Hobart Trek 180 Battery-Powered MIG Welding Package

The Trek 180 welding power source incorporates two sealed lead-acid batteries to provide energy for arc welding without being connected to the power utility. There is also a "hybrid" feature where energy is provided by both the power utility and the batteries to the welding output, allowing higher welding output power than can normally be converted from a standard 115V, 15 or 20A branch circuit.

The basic power-train of the Trek 180 consists of a voltage-doubling input rectifier, an isolated switched-mode power supply of the forward converter type, a 24V output bus which includes the batteries, and a non-isolated switched-mode power supply of the buck converter type to convert the bus power into usable welding power.

Like other welding power sources, the Trek 180 has two modes of operation. The two modes are "ready" and "weld". In the ready mode, the system must be capable of providing full weld output whenever the operator pulls the trigger on the welding gun. As the name implies, the weld mode is when welding is being performed. Since the batteries are integrated into the product and are required for operation, there is not a "no battery" mode.

The Trek 180 also contains a battery disconnect device so that it can be certified to the applicable CSA or UL standard for welding power sources. Due to the uniqueness of the Trek 180, this disconnect device must handle not only battery charge current but battery discharge current, which can be more than 100 amperes. When in the ready mode of operation, the disconnect device alone consumes several watts in the closed position.

Since the power circuit of the Trek 180 must not only provide power to charge the batteries but also provide a portion of welding output power, it is designed to provide greater output than if its only function were to charge the batteries. The losses of the power circuit consist of fixed and variable losses. The variable losses are a function of the output power provided, while the fixed losses are constant regardless of the output power. The fixed losses of the power circuit are several watts.