

MK Products Welding Technology On Its Way to Mars

**Mars Science Laboratory
Curiosity Rover
Approaching Mars**



**MK Products
Working Together with
NASA/JPL**

**Using the CobraTig® 150
Orbital Welding System**

MK Products Welding Technology on Its Way to Mars Using the CobraTig® 150 Orbital Welding System

Product: CobraTig® 150, CobraCooler®, and 4000 Mini Micro Weldhead

Application: NASA/JPL Mars Science Laboratory Curiosity Rover

Article By: John Francis



"Curiosity" Mars Science Laboratory - Artist's Concept Image Credit: NASA/JPL-Caltech - PIA09201

MK Products is proud that its welding technology is on its way to Mars.

Four years ago, the Jet Propulsion Laboratory in Pasadena, California obtained two complete orbital welding systems from MK Products for one of its latest and biggest projects, the Mars Science Laboratory (MSL) Program.

MSL's Curiosity is a car sized rover equipped with cameras, environmental sensors, sample collecting tools, and lab quality geochemical instruments. It will use its diverse scientific payload to observe the environment, seek out interesting sites, and acquire dozens of samples of rock, soil, and atmosphere for onboard analysis, relaying its findings to scientists on Earth.

MK Products' orbital line of welding equipment, along with its legendary push-pull wire feeding systems, has earned a well deserved reputation that is second to none among many welding professionals. MK Products has sold thousands of orbital power supplies and weldheads, as well as coolers, custom tooling and production tooling for these orbital systems.

Many of these orbital welding systems are being used around the world. China, Europe, India, Canada, and Central America are but a few of these international locations. More of these orbital systems are working here in the U.S., from smaller specialist shops to larger aerospace and defense companies.

Mars Science Laboratory was launched on Nov. 26, 2011 and is scheduled to land on Mars on Aug. 6, 2012 (EDT). It is

in route to Gale crater, a site thought to have had conditions that are favorable to sustain life. MSL will reach its target by steering through the atmosphere, slowing its descent on a parachute, and using a rocket powered sky crane to place the deployed rover directly on Martian soil. Once on Mars, the rover is designed to explore many miles of terrain for at least two Earth years.

MK Product's portable CobraTig 150 power supply, CobraCooler, and Mini Micro 4000 weldheads were used to create 367 flight welds on the MSL Spacecraft, 155 welds were on the Rover-Loop and 212 were on the Cruise Loop, plus hundreds of practice and qualifying welds. All welds were X-rayed and systems were proof pressured and helium leak checked.

These orbital welding systems were set up in work cells, and since they are portable, they could also be moved to the spacecraft, as well, to perform orbital welds on actual flight hardware. These orbital welds were performed by JPL technicians to meet highly demanding specifications required for flight hardware.

The CobraTig 150 can also be easily converted to the manual TIG welding process, making this little brute of a power supply even more adaptable to many different welding applications. For more information on MK Product's state of the art orbital line of equipment, visit www.mkproducts.com. MK performs demonstrations of our equipment at our Irvine, California location, and will travel to your shop to provide demos and classes as well.

If your application requires perfect welds, and you need equipment that can stand up to both high production demands and specialized applications, then trust MK Orbital to perform and deliver.

Established in 1966, MK Products is the original inventor of Cobramatic push-pull wire feed technology and is recognized worldwide as the leader of aluminum welding systems. MK Products also manufactures orbital tube welding systems and table-top rotary positioners. ■

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MK Products Welding Technology on Its Way to Mars Using the CobraTig® 150



Image Credit: Doug Kensrue MK-JPL-309024

The Mars Science Laboratory spacecraft is staged inside JPL's clean room assembly area.



Image Credit: Doug Kensrue MK-JPL-1000

Welded pieces are installed to fixtures to verify fit up tolerances.



Image Credit: Doug Kensrue MK-JPL-309090

MK CobraTig systems were set up in work cells, but were also moved to the spacecraft to perform welds on flight hardware.



Image Credit: Doug Kensrue MK-JPL-1030

The Mars Rover spacecraft sits inside JPL's clean room and diagnostic area, fully assembled.

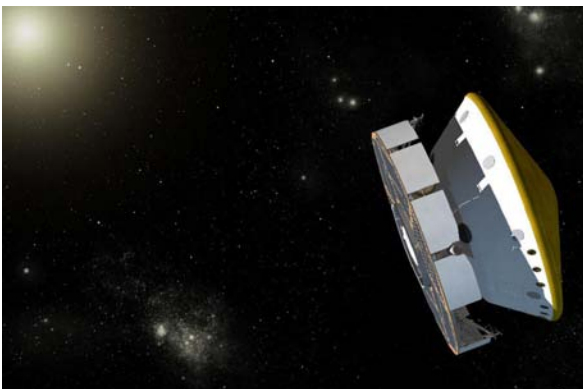


Image Credit: NASA-JPL-Caltech - PIA14831

Mars Science Laboratory spacecraft launched Nov 26, 2011 is scheduled to land on Mars on Aug 6, 2012 (EDT).



Image Credit: NASA-JPL-Caltech - PIA14840

Artist's concept depicts NASA's Curiosity rover touching down. Curiosity is designed to explore many miles of terrain for two Earth years.



MK Products Welding Technology on Its Way to Mars Using the CobraTig® 150



Image Credit: NASA-JPL-Caltech

Another view of sky crane deployment of the Mars Rover on it's final stage of descent to the surface of Mars (artist's conception).

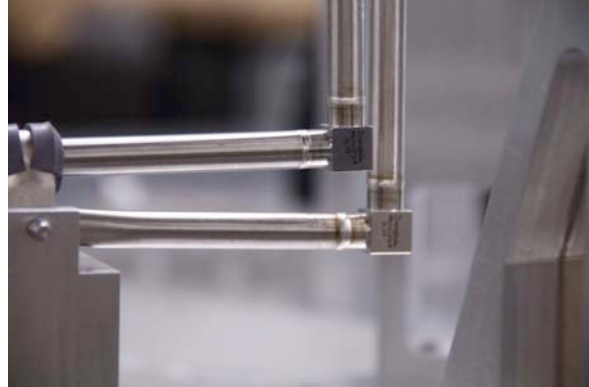


Image Credit: Doug Kensrue MK-JPL-309074

Welded micro fittings done by JPL's welding engineers using the CobraTig 150, Cobra-Cooler, and 4000 Mini Micro weld head.

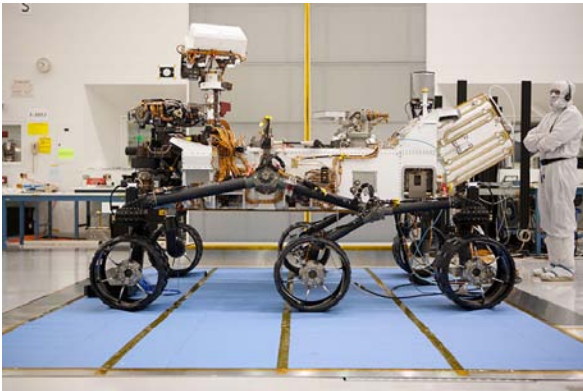


Image Credit: NASA-JPL-Caltech - PIA15181

Rover size, next to a man, about the size of a small SUV. Length 10 ft (3 meters); width: 9 ft (2.7 meters); height 7 ft (2.2 meters)



Image Credit: Doug Kensrue MK-JPL-1030

MK Products CobraTig Orbital welding system sits inside one of JPL's labs, ready to go to work.