WELDING CONSULTING & TECHNICAL SUPPORT

OWETEC Services

Training • Qualification • Consulting

A professional overview of OWETEC capabilities for critical welding operations, including optimization, qualifications, workforce training, program reviews, QA/QC support, automation guidance, and ongoing technical partnership.

Practical welding knowledge. Qualified performance. Field-proven solutions.

owetecllc.com | customer.service@owetecservices.com

Who We Are

Technical welding support for demanding production and compliance environments

- OWETEC Services provides welding education, hands-on training, and consulting for organizations that must control precision, compliance, and repeatability every day.
- Our team helps customers with orbital welding, manual welding, inspection support, procedure development, process validation, and workforce capability building.
- Support can be delivered at the customer site, remotely, or through structured programs at the OWETEC training center in North Royalton, Ohio.
- We help reduce rework, improve quality systems, qualify procedures and personnel, and create welding programs that stand up to demanding audits, customer reviews, and production timelines.

Our work goes beyond training individuals - we help companies build welding systems that can be repeated, measured, and sustained.

What Separates OWETEC

Practical execution backed by welding expertise

- Field experience supporting semiconductor, aerospace, biopharma, oil and gas, nuclear, food and beverage, shipbuilding, and advanced manufacturing applications.
- CWI/CWE-led support that connects technical requirements to what actually happens on the shop floor and in the field.
- Extensive experience with orbital systems, manual processes, qualification programs, inspection requirements, and high-purity/UHP welding environments.
- Recommendations are built around real production factors: schedule, cost, code compliance, fit-up, purge, documentation, tooling, and operator skill.
- Our standard is simple: if the customer gains compliance, consistency, and production stability, the work was successful.

Typical Problems We Solve

Support ranging from urgent troubleshooting to complete program buildout

- Missing, outdated, incomplete, or impractical WPSs, PQRs, WOPQs/WPQs, work instructions, quality manuals, and supporting records.
- Unstable weld quality, repeat defects, excessive scrap or repair, weak fit-up control, purge issues, and low first-pass acceptance rates.
- Weld schedules that fail to satisfy productivity, code, cleanliness, heat tint, discoloration, or customer acceptance requirements.
- Project delays tied to audit gaps, customer approval problems, inspection findings, or slow qualification activity.
- Manual processes that need better standardization, operator training, or a controlled path into orbital, automated, or robotic welding.

Business Outcomes

Measurable impact on quality, throughput, cost, and customer confidence

- Lower overall welding cost by cutting avoidable labor, consumable waste, purge/shielding gas waste, downtime, scrap, and repair work.
- Higher weld reliability through better procedure control, stronger training, and repeatable execution at the point of work.
- Quicker project launch through organized coupon planning, qualification testing, inspection coordination, documentation, and personnel readiness.
- Cleaner and safer work practices through disciplined process control, weld safety awareness, and clear production expectations.
- Improved readiness for customer audits, third-party reviews, certification bodies, and code compliance verification.
- Increased throughput by improving parameters, workflow, fit-up consistency, and operator confidence.

Signature Services

A full-service welding support platform delivered through OWETEC Services

- Embedded Technical Support and Retainer Services
- Process Optimization, Procedures, Qualification and Compliance
- Program Assessments and Ongoing Weld Program Improvement
- Technical Education, Orbital Training, Manual Welding Training and Examiner Support
- Weld Quality Systems, Manuals, SOPs and Work Instructions
- Product Launch, Repair Planning, QA/QC, Fixtures, Robotics, Equipment Selection and Analysis

OWETEC Capabilities Overview

This presentation outlines the full OWETEC service offering for customers who need welding expertise, training, documentation, compliance support, and production improvement.

- Retainer-based and embedded technical support for customers who need reliable access to experienced welding guidance.
- Process improvement, WPS/PQR development, procedure qualification, welder/operator qualification, and code/customer compliance support.
- Comprehensive weld program reviews covering documentation, shop-floor practice, equipment/tooling, personnel knowledge, findings reports, and corrective action planning.
- Recurring program optimization through quarterly, semi-annual, or annual follow-ups that keep improvements in place and protect cost reduction gains.
- Customized education and technical training for welders, operators, supervisors, inspectors, quality teams, engineers, planners, and management.
- Quality systems, product launch support, repair strategy, QA/QC oversight, fixturing/tooling, robotic welding, procurement guidance, weld calculations, engineering review, and specialty consulting.

Ways to Engage OWETEC

Flexible engagement models: remote, on-site, hybrid, retainer, assessment, project, or launch support.

- Use OWETEC for a focused technical need such as troubleshooting, audit response, qualification, customer approval, or start-up support.
- Bring OWETEC on site to elevate the capability of operators, welders, inspectors, supervisors, quality staff, and engineers.
- Engage OWETEC as a long-term technical partner for program control, continuous improvement, documentation discipline, and ongoing optimization.
- Use OWETEC as a launch partner when introducing new equipment, parts, materials, processes, or customer specifications.
- Lean on OWETEC as an independent technical advisor for equipment decisions, consumable strategy, tooling, process flow, robotic cells, and capital planning.

How We Work

A clear four-phase execution model

1 **Discovery**

Define objectives, project drivers, constraints, governing requirements, production pain points, and current operating practices.

2 **Assessment**

Review gaps, documentation, production practice, audit needs, inspection requirements, and qualification/test strategy.

3 **Implementation**

Create procedures, training plans, weld schedules, fixture concepts, inspection controls, and improved work methods.

4 **Continuous Improvement**

Sustain gains through follow-up reviews, training reinforcement, continuity checks, process tracking, and optimization support.

01

Embedded Technical Support Program

Dedicated access to OWETEC expertise so welding issues can be addressed before they disrupt production.

Priority support • Technical response • Document review • Process control

What the Support Program Provides

Move from emergency response to front-end control.

- Reserved technical hours that make budgeting clearer and give your team priority access when support is needed.
- On-call welding assistance for troubleshooting, procedure work, compliance questions, project execution, and technical decisions.
- Continuous review of WPSs, PQRs, WOPQs/WPQs, continuity records, SOPs, and related documentation to keep records accurate and usable.
- Routine technical oversight to expose inefficiency, risk, waste, cost drivers, and workforce training needs.
- Access to the full OWETEC service platform through one organized support structure.

Emergency Support vs. Embedded Control

The value is less firefighting, more control, and clearer ownership.

Reactive Welding Support

- Greater chance of urgent issues
- More repairs, scrap, and wasted effort
- More schedule pressure and shutdown risk
- Weaknesses in documentation and records
- Inconsistent technical decisions
- Reduced margin and lost profit

Embedded OWETEC Support

- Fewer unexpected technical problems
- Quicker technical decisions
- Stronger compliance position
- Improved first-pass acceptance
- More predictable support cost
- More stable production performance

Direct Technical Support

All service areas can be supported on site, remotely, or through a hybrid approach

- WPS/PQR development, qualification planning, and code/customer compliance guidance.
- Process optimization, weld schedule creation, parameter refinement, and production troubleshooting.
- Program assessments, quality system support, manuals, SOPs, and work instruction development.
- Repair strategy, QA/QC review, NDE coordination, inspection planning, and technical oversight.
- Automation, robotic welding, fixture/tooling concepts, and equipment selection support.
- Drawing and weld symbol review, audit preparation, technical submittals, and customer-facing documentation.

02

Process Control, Qualification & Compliance

Welding process development, parameter optimization, and qualification support matched to the code, customer specification, material, equipment, and production environment.

WPS/PQR/WPQ • ASME • AWS • SEMI • API • ISO • NAVSEA

Weld Process Optimization

Practical procedures that can be performed consistently in production

- Tune welding processes to meet quality, throughput, cleanliness, mechanical performance, and customer acceptance requirements.
- Build and qualify procedures around the proper essential variables, test scope, inspection methods, and acceptance requirements.
- Prepare and organize WPSs, PQRs, WOPQs/WPQs, SOPs, work instructions, inspection records, and supporting documents.
- Lock down key variables such as current, voltage, travel speed, pulse timing, wire feed, arc gap, shielding gas, purge, heat input, and interpass control.
- Lower overhead, reduce consumable waste, limit failed welds, protect schedules, and shorten customer approval cycles.

Codes, Standards & Customer Requirements

OWETEC helps connect the welding program to the standards and contract requirements that actually govern the work.

- AWS support can include B2.1, D1.1, D1.2, D1.3, D1.4, D1.5, D1.6, D9.1, D14.3, D17.1, D17.2, and related project requirements.
- ASME support can include BPVC Sections I, III, VIII, IX; B31.1, B31.3, B31.4, B31.8, B31.9; and applicable owner or project requirements.
- NAVSEA and MIL-standard support for applicable welding, brazing, fabrication, inspection, and NDT requirements.
- API, ISO, CSA/CWB, SEMI, ASME BPE, customer specifications, and project-specific acceptance criteria can be integrated as required.
- Additional codes and standards can be addressed depending on the contract, industry, material, and application.

AWS, ASME, API & ISO Support

Code support is translated into usable production guidance, not paperwork alone.

- AWS-related support for procedure qualification, performance qualification, structural work, sheet metal, stainless, bridges, aerospace fusion welding, resistance welding, and other applicable scopes.
- ASME BPVC and B31 support for welding, brazing, fusing qualifications, pressure components, process piping, power piping, and related fabrication work.
- API support for pipeline, facility, and related welding requirements when those standards apply.
- ISO support for welding procedure qualification and welder qualification of metallic materials when required by the project.
- Hands-on code navigation for WPS/PQR/WPQ/WOPQ creation, inspection planning, qualification testing, continuity tracking, and audit-ready records.

Specialty and Contract-Specific Requirements

We shape the technical program around the customer specification, contract language, and acceptance requirements.

- Naval and defense projects can be supported with NAVSEA/MIL-spec guidance for welding, brazing, fabrication, inspection, and nondestructive testing.
- CSA/CWB support is available when Canadian company certification, welder qualification, or welded construction requirements are part of the scope.
- Semiconductor and high-purity/UHP support can cover weld cleanliness, purge control, heat tint/discoloration expectations, orbital records, and customer acceptance criteria.
- Biopharma, sanitary, ASME BPE, food and beverage, aerospace, pressure equipment, energy, infrastructure, and customer-driven requirements can be incorporated as needed.
- When a contract references a specialized requirement, OWETEC helps turn that requirement into procedures, training, inspection controls, and production practice.

Expected Results

Consistent welding begins with controlled variables and clear requirements.

- Greater efficiency through standardized variables, repeatable methods, and reduced process variation.
- Documented proof that procedures and personnel can produce repeatable weld quality and required mechanical performance.
- Lower failure risk through qualified procedures, trained personnel, controlled documentation, and clear acceptance criteria.
- Smoother production with shorter turnaround, fewer disruptions, and lower total weld cost.
- Improved customer confidence through clean records, traceability, and clear alignment to governing requirements.
- Stronger positioning for work that requires qualified procedures, qualified welders/operators, and a reliable weld quality program.

03

Weld Program Assessment

A practical review of the welding operation to uncover gaps, risk, waste, training needs, cost-reduction opportunities, and compliance improvements.

Process review • Document audit • Capability gaps • Action plan

Assessment Approach

A clear path from current practice to controlled execution

- Create alignment between leadership, operations, quality, supervision, and engineering on welding objectives and expectations.
- Evaluate procedures, work instructions, quality manuals, drawings, qualification records, inspection practices, and production expectations.
- Observe the real process - fit-up, cutting, facing, forming, purge, welding technique, consumables, equipment condition, flow, and handoffs.
- Expose the difference between written requirements and actual production behavior.
- Deliver a practical roadmap for corrective actions, process improvement, document updates, and training needs.

Full-System Welding Review

We evaluate the full welding system - not only the final bead appearance.

- Process review: confirm procedures, parameters, methods, and controls support the production goals and governing requirements.
- Consumable/equipment review: identify waste, misuse, maintenance issues, capability limitations, and safety concerns.
- Personnel capability review: interview and observe welders, operators, inspectors, supervisors, and other key team members.
- Drawing review: check weld symbols, joint details, tolerances, notes, and inspection expectations for clarity and feasibility.
- NDT/inspection review: verify methods, acceptance criteria, personnel qualifications, records, and required hold points.

Assessment Tasks

After the review, OWETEC can help turn recommendations into action.

- On-site and remote review of procedures, quality manuals, work instructions, drawings, qualifications, and supporting records.
- Observation of welding operations and the upstream/downstream activities that affect cost, quality, and schedule.
- Evaluation of equipment, tooling, fixtures, ergonomics, workflow, accessibility, and safety considerations.
- Employee interviews and job shadowing to understand capability, obstacles, decision points, and real-world constraints.
- Preparation and presentation of a findings report with prioritized recommendations, practical next steps, and corrective action support.

Assessment Deliverables

The purpose is not a binder on the shelf - it is measurable improvement in the welding program.

- A customer-ready report that outlines key findings, risk areas, process gaps, and improvement opportunities.
- Recommendations connected to quality, cost, throughput, documentation, training, compliance, and operational stability.
- Economic impact review when practical, including avoidable labor, consumables, rework, scrap, downtime, and lost throughput.
- Prioritized corrective action list with realistic implementation steps and ownership guidance.
- Optional training, procedure development, and follow-up support to help recommendations become sustained standard practice.

04

Ongoing Weld Program Improvement

Recurring support to protect gains, reinforce new work habits, and keep the welding program aligned as work changes.

Quarterly • Semi-annual • Annual • Change control

Tiered Optimization Plans

Sustained improvement depends on repetition, accountability, leadership follow-through, and measurement.

- Tier 1 - Quarterly: intended for high-risk, high-cost, high-change, high-turnover, or strict-compliance environments that need frequent reinforcement.
- Tier 2 - Semi-Annual: suited for operations where rework, consumables, consistency, or moderate process change directly affects profitability.
- Tier 3 - Annual: built for lower-risk operations that still benefit from periodic oversight, validation, and program health checks.
- Each visit refreshes the roadmap and identifies new risks, inefficiencies, document issues, training needs, or process drift.
- On-site visits can include real-time coaching to correct drift before old habits become standard again.

Ongoing Review: What We Track

Follow-up support keeps gains from fading after the initial improvement effort.

- Whether team members are following the updated procedures, work instructions, weld schedules, inspection requirements, and corrective actions.
- Whether changes in production demand, materials, equipment, fixtures, staffing, or customer requirements have created new welding risk.
- Whether rework, scrap, gas consumption, consumable use, downtime, inspection failures, or schedule disruptions are trending negatively.
- Whether documentation, continuity records, travelers, hold points, and inspection reports remain current, accurate, and audit-ready.
- Whether the program needs additional training, coaching, procedure revision, or process optimization to remain stable.

Recurring Review Deliverables

The goal is durable program stability, not a one-time cleanup effort.

- Updated report using the same practical structure as the original assessment for easy comparison over time.
- New findings, revised recommendations, open/closed action status, and priority items for leadership review.
- Refresher training or on-the-spot coaching when recurring issues or process drift are observed.
- Document updates when production conditions, code requirements, customer specifications, or equipment capability change.
- A repeatable improvement loop that keeps quality, productivity, compliance, and cost control moving forward.

05

Welding Training & Technical Education

Tailored technical training that builds workforce capability, improves consistency, and gives welders, operators, inspectors, supervisors, engineers, and managers a common language.

Orbital • Manual • Inspection • Safety • Codes

Training Goals and Who We Support

Training built around the actual work, equipment, materials, and requirements your team faces.

- Build technical knowledge so personnel make better decisions, prevent defects, and control the variables that matter.
- Create custom training around the customer material, equipment, governing codes, specifications, and production environment.
- Deliver training on site, virtually, through a hybrid model, or at the OWETEC training center depending on the best fit.
- Train welders, operators, supervisors, inspectors, quality personnel, engineers, planners, leaders, and management teams.
- Combine classroom instruction with demonstrations, hands-on practice, mock qualifications, inspection exercises, and real production scenarios.

Core Training Topics

Technical understanding builds confidence in production decisions.

- Joining and cutting processes such as GTAW, GMAW, FCAW, SMAW, SAW, PAW, LBW, EBW, resistance welding, brazing, and related methods.
- Joint geometry, weld symbols, blueprint reading, and clearer communication between engineering, production, and inspection.
- Weld/base metal discontinuities, likely causes, prevention strategies, and corrective actions.
- Visual inspection, NDT awareness, inspection tools/gages, evaluation practices, and acceptance criteria.
- Metallurgy, material behavior, destructive testing, heat treatment, and weldability of common and specialty alloys.
- Welding economics, safety, code/standard navigation, qualification records, and other custom subjects as required.

Joining and Cutting Process Coverage

The training is built around the processes your team uses in production.

- Coverage can include GTAW/TIG, orbital GTAW, GMAW/MIG, FCAW, SMAW/stick, SAW, PAW, LBW, EBW, resistance spot/projection welding, brazing, and related cutting/prep processes.
- Process selection, equipment setup, parameter control, consumables, shielding/purge gas control, fit-up, joint prep, and inspection expectations.
- Operator and supervisor understanding of how variables influence penetration, fusion, bead profile, discontinuities, color/oxidation, productivity, and cost.
- Hands-on training can be built around the exact equipment, material, size, wall thickness, joint design, and customer specification in use.
- The result is better decision-making at the point of work - not just more classroom information.

Orbital and Manual Welding Training

From entry-level operators to advanced application-specific training.

- Orbital welding setup, programming, schedule development, arc-gap control, purge strategy, fit-up, inspection, maintenance, and qualification support.
- Manual welding training for pipe, structural, pressure vessel, repair, and field work using SMAW, GTAW, GMAW, FCAW, and other processes as needed.
- Hands-on work using real equipment, real coupons, and application-specific challenges.
- Training can be tailored for semiconductor, aerospace, biopharma, nuclear, oil and gas, food and beverage, shipbuilding, and industrial environments.
- Focus areas include consistency, troubleshooting, weld quality, compliance, safety, and readiness for production.

Joint Design and Weld Symbol Training

Clearer drawings and clearer interpretation reduce costly mistakes.

- Help engineers, welders, inspectors, and supervisors communicate welding requirements accurately and consistently.
- Build understanding of joint selection, fit-up, groove details, fillet sizing, contour requirements, and weld symbol interpretation.
- Reduce rework created by unclear drawings, incorrect symbols, or poor communication across departments.
- Support AWS A2.4-style symbol reading and project-specific drawing expectations.
- Improve customer confidence through clearer drawings, stronger interpretation, and consistent execution.

Weld and Material Discontinuities

Identification matters most when it leads to prevention.

- Train personnel to recognize cracks, porosity, incomplete fusion, incomplete penetration, inclusions, undercut, overlap, underfill, arc strikes, spatter, lamination, seams, distortion, and related conditions.
- Connect each discontinuity to likely contributors such as prep, fit-up, contamination, purge, parameters, technique, equipment condition, consumables, or material condition.
- Improve inspection accuracy through correct terminology, recognition methods, and evaluation discipline.
- Reduce scrap and rework through earlier detection and quicker corrective action.
- Build a stronger quality culture by helping welders, supervisors, and inspectors use the same technical language.

Visual Inspection and NDT Awareness

Welders are often the earliest quality control point in the process.

- Pre-weld inspection practices: material condition, cleanliness, fit-up, alignment, joint prep, purge setup, and documentation review.
- In-process inspection practices: parameter control, interpass conditions, technique, heat input, environment, and work instruction compliance.
- Post-weld inspection practices: visual acceptance, sizing, discontinuity evaluation, documentation, and next-step inspection requirements.
- Hands-on practice with inspection tools, gages, and evaluation methods required by the application.
- Awareness of VT, PT, MT, RT, UT, ET, and how each method supports the quality assurance plan.

Metallurgy, Testing and Material Behavior

Understanding the material is part of protecting the weldment.

- Weldability and process guidance for carbon steel, low-alloy steel, stainless steel, aluminum, nickel alloys, copper alloys, titanium, duplex alloys, cast irons, and dissimilar metals.
- Heat treatment topics including preheat, interpass control, stress relief, tempering, aging, and thermal gradient concerns.
- Mechanical property concepts such as tensile strength, ductility, hardness, toughness, fatigue, corrosion resistance, and fitness-for-service factors.
- Destructive testing awareness for bend, tensile, Charpy, nick-break, fillet-break, macroetch, hardness, fatigue, and related tests.
- Practical metallurgy applied to reduce cracking, distortion, test failures, and service-related weld failures.

Welding Economics

The lowest bid weld is not always the lowest-cost weld.

- Identify cost drivers such as labor, consumables, shielding gas, equipment, power, inspection, testing, rework, scrap, and overhead.
- Analyze deposition rate, cycle time, travel speed, setup time, changeover, operator efficiency, and process selection.
- Optimize consumables including filler metal, electrodes, contact tips, nozzles, liners, shielding gas, purge gas, and tungsten usage.
- Evaluate manual, automated, and robotic options along with the real return on investment of new equipment.
- Improve budgeting and forecasting by understanding the full cost of producing acceptable welds.

Code, Qualification and Documentation Training

Codes only help when the team understands how to apply them.

- Train engineering, quality, supervision, welders, and inspectors to navigate code, standard, and customer requirements correctly.
- Build understanding of WPS, PQR, WPQ/WOPQ, continuity, inspection reports, NDT coordination, traveler control, and related records.
- Reduce risk from misinterpreting AWS, ASME, API, ISO, NAVSEA, SEMI, customer specifications, and project-specific requirements.
- Improve audit readiness and customer trust through accurate records and consistent use of acceptance criteria.
- Build confidence in decisions related to qualification, production welding, repair, inspection, and acceptance.

Weld Safety Training

Safety and productivity need to work together.

- Increase awareness of burns, fumes, electric shock, radiation, eye hazards, compressed gases, fire risk, noise, slips/trips/falls, falling objects, and related hazards.
- Train personnel on PPE, safe work practices, ventilation/fume control, equipment setup, and maintenance expectations.
- Strengthen safety culture to protect people, equipment, production, and the organization.
- Reduce downtime connected to preventable incidents, unsafe conditions, and poor work practices.
- Align welding safety expectations with OSHA, site rules, hot work procedures, and industry best practices.

Additional Training Options

Custom training can be developed when the need falls outside a standard class.

- Engineering drawing and blueprint interpretation for welders, supervisors, inspectors, quality teams, and engineering teams.
- Lean manufacturing and production flow tied to welding, fit-up, inspection, rework, and bottleneck reduction.
- Practical shop-floor math including weld calculations, heat input, deposition rate, travel speed, cycle time, and related topics.
- Customer-specific training based on actual procedures, parts, equipment, inspection tools, acceptance criteria, and site rules.
- Refresher training, new-hire onboarding, train-the-trainer support, and qualification preparation can be included.

06

Weld Quality System Development

Develop an internal weld quality system that is auditable, practical, aligned to requirements, and usable by the people who must execute it.

Quality manual • SOPs • Records • Continuity • Corrective action

Quality System Deliverables

A quality program built to be used, audited, and improved.

- Custom welding quality manuals tailored to the customer operation, industry, codes, standards, and contract requirements.
- Document control and revision practices that protect welding record integrity and prevent outdated information from being used.
- Controls for WPS/PQR/WPQ/WOPQ, welder/operator continuity, qualification matrices, authorization scope, and record traceability.
- Requirements for consumable handling/storage, material control, fit-up, visual inspection, and work instruction use.
- NDT coordination, acceptance criteria, root-cause activity, corrective action, and audit preparation/support.

Typical Weld Quality Manual Sections

OWETEC develops manuals meant for real execution - not just a binder for audits.

- Scope, exclusions, deviations, safety expectations, facility requirements, and responsibility matrix.
- Base material, backing, filler metal/consumables, shielding gas, and traceability controls as required by the work.
- Preheat, interpass, PWHT, fit-up, joint prep, cleaning, visual inspection, NDT coordination, and acceptance requirements.
- WPS/PQR/WPQ/WOPQ management, continuity tracking, revision control, document retention, traveler use, and traceable records.
- Nonconformance handling, root-cause analysis, corrective action, repair control, audit preparation, and continuous improvement expectations.

Implementation Support

A weld quality system only works when the team understands and uses it.

- Hands-on rollout support across production, quality, supervision, and engineering so the manual and procedures become daily practice.
- Training and knowledge transfer so personnel understand the requirements, responsibilities, and reason behind the system.
- Support for customer audits, third-party reviews, internal audits, and program health checks.
- Development of templates, forms, logs, travelers, checklists, and standard work tools as needed.
- Long-term sustainability through retainer support, recurring reviews, or continuous optimization visits.

07

Weld Product Development

Support through welded product design and launch to improve manufacturability, compliance, performance, quality, and total cost.

Design review • Materials • Joint design • Prototypes • Validation

Welded Product Launch Support

Design with welding success in mind from the beginning.

- Early design and launch support to reduce waste, redesign loops, rework, and manufacturing cost.
- Base and filler metal selection based on mechanical performance, corrosion resistance, weldability, cost, availability, and fitness-for-service.
- Process selection based on productivity, cycle time, quality expectations, code requirements, cleanliness needs, and available skill.
- Joint design guidance to improve strength, accessibility, repeatability, distortion control, and welding economics.
- Prototype evaluation, parameter tuning, validation testing, and procedure qualification support.
- Collaboration with engineering, manufacturing, quality, and production teams to support smoother implementation.

Welded Product Development Results

Strong weld input early helps prevent expensive fixes late in the launch cycle.

- Material and filler metal choices that balance performance, weldability, availability, corrosion needs, and cost.
- Weld processes and joint designs that satisfy engineering intent while remaining practical to build.
- Optimized parameters, WPSs, and validation testing that lower launch risk and support production release.
- Better alignment between design, manufacturing, quality, and production before issues reach the floor.
- Less redesign, less rework, better throughput, and more confidence before release to production.

08

Repair Planning and QA/QC Oversight

When production or field welds require repair, OWETEC can support root-cause review, repair planning, qualification, oversight, and documentation.

Root cause • Repair WPS • NDE • Heat treatment • Oversight

Repair Development Scope

Repair work should be controlled, traceable, and technically justified before it begins.

- Root-cause review of welding defects to reduce repeat issues and protect future production.
- Selection of proper defect removal methods such as grinding, gouging, machining, blending, or cutout/replacement when appropriate.
- Development or review of qualified repair WPSs, work instructions, hold points, traveler steps, and inspection requirements.
- NDE method selection and acceptance criteria coordination when the repair scope does not already define them.
- Preheat, interpass, and post-weld heat treatment guidance when required by the material, code, or repair plan.
- Real-time oversight, document review, and coordination with third-party inspectors, customers, owner representatives, and internal quality teams.

Repair Planning Results

A controlled repair plan protects the component, the schedule, and the customer relationship.

- Defect causes are identified and controlled rather than repaired once and allowed to repeat.
- Repair methods are chosen with code compliance, safety, quality, schedule, cost, and fitness-for-service in mind.
- Repair WPSs, NDE requirements, hold points, heat treatment needs, and records are defined before the repair starts.
- Inspectors, customers, and owner representatives receive a clearer technical basis for acceptance and closure.
- Traceable technical control helps reduce downtime, repeated failures, additional rework, and dispute risk.

09

Weld Tooling and Fixture Support

Engineering and fabrication support for custom jigs and fixtures that improve location, access, repeatability, ergonomics, and weld quality.

Repeatability • Access • Ergonomics • Distortion control

Tooling & Fixturing Goals

Good fixturing protects the weld before the arc starts.

- Improve part location, joint geometry, gap control, alignment, and repeatable fit-up.
- Increase production stability by standardizing setup methods and reducing variation.
- Improve access and ergonomics so welders can work more safely, more efficiently, and with less fatigue.
- Support fixture concepts for manual stations, orbital welding setups, automation, and robotic cells.
- Reduce distortion, part movement, and rework through fixture strategy, sequencing, and restraint planning.
- Improve compliance through documented tooling controls, setup requirements, and standard work.

Expected Robotic Welding Results

A robot performs best when it is part of a controlled weld system, not treated as a shortcut.

- Stabilized robot programs, paths, and parameters that produce repeatable welds across shifts and production lots.
- Shorter cycle times through better torch angles, sequencing, travel speeds, weave strategy, and part presentation.
- Better first-pass yield by addressing discontinuities through joint prep, fixture control, part presentation, and parameter tuning.
- Improved uptime through preventive maintenance planning and consumable change strategies.
- Better visibility through captured weld variables, inspection results, and trend data for improvement.

Tooling and Fixture Results

Control begins before the arc is ever struck.

- More repeatability through stronger location, restraint, access, alignment, and setup control.
- Shorter cycle time through faster fit-up, fewer adjustments, and more consistent part presentation.
- Less scrap and rework by maintaining joint geometry and preventing avoidable movement or misalignment.
- Improved ergonomics and safety for manual, orbital, automated, and robotic applications.
- Stronger audit readiness through documented tooling controls, standard work, and repeatable setup methods.

10

Robotic Welding Support

Automation support to stabilize weld programs, improve throughput, lower weld cost, and keep quality from being sacrificed for speed.

Path optimization • Fixture review • Cycle time • ROI • Data

Robotic Welding Scope and Results

Automation works best after the welding process is understood and controlled.

- Refine robotic welding parameters, travel paths, torch angles, sequencing, weave strategy, and start/stop logic.
- Evaluate joint design, tolerance stack-up, part presentation, fixture suitability, and robotic accessibility.
- Support robotic cell planning, robot/positioner selection, integration strategy, and ROI review.
- Reduce spatter, porosity, undercut, lack of fusion, and other discontinuities through better control of the process.
- Improve uptime through consumable strategy, preventive maintenance review, spare parts planning, and quick-change concepts.
- Capture weld data and inspection results to support measurable continuous improvement.

11

Equipment and Consumable Selection Support

Independent technical guidance for choosing welding equipment, orbital systems, robotic cells, power supplies, consumables, fixtures, jigs, and support tools.

Selection • ROI • Integration • Capability

Selection and Procurement Guidance

Select equipment that fits the application - not simply the most expensive option.

- Review process requirements, materials, duty cycle, production goals, quality expectations, code needs, and future capability targets.
- Recommend equipment configurations for manual, orbital, automated, robotic, and specialty welding applications.
- Advise on power supplies, weld heads, accessories, consumables, shielding/purge gases, tooling, and support equipment.
- Evaluate access, ergonomics, footprint, maintenance needs, training burden, and production flow before purchase.
- Support integration planning so equipment, procedures, tooling, people, and inspection controls are aligned before launch.
- Reduce capital risk by avoiding equipment purchases that do not fit the application, workforce, or customer requirement.

Procurement Support Results

Procurement should satisfy both technical requirements and business goals.

- Lower capital risk by matching equipment and tooling to actual production, code, material, and quality needs.
- Better weld quality and consistency through stronger process, power source, weld head, fixture, and consumable choices.
- Higher productivity by aligning equipment capability with workflow, operator skill, maintenance demands, and inspection requirements.
- Lower operating cost through smarter consumable use, less rework, and better integration planning.
- Faster implementation because procedures, tooling, operators, and inspection controls are planned before the equipment goes live.

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Weld Calculations and Technical Analysis

Weld sizing, fitness-for-service review, distortion mitigation, engineering documentation, and customer/technical submittal support.

Weld sizing • Distortion • Submittals • Traceability

Technical Analysis Support

Engineering input that keeps weld decisions compliant, buildable, and economical.

- Material thickness and weld size calculations based on loading, stress, structural needs, and fitness-for-service requirements.
- Distortion review and mitigation strategies to protect dimensions and reduce rework.
- Joint design and weld sizing support to meet requirements without adding unnecessary weld metal, material, or labor.
- Documentation for engineering submittals, customer review, code alignment, and audit traceability.
- Data-informed recommendations that support faster technical decisions and smoother manufacturing execution.

Technical Analysis Results

The goal is safe, compliant, cost-effective welding - not unnecessary over-welding.

- Weld size and joint decisions that meet service requirements without excessive weld volume, material, or labor.
- Less distortion, scrap, and dimensional rework through better planning, sequencing, restraint, and mitigation strategy.
- Clear and traceable documentation for customers, engineering teams, quality departments, and audit submittals.
- Quicker technical decisions because recommendations are connected to loading, stress, geometry, code intent, and production reality.
- Improved customer confidence through controlled, documented, engineering-supported recommendations.

Additional Welding Consulting Services

When welding performance affects cost, compliance, safety, or delivery, OWETEC is built to support it.

- Short-term or long-term consulting engagements structured around project needs.
- Subject matter expertise for OEMs, fabricators, contractors, EPC teams, owners, and owner representatives.
- Troubleshooting for critical weld failures, repeat quality issues, and complex application challenges.
- Independent review of documentation, procedures, drawings, inspection results, quality records, and audit findings.
- Expert witness and litigation support when welding interpretation, documentation, or technical review is required.
- Custom support for unique materials, applications, equipment, cleanliness requirements, and customer-specific specifications.

Let OWETEC help build a stronger welding program.

From training and qualification to optimization, program review, QA/QC support, and long-term partnership, OWETEC helps customers create welding systems that are controlled, compliant, and ready for production.

Start with a discovery call

owetecllc.com

customer.service@owetecservices.com

North Royalton, Ohio | On-site support available worldwide