

2026



Newsletter for May-
June, 2026

Issue 01

All about Orbital
Welding

UNIVERSAL ORBITAL SYSTEMS PVT LTD

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Newsletter for May-June 2026

All About orbital welding

Issue 01, May 2026



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Universal Orbital Systems Pvt Ltd

Editorial notes

*We, at Universal Orbital Systems Pvt Ltd, are glad to announce our **first issue** of the newsletter editorial series "All about Orbital Welding". The objective of starting this newsletter is to provide insights about latest developments at Universal Orbital Systems Pvt Ltd. At Universal Orbital, innovation and development goes hand in hand to cater to customer and industrial requirements. Through this newsletter, we aim to reach to the readers, share our orbital welding knowledge.*

*Started with a sole purpose to "Share and exchange knowledge and information as a contribution to enhance the brand "**INDIA**" ", Universal Orbital Systems Pvt Ltd is the only Indian manufacturer of Orbital welding machines. The company was established in 2009. Situated in Pune, Universal Orbital systems has reached globally with an instalment of more than 1000+ orbital welding machines and 4000+ trained welders. We provide a complete orbital welding solution. We are known for our unique solutions, innovations, user friendly, cost effective machinery which push us forward as an organisation to strive more and contribute to 'MAKE IN INDIA' mission as an import substitute for orbital welding machines.*

We have a well-equipped research and development facility with designing stations and quality control facility to provide solutions with utmost quality and user friendly solutions.

Our product range includes Orbital Power Sources with Industry 4.0, Closed arc orbital weld heads, Orbital weld heads for heat exchangers, condensers and cooler industries, Special purpose machines used for welding applications for industries like pharmaceutical industries, nuclear industries, aerospace industry, semiconductor and gas and oil industry.

Orbital welding accessories such as orbital Pipe cutter, Orbital Facing machine, Tungsten grinder, Video boroscope for visual weld inspection.

We have started the initiative of circulating newsletter for every month and will be staying in touch with the welding fraternity and our clientele through the newsletter.

Training centre at Universal orbital Systems Pvt Ltd



Orbital Welding Training is provided for 3 days at UOSPL Training center.

Here, we provide a full 3 days advance training for orbital welding system to acquire the desired results.

We believe in sharing and exchanging knowledge to enhance brand "INDIA".

Training session agenda



Training Session In Univesral Orbital Systems

The
Complete
Orbital
Welding
Solution

1
Day

INTRODUCTION TO ORBITAL WELDING

1. Introduction to Orbital Welding
2. Benefits of Orbital Welding
3. Applications of Orbital Welding
 4. Weld joint Preparation
 5. Tungsten Preparation
 6. Gas Quality Requirement
7. Importance of other parameters like Gas, Tungsten shape, joint preparation on Orbital Welding, Heat number, Sulphur content in tube
8. Explanation of parameters to be controlled from Machine
9. Samples of Orbital Welding joint to be shown

Revision of Day 1

Orbital welding practice on different sizes and thickness

Practice for Orbital joint with different settings and all types of joint such as tube to TC/Union, Tube to UBEND.

Explanation on WPS and POR

2. Video and photo demo
3. Pharma process piping defects and case study
4. Study of manual and guide
5. To do and don't in ORBITAL WELDING explanation

2
Day

POWER SOURCE FUNCTION EXPLANATION:

1. Function of each screen and Buttons
2. Machine input requirement
3. Printout Parameters
4. Table selection and copying programs
5. Training as per Guide
6. Weld procedure preparation in auto and Manual Mode

Effect of change of current welding

2. Effect of change in speed welding
3. Effect of pulse frequency on welding
4. Study of welded sample and adjusting current According to Weld penetration
5. Setting parameters again to fine the setting
6. Welding practice on own.

3
Day

FAULT FINDING

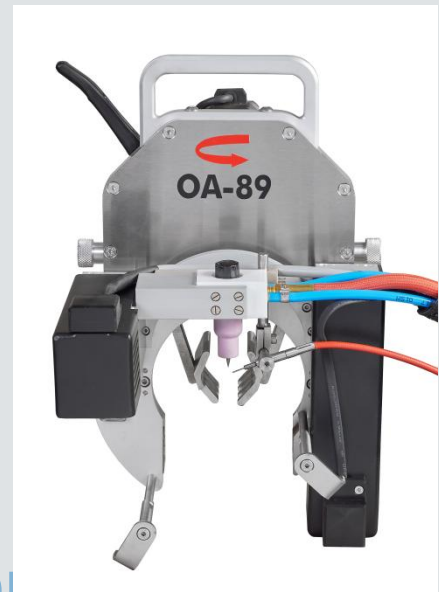
1. Explanation on Faults and simulation of faults and solve method
2. Weld Head Opening and Servicing
3. Fault finding test

April-May month developments



Open Arc Weld Head Series

Open Arc orbital GTAW process refers to automatic pipe welding, where the pipe is stationary and the tungsten electrode orbits around the pipe. Here, the welding torch is visible and the weld head has a wire feeding system to weld from thickness above 3mm. The orbital weld head also has automatic oscillation system to mimic the welder's weaving pattern. The weld head also has AVC (automatic voltage control) to control the gap of the torch and the pipe at all times during welding and cater to the ovality of the pipe.



We have launched the open arc series in the month on January in the IMTEX Bangalore exhibition. Indigenously designed orbital weld head to cater the requirements of various industries. Currently, we are providing trials on our weld heads to various industries and ready for the market. We have worked on various pipe materials such as Carbon Steel, Mild Steel, SS and GI steel pipe. The pipe welding range is from 33mm to 89mm for OA-89 and 42mm to 125mm for OA-125. The trials were conducted on edge preparation as J-grove and V-grove.

We have successfully completed trials of activated TIG flux on the open arc weld head series as well. In case of activated TIG flux, there is no requirement of complicated edge preparation such as V-grove (beveling). The edge preparation required is square butt joint. The welding trials were successful and the joint was passed for Radiographic testing.



Case Study of Open arc orbital welding: Active TIG Flux orbital welding

Trial details

MOC: SS-304

Diameter: 60.00mm

Thickness: 3.8mm and 5mm

Test carried out: Radiographic Test

Welding cycle time: 4.50 mins (pre flow- post flow)

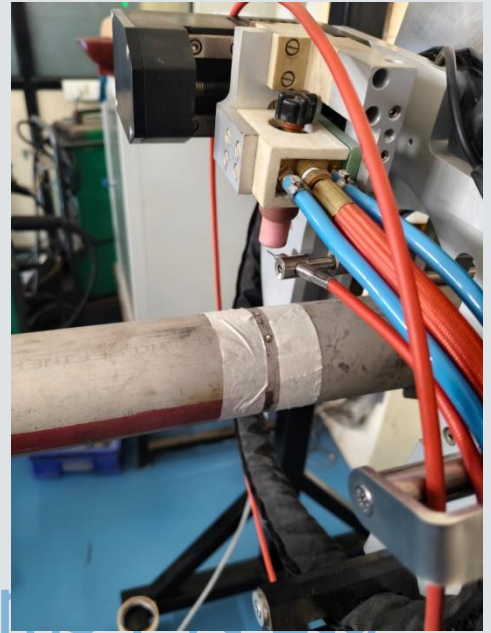
Gas: Argon 99.995% pure

Weld Head: OA-125

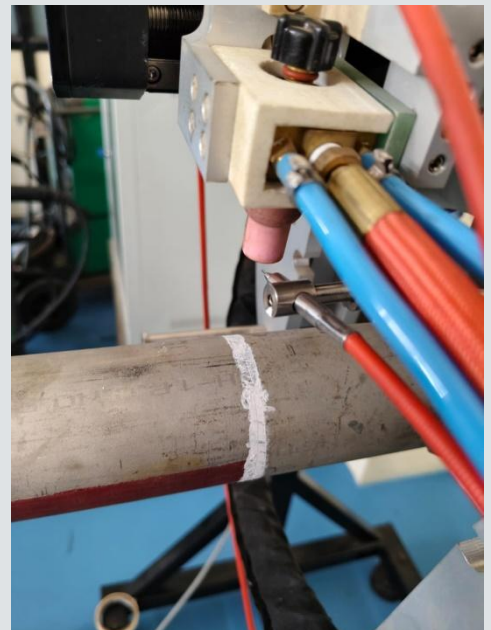
Power Source: Orbitron 7K300

Edge preparation: Square Butt Joint

Universal Orbital Systems



In the trials, the activated TIG flux was applied on the pipe that is to be welded. After application of the flux, open arc orbital welding was carried out on the pipe. The edge preparation was simple square butt joint. Full penetration was observed using the video boroscopy test. The type of welding was orbital active TIG flux with wire feeder



Observations and Results

1. Full penetration for 3.8mm and 5mm tube in fusion welding process
2. Constricted welding arc
3. Video boroscopy test passed
4. Uniform weld bead



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Comparison between multiple pass welding and active TIG flux orbital welding

SR no	Multiple Pass Orbital Welding	Active TIG flux orbital welding
1.	Edge preparation: J or V groove	Edge preparation: Square Butt Joint
2.	No of Passes for 5mm thickness: 4 passes (root pass, hot pass, filler pass and cap pass)	No of passes for 5mm: Single pass with filler is possible
3.	Welding Cycle time: per pass 4.5 minutes	Welding cycle time: 4.5 for single pass
4.	Consumable cost: Wire cost: 40 rupees per pass Argon Shielding Gas cost: 80 rupees for 1 pass	Consumable Cost: Flux cost: 70 rupees per pass Argon Shielding Gas cost: 20 for one pass
5.	Due to multi-pass time required to complete one weld joint is 18-20 minutes	In this case, the time required is 4.5 minutes with single pass
6.	Complex joint preparation (V or J type)	Simple joint preparation that is square butt joint
7.	More heat input for the pipe	Less heat input
8.	Consumable cost is higher	Consumables cost is not excessive

TTS-60 WF Orbital Weld Head for Tube-to-tube sheet welding

Heat exchanger industry has one requirements of welding of tubes to the tube sheet. Automatic welding equipment is employed for accurate and precise welding where human access is restricted. For such applications we have developed TTS-60 WF that has on-board wire feeding system. The welding trials conducted on the tube welded using orbital TIG to the tube sheet passed the MLP (minimum leak path). The diameter welding range of this weld head is from 19mm to 60mm. The protrusion acceptable for the tube from the tube sheet is 3mm to 5mm and welding can be done in multi-pass. The minimum ligament required between the tubes is 4.5mm. Indigenously designed weld head to cater the needs of heat exchanger, condenser industries.



Orbitron 7K300

The open arc weld head power source is Orbitron 7K300. This power source controls the AVC, Oscillation and Wire feeding systems along. This is a programmable power source with 600 program storage capacity. The power source also has IOT connectivity.

This power source can connected to closed arc orbital weld heads of Universal Orbital Systems Pvt Ltd. Indigenously designed orbital power source suitable for all UOSPL weld heads.



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