HEMG

CLEAN PIPING & ORBITAL WELDING

High-Purity Piping Fabrication,
Orbital Welding & Installation Support



CLEAN. PRECISE. COMPLIANT. BUILT TO LAST.







WHERE HEMG HELPS

- High-purity process piping
- Hygienic tubing & BPE systems
- Site-driven fabrication & installation planning
- Weld mapping & spool traceability
- QA/QC records & turnover dossiers

EXECUTION STRENGTHS

- Orbital GTAW execution support
- SS316L / SS304L clean piping
- Progressive system turnover
- Material & weld traceability
- GMP / CQV documentation readiness

IDEAL FOR

- Pharma & Biotech
- Food & Beverage
- Semiconductor
- Clean Utility Projects
- EPC / EPCM / Contractors

Looking for orbital welding or clean piping execution support? **Let's connect.**

HEMG – Helios Engineering & Mechanical Group | hemg-ai.com

ASME BPE ALIGNED | EHEDG INFORMED | GMP/CQV DOCS | FOOD & PHARMA READY

CLEANWELD EXECUTION PACKAGE

Complete Orbital Welding Execution

High-purity piping execution with controlled QA evidence and handover.

WHY THIS MATTERS

In hygienic and high-purity plants, every weld affects cleanability, validation readiness, startup confidence and future maintenance. HEMG CleanWeld delivers the work and the evidence together.

Execute

Orbital GTAW work packages for sanitary tubing, skids, clean utilities, tie-ins, valve replacements and maintenance scopes.

Assure

Weld numbers, WPS/PQR/WPQ controls, material heat traceability, purge records, borescope evidence and repair visibility.

Handover

Structured final dossiers with weld maps, MTRs, test records, passivation evidence and client-ready handover packs.

CUSTOMER PAIN CONTROLLED BY HEMG

Customer pain	What HEMG controls	Business result
Incomplete weld history	QR weld register, weld maps, parameter capture, visual/borescope records and repair tracking.	Faster validation, cleaner dossier closeout and audit confidence.
Contamination risk	Controlled fit-up, purge/oxygen record, sanitary weld acceptance and passivation/cleanliness records.	Reduced rework, stronger hygiene assurance and safer startup readiness.
Maintenance blind spots	Weld history retained against equipment, line, skid, room, system and maintenance work order.	Better repair planning and clear lifecycle traceability.

HEMG is execution plus digital assurance.

Orbital welding work, QA evidence, documentation and lifecycle control connected into one delivery model.

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EXECUTION SCOPE

Full Scope HEMG Can Deliver

From workface planning to orbital welding, QA records and final handover.

CLEAN PIPING AND ORBITAL WELDING SCOPE

Suitable for greenfield plants, cleanroom expansions, shutdown tie-ins, hygiene upgrades and lifecycle maintenance work.

Fabrication & Installation

- High-purity process piping and hygienic tubing
- SS316L / SS304L BPE and sanitary systems
- Shop fabrication and site-driven installation
- Spool identification, preservation and controlled release
- Equipment hook-ups, utility panels and skid tie-ins

Orbital Welding Execution

- Orbital GTAW for hygienic and high-purity tubing
- Tube preparation, fit-up, purge and weld coupon control
- Valve, instrument, TC clamp and flexible hose interfaces
- Repair loop management and QA release control
- Progressive system turnover readiness

QA/QC & Turnover

- Weld maps, weld logs and digital work packs
- MTR, heat number and component certificate control
- Borescope / visual evidence linked to each weld
- Pressure/leak, flushing, passivation and cleanliness records
- Final turnover dossier for owner and QA teams

WHAT THE CLIENT RECEIVES

One weld identity

Every joint is numbered, located and tied to line, system, room and acceptance status.

One evidence trail

Qualification, material, machine, inspection, repair and test records stay connected.

One turnover pack

The execution record becomes the final handover dossier without duplicate reconstruction.

Built for hygienic, high-purity and validation-sensitive environments.

Aligned with project specifications and client QA plans, including ASME BPE / EHEDG expectations where specified.

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WORKFACE PLANNING

Site-Driven Execution Methodology

Site-ready fabrication aligned with installation sequence and turnover.

METHODOLOGY FROM SCOPE TO HANDOVER

1. Site priority identification
2. Area readiness verification
3. System/area prioritization
4. Weld map development
5. Fabrication package release
6. Field engineer review
7. Priority drawings to shop
8. Shop fabrication & orbital welding
9. Shop inspection & cleaning
10. Spool traceability
11. Sequence-based delivery
12. Site installation & hook-up
13. Field inspection & cleaning
14. Testing & punch closure
15. Documentation & turnover

CONSTRUCTABILITY BENEFITS

Less congestion

Shop fabrication and sequence-based delivery reduce unnecessary spool accumulation at site.

Higher readiness

Installation proceeds by area, level and system based on verified workface availability.

Lower rework

Weld maps, spool control and QA hold points reduce mismatches and documentation gaps.

Progressive turnover

Systems can be completed and handed over progressively to support CQV and startup.

Site-driven. Traceable. Turnover-focused.

The method supports safe execution, schedule control and clean final documentation.

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TECHNICAL CAPABILITY

Orbital Welding Capability & Controls

Controlled high-purity joining with qualified procedures and clean records.

CAPABILITY ENVELOPE

Tube size capability	DN15 to DN150, subject to final project scope and tooling selection.
Welding process	Orbital GTAW for sanitary and high-purity stainless tubing.
Material focus	SS316L / SS304L BPE, sanitary, BA and project-specified surface finishes.
Execution mode	Shop prefabrication plus site installation and hook-up support.
Documentation	Weld log, weld map, WPS/PQR/WPQ, MTR, borescope and turnover evidence.



QUALITY GATES

- WPS / PQR / WPQ verified before release
- Machine setup, calibration and program control
- Tube preparation, purge and oxygen limit evidence
- Mock-up or coupon control where required
- Visual / borescope inspection and acceptance status
- Repair loop tracking before final QA release

EXECUTION PLANNING BASIS

Scalable manpower, equipment and fabrication capacity

- Resources can be mobilized by project volume, system criticality, shutdown window and area readiness.
- Shop fabrication percentages, field weld productivity, inspection windows and turnover sequence are defined during project planning.
- HEMG focuses on disciplined execution, daily progress visibility and records that are ready for owner, EPC, QA/QC and validation review.

HYGIENIC ROOMS | CIP / SIP READY | PRODUCT CONTACT PIPING | MAINTENANCE READY

FOOD, DAIRY & BEVERAGE

Food, Dairy & Beverage Hygienic Welding

For product contact lines, CIP/SIP loops, skids, tanks and maintenance tie-ins.

WHAT HEMG DELIVERS

HEMG supports hygienic stainless piping execution where uptime, hygiene assurance and documentation closeout are critical. The service is suitable for expansion works, brownfield replacements, shutdown maintenance and plant reliability upgrades.

- CIP/SIP Lines
- Product Transfer
- Dairy Rooms
- Beverage Skids
- Tank & Filler Tie-Ins
- Clean Utilities

FOOD INDUSTRY VALUE PROPOSITION

Hygiene assurance

Clean weld evidence for product contact and sanitary systems - traceable per joint, line, room and equipment.

Faster restart

Shutdown closeout becomes easier because QA records are captured during the work, not reconstructed later.

Photo proof

Field photos and borescope evidence can be attached directly to the weld record and acceptance workflow.

Audit confidence

Lifecycle records support QA, plant engineering, maintenance and food safety inspection readiness.

Hygienic execution backed by field evidence - from first weld to final sign-off.

Built for plant owners, EPCs and maintenance teams who cannot afford documentation gaps.

WFI / PW | CLEAN STEAM | PASSIVATION RECORDS | VALIDATION READY

PHARMA, BIOTECH & VALIDATION

Pharma, Biotech & Clean Utilities

High-purity welding where documentation discipline is as important as physical execution.

DESIGNED FOR VALIDATION-SENSITIVE SCOPES

CleanWeld supports WFI/PW, clean steam, sterile utilities, product transfer, process skids, buffer/media lines, room shutdowns and validation-ready documentation. Each critical weld is tied to procedure, personnel, material, inspection evidence and turnover status.

Clean utilities

WFI, purified water, clean steam, sterile utilities, skid piping, passivation, flushing and pressure/leak evidence.

Controlled qualification

WPS/PQR/WPQ, operator readiness, coupon records, machine setup and procedure enforcement before field work.

Validation evidence

Weld maps, borescope evidence, MTRs, exception reports, acceptance status and final dossier for QA review.

TYPICAL PHARMA / BIOTECH PACKAGE

System type	Typical HEMG scope	Evidence captured
WFI / PW / Clean Steam	Orbital welding, fit-up, purge, weld map, QA hold points, pressure/leak test and passivation support.	Weld logs, borescope images, MTRs, qualification records and test reports.
Sterile Product / Process Lines	Controlled high-purity joining, equipment tie-ins, skid records, visual evidence and exception closure.	Machine program, purge data, acceptance status and validation dossier.
Maintenance & Modifications	Replacement spools, tie-ins, room shutdown support, revalidation evidence and lifecycle history.	Work order linkage, repair record, QA release and final pack.

Clean utility work needs high-discipline records.

HEMG supports field execution and the evidence trail required for validation and acceptance.

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QUALITY DOCUMENTATION PACK

Digital Weld Evidence & Turnover Dossier

A lifecycle record for audit, validation, maintenance and modification.

ONE CONTROLLED RECORD PER WELD

HEMG connects the physical weld, digital work pack, inspection evidence, QA acceptance and turnover document into one controlled record. The field record becomes the handover evidence.

Weld Map & Weld Log

Area, line, spool, weld number, location, status, acceptance and repair history.

WPS / PQR / WPQ

Procedure and personnel qualification controls before critical weld execution.

Material Traceability

MTR, heat number, tube/fitting details, valve/instrument references and certificates.

Machine Parameters

Orbital machine ID, head ID, program, current, speed, purge details and operator.

Borescope Evidence

Internal weld photos/videos linked directly to weld record and acceptance status.

Cleaning & Passivation

Passivation, flushing, cleanliness, pressure/leak test and release documentation.

Progress Dashboard

Live completion by system, area, crew, contractor, room, skid or package.

Turnover Dossier

Structured final pack for owner, EPC, QA/QC, validation and commissioning teams.

One weld. One QR. One complete lifecycle record.

From field execution to validation, audit and future maintenance.

info@hemg-ai.com | +971 52 668 9155 | hemg-ai.com
United Kingdom | UAE | India

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HEMG DIGITAL ECOSYSTEM

CleanWeld Inside HEMG's Integrity Ecosystem

Weld traceability, test packs, training and mechanical integrity connected.

INTEGRATED DELIVERY MODEL

CleanWeld is positioned as an execution-plus-assurance package under the HEMG mechanical integrity ecosystem. It can be deployed as a project package, pilot area, maintenance framework, shutdown support model or full plant turnover program.

CleanWeld Integrity	Complete orbital welding work packages for hygienic and high-purity facilities: execution planning, weld numbering, field records, inspection evidence and handover.
Weld Integrity Pro	Digital weld traceability, qualification control, inspection visibility, repair loops, QR weld identity and analytics.
Project Lifecycle Commander	Digital test pack, punch list, system/subsystem completion, multi-party sign-off and final turnover dossier compilation.
Skill-Up Academy	SME-led training for welding, joining, hygienic execution, QA/QC, documentation discipline and workforce readiness.
Bolted Joint Master	For utility skids and critical bolted systems around clean plants: flange integrity, tightening records and maintenance readiness.

One execution partner. One digital evidence trail.

Welding, quality, turnover, training and mechanical integrity connected under HEMG.

OWNER READY | EPC READY | MAINTENANCE READY | TURNOVER READY

ENGAGEMENT MODEL

Complete Hygienic Welding Execution with Digital Integrity

HEMG takes the orbital welding scope, controls the evidence, manages the QA record and delivers the final handover dossier - for new plants, expansions, shutdowns and lifecycle maintenance.

1
Discovery & Scope Freeze

Review systems, drawings, standards, rooms, utilities, schedule, QA needs and handover requirements.

2
Digital Work Pack

Create weld numbering, checklists, roles, acceptance hold points, document templates and dashboard views.

3
Field Execution

Deploy orbital welding team, equipment, purge method, inspection plan and daily progress control.

4
QA Acceptance

Verify records, review evidence, close repairs, approve welds and manage exception reports.

5
Turnover & Lifecycle

Submit final dossier and retain weld history for future modification, audit and maintenance programs.

Execute

Orbital welding work packages with controlled field execution and daily progress visibility.

Assure

Digital weld traceability, qualification control, borescope evidence, repair loops and QA acceptance.

Handover

Turnover-ready weld packs, test evidence, passivation records, dashboards and lifecycle history.

Ready to scope the first CleanWeld project?

Contact: info@hemg-ai.com | +971 52 668 9155 | hemg-ai.com