When the FMC Corporation Wellhead Equipment Group in Dunfermline, Scotland contracted for the welding of pipework for the supply of 13 sub-sea “Christmas Tree” wellheads for the Terra Nova Capex II Project for Petro-Canada they were required to meet very stringent quality standards. The Terra Nova project specified 100% visual inspection of the outside (OD) of the welds, 100% radiography and 100% dye penetrate inspection. In addition to the requirements for 316L stainless steel, welds on 2205 duplex stainless steel tubing were subjected to ferrite counts, macro and micro examinations, and Vickers hardness testing. Welds on duplex also had to pass the stringent ASTM G-48 test of corrosion resistance and the finished trees were subjected to hydrostatic pressure tests.

In order to meet the demanding quality requirements and the specification for a 25 year guarantee of the Christmas trees, FMC decided to invest in orbital GTA welding technology for the project. They purchased a Model 227 power supply and a Model 9-750 weld head. When FMC initially subcontracted the welding of the first Christmas Tree, welds had unacceptable 14% reject rate. After changing their approaches to incorporate the use of mixed gas, pressure control, alignment clamps and material control, the reject rate fell to 5% with reduced weld time from 3 weeks to 6 days.

Welding of “Tree Number 3” was performed by a subcontractor and the results were back to being unacceptable. At this point FMC took full control and implemented their own Standard Operating Procedures (SOP’s) based on what they had learned from Arc Machines UK Ltd. They put one of their own welders in charge and did the rework of “Tree Number 3” and all of the remaining trees from 4 through 13 themselves. Once FMC took control of the welding, the reject rates for individual trees were much lower.

To read the full story, visit www.arcmachines.com

For further information, call AMI at 1-818-896-9556 or e-mail sales@arcmachines.com
M227 Power Supply

**Input Power**
- 100 - 240 VAC service, single-phase
- 50/60 Hz

**Weld Current**
- 3 - 100 A DC @ 100/120 VAC input, 3 - 225 A DC @ 200/240 VAC input, 100% Duty Cycle

**Memory Capacity**
- 100 weld schedules maximum
- 100 levels per schedule maximum
- 100 different passes per level

**Water Cooler**
- Optional

**Dimensions**
- 15” x 23” x 20”
- (381 mm x 584 mm x 508 mm)

**Weight**
- 88 lbs.
- (40 kg)

M9 Series Weld Heads

**OD Range**
- 0.093” to 7.500”
- (2,362 mm - 190,500 mm)

**Travel Motor**
- D.C., P.M., D.C. Tachometer

**Head Weight**
- 11 lbs. - 35 lbs.
- (4.9 kg - 15.9 kg)

**Electrode Size**
- 0.040”, 1/16”, 3/32”
- (1 mm, 1.6 mm, 2.3 mm)

**Rotor RPM**
- 0.1 - 20

**Cable Length**
- 25 ft. (7.6 m) when connected to adapter cable
  - (extensions available)

- Removable tube clamps
- Pre-plumbed for water-cooling
- Compatible with all AMI Power Supplies