Held



BT-6 Panel Mount



BOS 6000 SCHEDULE SCREEN

I/O Options



Interbus



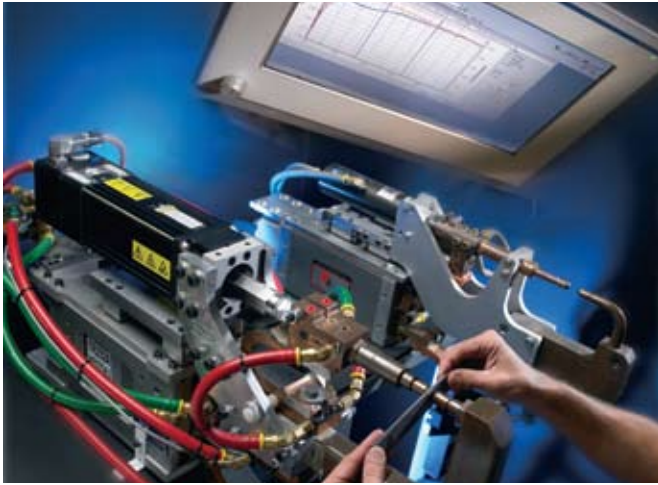
Profibus



Discrete

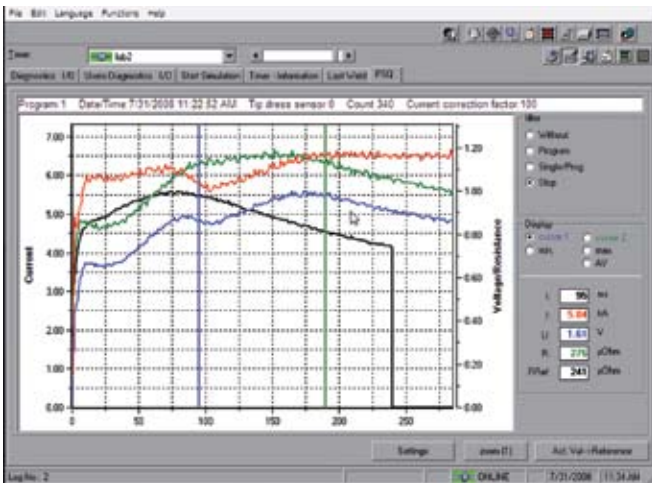


Device Net



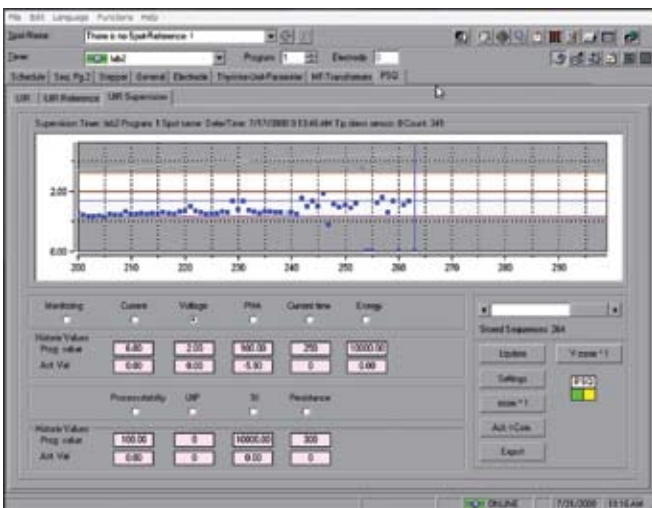
UIR Adaptive Module

The adaptive current/voltage control module provides added flexibility for future requirements in the welding process. By dynamically measuring current and voltage, the course of resistance and energy can also be recorded, controlled and accurately evaluated during welding. **The adaptive control algorithm ensures constant weld quality and reduced expulsion by either increasing the weld time or increasing current amplitude.** Expensive rework or scrapping of the part is virtually eliminated.



Graphing Capability

As the XQR module dynamically monitors the resistance, secondary current, and secondary voltage of the welding loop against the control values, it graphs the values and displays what actually happened during the welding cycle. As can be seen in the case on the left, the black control line ends yet the current, voltage, and resistance values are extended as the XQR module detected a variation in the resistance and extended the weld time to insure a quality weld.



UIR Weld Data

As welds are completed, the XQR module captures all of the relevant welding data, such as current, voltage, resistance, times, etc., and stores the data into a sequel data base.

This information can then be exported to an application such as Microsoft Excel, where the data can be interpreted and trends and tendencies evaluated.



Servo Weld Gun Operation

Rather than control the operation of the servo weld gun as a function of the 7th axis of the robot, **Stegner has integrated the required drive and integrated motion controller into the weld control panel**, utilizing the BoschRexroth platform of drives, for a significant savings without any sacrifice in performance. Features of the servo drive capabilities include:

- Integrated Motion Logic Controller & PLC (IEC61131 compliant)
- Current ranges from 12 to 200A
- Field Bus Interfaces: DeviceNet, EtherNet, Profibus, Sercos, ControlNet
- Easy to use Windows based programming software
- Full diagnostics

Precise Force & Position Control:

“Intelligent Drive Technology” allows position, velocity and current loops to be closed by servo drive resulting in the following:

- Torque/Force Control..... (+/-) 1%
- Position Control (+/-) .5mm
- Velocity Control (+/-) 1mm/min

Actuators:

The servo drive can be integrated with many of the main linear actuators available today including:

- Exlar
- Tol-O-Matic
- SKF

Connectivity:

The servo can easily be integrated to communicate with various robot controllers such as:

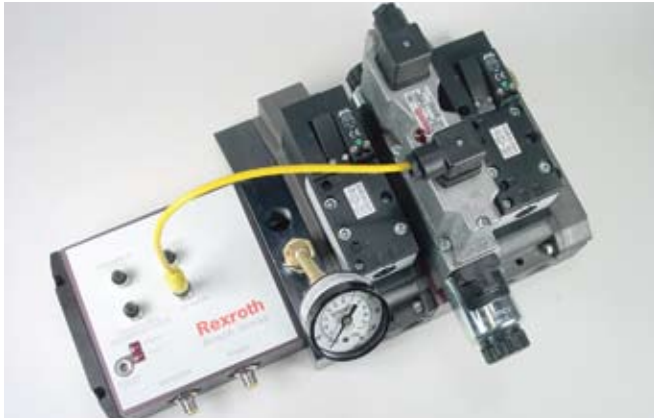
- KUKA
- ABB
- Fanuc
- Kawasaki
- Nachi
- MotoMan
- Mainline PLCs via DeviceNet, Ethernet, Profibus.

Capabilities:

- Utilize existing Legacy Robot Application
- Soft Touch
- Increase Speed
- Gun Sag Compensation
- Metal thickness detection
- Performs same functions of the 7th axis robot option
- Tip wear compensation
- Up to 256 schedules with 5 unique positions per schedule
- Upper level host connectivity for advanced diagnostics and reporting

Reliability:

The servo drive and integrated motion controller is the same drive and controller that is installed in most automotive plants. With thousands of axis installed in the United States and worldwide, BoschRexroth servo drives are ranked highest in their class for Reliability.

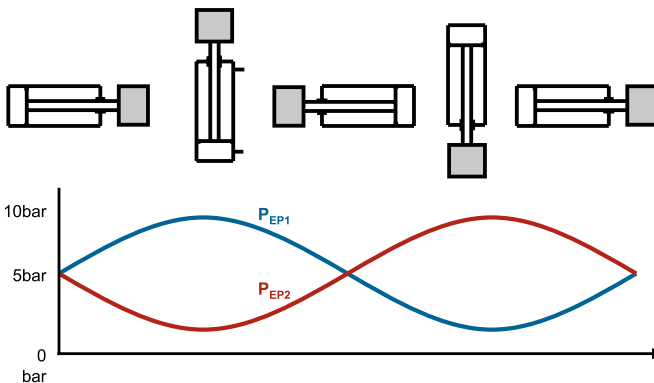


Dense Packs

Stegner has the capability to design and manufacture custom dense packs to your exact specifications. These units include pneumatic controls, water manifolds, and electrical junctions for resistance welding cells.

The pneumatic portion of our dense packs feature BoschRexroth components. Air operated weld guns for robotic and manual applications can be controlled through several different methods. Our compact proportional valve system for multiple pressure applications reduces size and weight while increasing overall process flexibility.

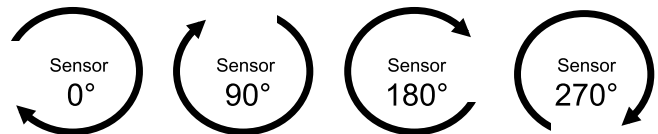
Gun Compensation Cylinder



Automatic Pneumatic Gun Compensation

Pressure regulation based on position

- **Integrated position sensor** - for automatic compensation of the gun weight for every position of the gun
- **Optimized force compensation** on the sheet metal
- **Single scaling**
- **Stable position** with emergency stop



System Capability

Stegner's Resistance Welding System approach provides integration capabilities for all resistance welding components:

- Controls design
- Servo drive operation of guns
- Robot work cell integration
- Servo actuators
- Machine control integration
- Pneumatic weld products
- AC and MFDC Resistance welding controls
- Safety Products
- Adaptive welding system

A decorative graphic consisting of numerous overlapping, horizontal lines in various colors including teal, blue, yellow, and red, creating a sense of motion and depth.

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**AC and MFDC
welding products**

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