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**Choosing a Sanrex Plasma Welding System**

Determining the Requirements for Your Plasma Arc Welding System

**Microplasma Welding (typical current range 0.1 - 15A)**

Microplasma is used for welding thin sheets [down to 0.004” (0.1 mm) thickness], and wire and mesh sections. The needle-like, stiff arc minimizes arc wander and distortion.

**Medium Current Welding in the Melt-in Fusion Mode (typical current range from 15 - 200A)**

This is an alternative to conventional TIG. The advantages are deeper penetration (from higher plasma gas flow), greater tolerance to surface contamination including coatings (the electrode is within the body of the torch) and better tolerance to variations in electrode to workpiece distance, without significant change in heat input.

**Keyhole Welding (typically over 100A)**

By increasing welding current and plasma gas flow, a very powerful plasma beam is created which can achieve full penetration in a material, as in laser or electron beam welding. During welding, a keyhole is formed which progressively cuts through the metal with the molten weld pool flowing behind to form the weld bead under surface tension forces. This process can be used to weld thicker materials [up to 3/8” (10 mm) of stainless steel] in a single pass.

**Please answer the following questions to help us guide you through the selection of the proper Plasma Arc Welding System for your needs.**

1. Is this a Retrofit or New appliciation? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note: Sanrex Plasma Welding systems are a direct replace to the Thermadyne/Thermal Arc Plasma Welding systems. See (300PW 150PW TAI Replacement pdf.) for retrofit instructions.

1. What is the end users objective (Reduce welding cost, Increase cycle time, part rejects, etc.)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the application (Robotic, Hard Automation, Semi Automatic, PAW replacment, TIG Replacment, etc.)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Part to be welded & Joint design (Weld Position by AWS or ASME)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What is the end user using today? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   1. Model numbers of existing PAW system \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Model number of existing Torch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Will they be purchasing new fixturing or retrofit on exisiting Fixture? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. What is the end users timeline? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Will the End User be welding in the Melt-In Fusion (TIG Like) or Keyhole mode (Laser Like)? \_\_\_\_\_\_\_\_\_\_\_\_\_
8. What is the thickness of the material to be welded?
   1. 3/16” (4.7mm) or Less \_\_\_\_\_\_\_ More that 3/16” (4.7mm) \_\_\_\_\_\_\_
9. What is the cycle time of the weld. Weld On time \_\_\_\_\_\_\_ Weld Dwell Time \_\_\_\_\_\_
10. What are the DC Amperage Welding requirments? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. Determine what Input Power you have available and list for reference?
    1. AC Volts \_\_\_\_\_\_\_\_ Phase \_\_\_\_\_\_ Hertz \_\_\_\_\_\_\_
12. What Material will be welded? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. Will they need a Weld Timer, Weld Pulser, or Current Sloper? \_\_\_\_\_\_\_\_\_\_\_\_
14. Do they need to add Filler Metal to the weld? \_\_\_\_\_\_\_\_\_ If yes what size? \_\_\_\_\_\_\_\_

In General 3/16” or less quote the 150PW. Over 3/16” quote the 300PW. Limitations of the 300PW is 5/16” maximum material thickness with one pass. Thicker with multiple passes.

Exceptions: If duty cycle plus cycle time of the weld requirments equals 200 Amps. @ 60% Duty Cycle or more, then the 150PW is out. Must go with a 300PW system. Most Keyhole applications will require the 300PW.

Types of welding positions by AWS & ASME.

