

Eng-Cad is an established and respected turnkey solution provider to the Oil, Gas, Renewable Energy, Petrochemical and Nuclear industries.



- ▶ Personnel Resource Solutions
- ▶ Process & Piping Design
- ▶ Structural Design Services
- ▶ Electrical & Instrumentation Services

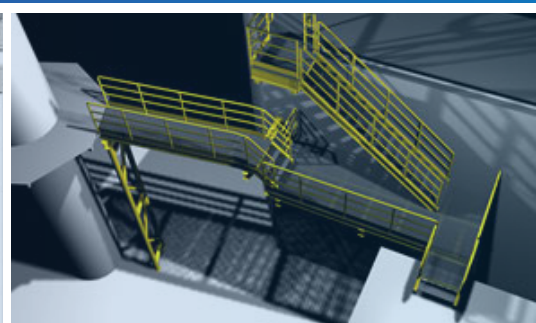
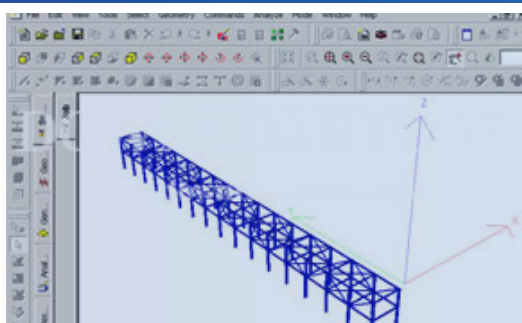
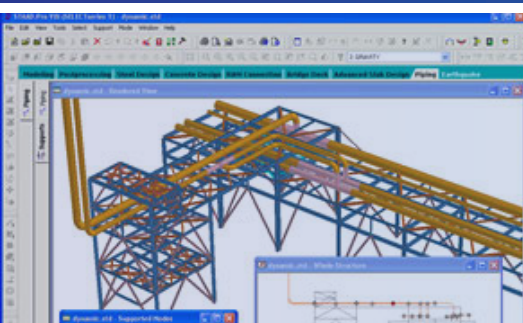
- ▶ Surveying & 3D Laser Scanning
- ▶ CAD Draughting
- ▶ Decommissioning
- ▶ Training Courses

Eng-Cad provides full turnkey solutions to resolve client's Structural, Process / Piping, E&I and Personnel Requirements for any complete or part project for which a defined work-scope is identifiable. By taking responsibility and accountability for entire scopes, Eng-Cad provides seamless coordination through design to fabrication, utilising the full range of technical, engineering, construction and associated support. This serves to minimise commercial and technical risks and ensures full design optimisation for any dedicated project.

TURNKEY SOLUTIONS

Services provided include (but are not limited to):

- ▶ Feasibility Studies
- ▶ Site Surveys
- ▶ Conceptual Design
- ▶ Quantity Surveying / Cost Engineering
- ▶ Procurement
- ▶ Project Management (Work Packs, CTR creation, Method Statements and Risk Assessments)
- ▶ Labour Supply (all levels from Trade to Management)
- ▶ As Built Survey and Drawing Updates
- ▶ Close Out Packages



Eng-Cad are able to provide known, multi-skilled personnel worldwide and are able to respond to both short turnaround and planned requirements, providing and mobilising labour from a single resource to entire crews, for short and long term projects. The Eng-Cad Resource Department is available 24/7 to provide quality time served personnel, at all levels from Trade to Senior Management.

Eng-Cad operates transparent personnel resourcing procedures within a stringent ISO 9001 Quality Management System and Competency Assessment and Selection criteria.

Eng-Cad provides IRATA accredited multi-skilled industrial rope access technicians worldwide, offering working at height solutions such as inspections, repairs, modifications, installation and equipment removal.

PERSONNEL RESOURCE SOLUTIONS

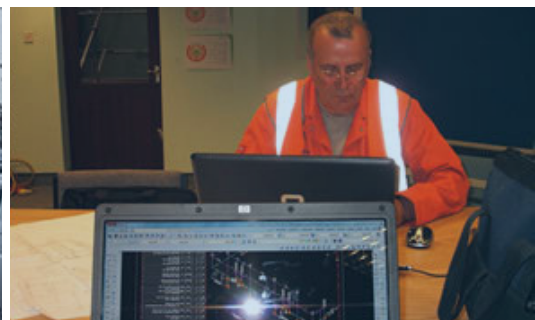
ROLLS ROYCE – WASTE HEAT RECOVERY UNIT

Eng-Cad, together with AKD Engineering (Fabrication), were commissioned by Rolls Royce for a project based in Nigeria on the 'Waste Heat Recovery Units' of the Gas Turbines that they had previously installed.

The WHRU's, which are situated on an FPSO owned by Total, were found to have developed some defects with the exhaust internal lining plates.

Eng-Cad carried out surveys to establish the magnitude of the defects and to collate all the necessary dimensional and technical information in order to propose a solution. Once this design proposal had been agreed in principal, Eng-Cad then undertook a full structural design stress analysis using Ansys.

Upon completion of the analysis, all the relevant fabrication detail and assembly drawings were produced. Eng-Cad then worked in close liaison with AKD Engineering during the fabrication process. The linings were fitted on site in Nigeria, overseen by Eng-Cad supplied construction supervision.



Eng-Cad's Resource Department schedules and mobilises personnel as per project requirements on an international basis, allowing the appropriate personnel to be allocated and mobilised to satisfy client requirements in a quality and timely manner.

- ▶ Over 10,000 CVs held.
- ▶ 50% are known to Eng-Cad Staff.
- ▶ Proven track record for delivery of the required resources.
- ▶ Globally positioned local content, allowing for swift deployment.
- ▶ Client orientated and delivery focused.

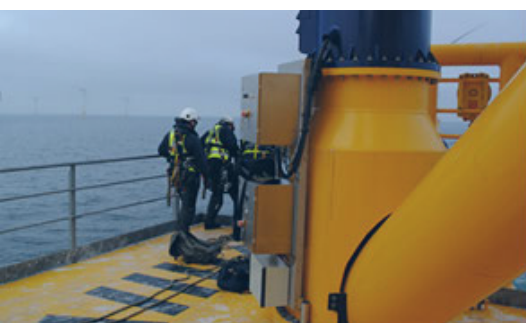
RESOURCE EXPERTISE

SOURCE AND SUPPLY

The Resource Department are able to source and supply the following trades, internationally, both for Eng-Cad requirements but also for those of our clients:

- ▶ Barge Engineers
- ▶ Coxswain
- ▶ Construction Personnel
- ▶ Construction Supervision
- ▶ Crane Operators
- ▶ Deck Foreman
- ▶ Deckhand
- ▶ Discipline Engineers
- ▶ E & I Technicians
- ▶ E & I Supervisors
- ▶ Fabricators
- ▶ Floorhand
- ▶ HSEQ
- ▶ Hydraulic Technicians
- ▶ Helideck Competencies
- ▶ Mechanical / HVAC Technicians
- ▶ NDT Personnel
- ▶ OIMs
- ▶ Pipefitters
- ▶ Platers
- ▶ Riggers
- ▶ Rope Access Technicians
- ▶ Roustabouts
- ▶ Rig Builders
- ▶ Surveyors
- ▶ Welders
- ▶ Windfarm Personnel

Eng-Cad welcome client requirements not listed above.



Eng-Cad's wealth of experience is no more apparent than within the Process and Piping design departments.

Eng-Cad can draw upon the talents of a dedicated team of high quality Engineers and Designers from a wide range of backgrounds including Oil & Gas, Petrochemical, Nuclear, Marine / Shipbuilding, Power Generation and Water Treatment facilities.

Eng-Cad's design facility is fully managed within both the ISO 9001 Quality Management System and that of a PED module H control process, ensuring full control of every safety and process engineering design activity, removing potential risk factors and ensuring full design optimisation in every aspect of Eng-Cad's service offering.

Handling all aspects of the design cycle from initial survey and conceptual design, through full process analysis (utilising both the CAESAR pipe stress analysis package and CADWORX solid modelling techniques) and practical detail draughting, right up to as built survey and project sign off documentation. Eng-Cad's methodical approach minimises technical and commercial risks, ensuring complete client faith in both the quality of work and the speed of response.

Eng-Cad have considerable experience in Piping Design of Floating Production Facilities; FPSO, FSU, FSO, FLNG, etc; including systems installed on all types of internal and external turrets. Eng-Cad's Pipe Stress Engineers are experienced with the complexities of pipe stress analysis on floating production units with respect to; vessel motions, hogging and sagging deflections, swivel deflections, etc.

Our Piping Engineers can fully develop piping specifications to client requirements and make specifications suitable for purchase of all piping equipment, valves and fittings.

PROCESS & PIPING DESIGN

REPLACEMENT ACCUMULATOR & REBOILER

Due to the age of some of the existing plant at the Bacton Gas terminal, Eng-Cad has regularly been presented with the task of providing the necessary information required to replace these items.

For example, on one of the sites the survey team have carried out on-site dimensional control surveys on the existing accumulator and re-boiler assemblies. Reports were then produced which were followed by fabrication detail and assembly drawings for the plant replacement, including associated pipework that had been affected by the change.



Eng-Cad's Structural Engineering department offers a broad experience base in analytical, stress resolution, detail design and a remarkable array of structurally related technical services to empower our clients to manage their design requirements within a transparent and risk free environment.

Utilising experience gained from an impressive range of backgrounds, including Oil & Gas, Naval Architecture, Nuclear Power Stations and Chemical Processing Plants, Eng-Cad are able to offer services ranging from simple design studies through to full conceptual design analysis and verified calculation stage, right up to production of fabrication drawings, on site dimensional control and full as-built survey facilities.

As with each of the other discipline departments within our company, the structural design works undertaken by Eng-Cad are fully controlled within the strict constraints of Eng-Cad's ISO 9001 Quality Management System, thereby giving all Eng-Cad's clients the confidence and security required to undertake their construction projects safely within the confines of Eng-Cad's high quality design standards.

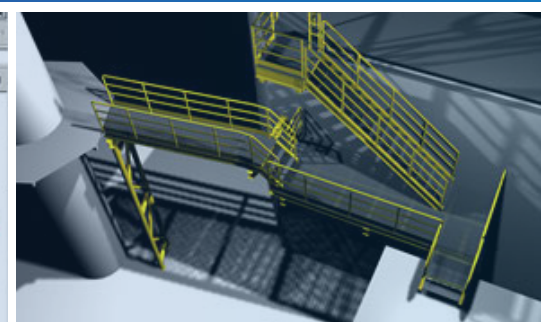
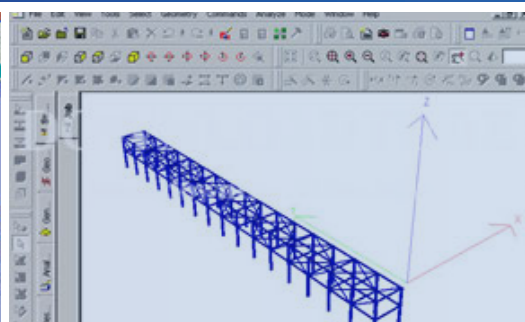
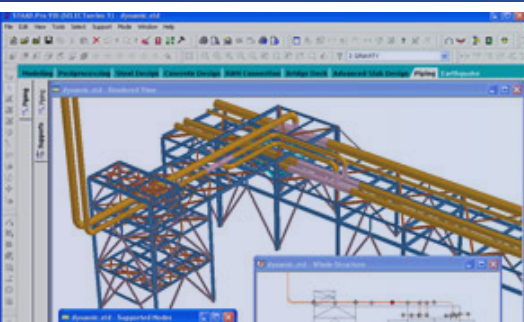
Utilising the latest technical advancements such as the AutoCAD, Intergraph, TEKLA 3D, STAAD, MASTERSERIES CADWORX and ANSYS finite element analysis programs, our mission of providing a service that is both cost and time efficient whilst minimising technical and commercial risks, is always met and the client's expectations regularly exceeded.

STRUCTURAL DESIGN SERVICES

OFFSHORE ACCESS BRIDGE

Eng-Cad have been involved in offshore access bridges in many different capacities, whether it be modifying an existing bridge, providing structural analysis for recertification of an existing bridge or to design, detail and fabricate a completely new bridge.

The one shown here is a 20 metre access bridge that was designed and detailed on behalf of AJS Great Yarmouth. The bridge was manufactured for use in the North Sea Southern Sector for Shell UK, initially for use during shutdown & maintenance campaigns on the 'Upgrade Project' in conjunction with a jack-up barge such as Seafox 4.



Eng-Cad's Electrical and Instrumentation team are an integral part of the multidiscipline design process, taking an active and often leading role in any process project or across discipline environment.

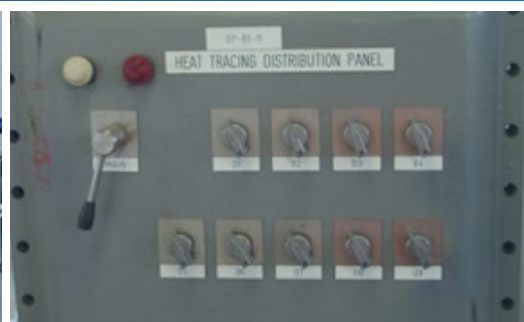
With substantial experience gained within the Marine Offshore, Petrochemical, Power Generation (Nuclear, Traditional and Renewable) and Water Treatment industries, Eng-Cad has built up an impressive reputation. Working closely with our Process / Piping colleagues Eng-Cad provides an innovative and cost efficient instrumentation and control solutions to ensure safe and measurable control management for any plant or equipment designed and analysed by Eng-Cad's teams.

Tightly monitored within the ISO 9001 Quality Management System, Eng-Cad is confident that any design solutions proposed comply fully with all relevant standards and will satisfy (and generally exceed) any fit for purpose requirements imposed by current legislation and client specifications.

ELECTRICAL & INSTRUMENTATION SERVICES

SERVICES AVAILABLE

- ▶ Installation of all electrical equipment in hazardous areas
- ▶ Installation of safety instrumented systems
- ▶ Installation of communications systems and equipment
- ▶ Rigging and installation of telecoms equipment at height
- ▶ ATEX compliance inspections
- ▶ Construction & hook-ups
- ▶ Commissioning & de-commissioning support
- ▶ Ongoing maintenance services
- ▶ Panel building and fabrication
- ▶ Rope Access Electrical scopes
- ▶ Full E & I Design



Eng-Cad's Survey Department has been specifically formed to undertake accurate Laser Total Station Surveys known within the industry as DC Surveys or Dimensional Control Surveys, which does not just cover engineering. Eng-Cad also provides MBS surveys (Measured Building Surveys) Land surveys, and 3D scanning.

Using the right combination of equipment and proven methods, Eng-Cad's trained surveyors are able to measure existing plant, equipment and assets to submillimetre accuracy throughout the fabrication and commissioning phase of any construction project, regardless of discipline.

Because of Eng-Cad's extensive practical design and construction background, we are able to offer a comprehensive and flexible service removing the requirements for costly additional on site fabrication activities.

Eng-Cad's diverse portfolio already boasts a considerable variety of major clients within the Oil & Gas, Petrochemical, Nuclear, Public Utility and Renewable Energy fields and Eng-Cad is continuing to expand the company's horizons.

Eng-Cad are always happy to discuss and advise on any survey requirement you may have, large or small.

All Eng-Cad's survey activities are fully controlled within the ISO 9001 Quality Management System with regular quality audits and documented Leica equipment calibration to guarantee the quality of the final deliverable in every case.

SURVEY SERVICES

RUDDER DIMENSIONAL CONTROL

Eng-Cad were given the opportunity to participate in the contract one stage further by being asked to oversee the dimensional control aspect of the rudder component fabrication. This scope of work took place over a 3 month period and involved the rudder stock alignment through to final assembly, with results being given to sub-millimetre accuracy at all times.



Eng-Cad's 3D Scanning division focuses on using the right equipment for the right project and Eng-Cad's in-house experienced team of surveyors can operate the latest hardware and software to ensure that the project is surveyed to suit your needs exactly.

Dimensional controlled results are combined together with the scanned data for improved accuracy. Total stations are still the preferred choice for flange angles and bolt hole rotation calculations, whilst the 3D scanners are used for clash detection and an overview of the entire area surveyed for added quality assurance.

FARO SCENE software is a comprehensive 3D point cloud processing and managing software tool for the professional user. It is specially designed to allow viewing, administration, and working with extensive 3D scan data obtained from high resolution 3D laser scanners like the FARO Laser Scanner Focus3D.

SCENE processes and manages scanned data easily and highly efficiently through a wide range of functions and tools, such as filtering, automatic object recognition, scan registration and positioning, as well as automatic scan colorization.

With SCENE WebShare, your scanned projects can be published on the Internet, and viewed with a standard Internet browser, uploaded to a specified drop box account or simply added to a USB stick, whichever is preferred.

3D LASER SCANNING

BENEFITS OF 3D LASER SCANNING:

- ▶ Reduce operation shut down time.
- ▶ Eliminate re-work & costly over-runs.
- ▶ Allows for Risk mitigation planning (the process of developing options and actions to enhance opportunities and reduce threats to project objectives).
- ▶ Help future maintenance & operations.
- ▶ Allows for last minute design changes from the comfort of your office "Desktop engineering".
- ▶ Use point cloud clash detection & 3D conversion software such as "Kubit Point Sense Plant".
- ▶ Added layer of quality control combining dimensional control with scanned data.
- ▶ No need for you, the customer, to purchase expensive software to view the survey results.



Eng-Cad's impressive array of design disciplines described within this brochure are enhanced further by full CAD draughting services to both compliment Eng-Cad's design capability and to fulfil the CAD requirements of the clients as and when appropriate.

All of Eng-Cad's CAD Technicians are highly competent users of both AutoCAD and Microstation industry standard CAD software applications. Furthermore, in line with the more sophisticated requirements of many 'high-end clients' Eng-Cad has substantial experience of 3D solid modelling, image rendering and animation generation software packages. Eng-Cad is also experienced in the use of discipline specific CAD packages such as TEKLA steelwork, Solid Edge and PDMS and are happy to supply deliverables in these higher level formats when required.

CAD draughting is generally serviced here within Eng-Cad's Great Yarmouth Head Office; however, we are equally happy to supply CAD technicians to work within your offices if that is your preference. Furthermore, Eng-Cad has the facilities to supply CAD resource (including workstations, printers etc.) to establish a CAD 'office' at any on-site location to service the demands of any clients project requirements.

Eng-Cad's CAD technicians are skilled across the entire range of disciplines including Pipework, Structural Steelwork, Electrical, Mechanical, Architectural, Cartographic, animation and walkthrough technology, with all outputs strictly managed and controlled within Eng-Cad's ISO 9001 Quality Management System, ensuring both the accuracy and integrity of all deliverable elements.

CAD DRAUGHTING

FPSO TURRET/GANTRY PROJECT

On this particular project, working in close liaison with a major FPSO client, Eng-Cad were responsible for the conceptual and detailed design of all of the Process and Utility pipework starting from the riser terminations on the geo-stationary side, terminating at the main pipe rack tie-ins situated on the vessel main deck (rotating side). The work scope also included conceptual & detailed design of all firewater deluge protection along with all required pipe supports and additional ancillary steelwork.



The Inde Field Decommissioning project was initiated by Shell UK once it had been decided that the asset was no longer a viable concern. The overall contract was awarded to the Norwegian company A.F.Decom who then actively sought partners who would be able to assist in this major project.

Eng-Cad's role in the project included a team of engineers, designers and surveyors, who worked closely with Shell UK and A.F.Decom, to provide a service that would enable the successful and safe decommissioning and removal of the topside facilities of Inde Juliet, Lima, Kilo, Mike and November platforms, in preparation for the removal of the jacket structures.

The team were directly involved in the offshore site surveys, production of destruct drawings and calculations, risk assessments, lifting plans, job cards incorporating full man-hour estimating and also actively participated in progress, planning and safety review meetings with all of the parties concerned.

DECOMMISSIONING



Eng-Cad is pleased to offer a number of specialist training & educational courses to support your company's needs. Eng-Cad strongly believes that "safety is no accident" and thrive to promote a safe working environment offshore & onshore.

S-cape and M.I.S.T. Courses are available with last minute bookings and an out of hours service to prevent your company "missing the boat". Eng-Cad also runs courses in the new International minimum safety training (I.M.I.S.T.) which is quickly becoming mandatory around the world as safety doesn't stop at the North Sea.

Along with safety training, Eng-Cad can also offer tailor-made educational courses at our atlas E-learning approved centre. These courses cover a widespread genre from general Health & Safety to specific company needs within the oil and gas industry as well as other disciplines.

AutoCAD 2D/3D refresher & bespoke courses are also available at Eng-Cad. These courses are designed around the individual to work hand in hand to improve your AutoCAD skills or to learn new ones. The courses can be tailor-made to fit your discipline or simply refresh the skills you already have acquired.

TRAINING SERVICES

- ▶ Oil & Gas Extraction
- ▶ Natural Gas Liquids & Natural Liquefied Gas Part 1
- ▶ Natural Gas Liquids & Natural Liquefied Gas Part 2
- ▶ FPSOs
- ▶ Gas Compression
- ▶ Gas Treatment

- ▶ P-ID's
- ▶ Produced Water
- ▶ Oil & Gass Sampling, Metering & Pigging
- ▶ Fuel Systems
- ▶ Potable Water
- ▶ Compressed Air

TRAINING COURSES

- ▶ Seawater & Firewater
- ▶ HVAC
- ▶ Power Generation
- ▶ Seperation
- ▶ Water Injection





HALLIBURTON



Price Newman Pipework Limited



CERTIFICATION & MEMBERSHIPS

Quality Management System - ISO 9001.

Environmental Management System - ISO 14001.

Pressure Equipment Directive - Module H (including Schedule Four).

Certified S-Cape Trainer.

Member of The Nuclear Industry Association.

Member of The East of England Energy Group.

Member of The Institute of Recruiters.

Atlas Approved Invigilation Centre.



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