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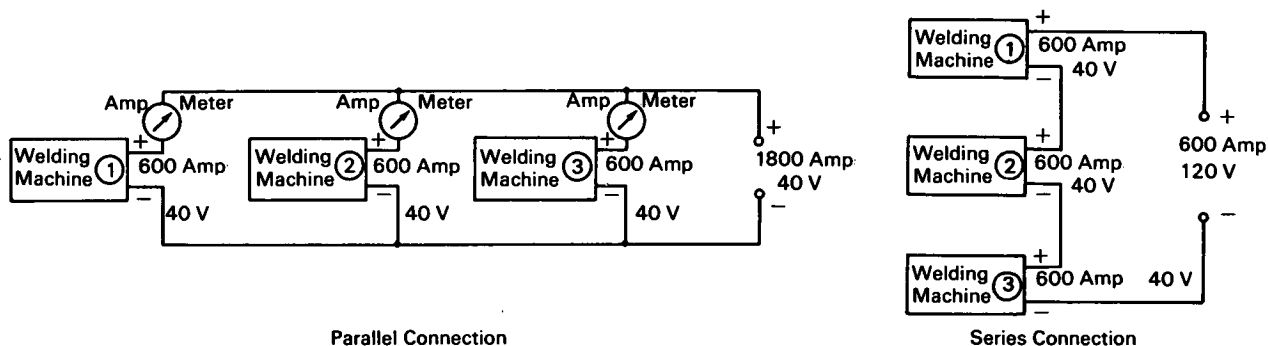
Brief 66-10441

NASA TECH BRIEF



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Standard Arc Welders Provide High Amperage Direct Current Source



Parallel Connection

Series Connection

The problem:

To obtain an adequate supply of current or voltage for various purposes such as arcs, high power magnets, and laboratory experiments. Special equipment which is now available is expensive and limited in its range of application.

The solution:

Hook up a number of standard arc welders or power supplies in parallel or series connections to obtain the desired current and voltage. This method provides maximum flexibility in a wide range of voltages and currents.

How it's done:

To obtain 120 volts for a 600 ampere dc arc at reduced pressure, 3 standard arc welders each rated at 600 amperes, 40 volts were connected in series, the total voltage then being the sum of the individual voltages: 120. To obtain high currents for large magnet coils a parallel arrangement was used. For example, 2 aircraft starters, each rated at 1500 amperes, 28 volts were connected in parallel to provide 3000 amperes at 28 volts.

Notes:

1. In the series connection, control of the arc welders permitted a variation in arc current from approximately 200 to 600 amperes with no ballast resistors required.
2. Care must be taken in the parallel arrangement to see that each unit used has nearly equal output. Gross discrepancies in outputs can cause damage to equipment and hence appropriate monitoring is needed.
3. Inquiries concerning this innovation may be directed to:

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Patent status:

No patent action is contemplated by NASA.

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Category 01