

Competence Profiles – Guidance for applicants and assessors

INDUSTRY CLASSIFICATION – OIL INDUSTRY & OFFSHORE ENGINEERING

Introduction

The Oil Industry and Offshore Engineering covers a diverse range of engineering roles and activities. There are organisations and companies who specialise in the following or in many cases a combination of the following to provide the full professional engineering cover to the industry on a global scale in the major operational areas of “Topsides”, “Sub-sea”, and “Sub-Surface”. However it must be appreciated that all of the players work in close association with each other. This is particularly significant with the relatively recent move toward the “Life of Field” contract which will encompass design, construction and maintenance for the entire production life of a particular field and which can be awarded to a single company by the operator.

Requirements for election or transfer to Member

The key players will all employ mechanical engineers at varying professional levels a high proportion of which must be at the Chartered Engineer (CEng) level.

The key players are the:

- 1) Operating Company
- 2) Design and Development Consultants
- 3) Service Companies
- 4) Maintenance Specialist Companies
- 5) Construction & Fabrication Companies
- 6) Regulatory Organisations

Operating Company

The “operator” is the owner or part owner of the field or asset and will develop, extract and market the oil / gas obtained. The operator or owner of an offshore installation must prepare and comply with an Approved Safety Case which identifies the major hazards and how they are to be controlled and who will therefore carry the ultimate responsibility for the safe operation and maintenance of safe working practices for the life of the field. Whilst in almost every case the Operator will contract out various aspects of the operation including design, construction and maintenance it is vital that an adequate “in house” engineering expertise is available. This will ensure sub contracts are discharged appropriately, that design improvements are identified, new and developing technology is utilised and that Safety Case issues are controlled. Thus the operator will employ and develop engineers at CEng level to cover these issues. In most cases graduate recruitment will ensure appropriate on going cover.

Design & Development Consultant

As the name suggests Design is the prime activity and Consulting Companies provide a full service to both the Operator in a development / problem solving situation and also as a specialist sub contractor in the provision of design service to a main contractor. Professional Engineers will be employed who will have full awareness of Safety Case and Regulatory issues as well as Design codes and standards and in most areas they will need to be at the CEng level so as to deliver at the appropriate level.

Service Company

The larger organisations, in this sector, provide an engineering service for all aspects such as Design, Construction/ installation and Maintenance in each of the major operational areas. In addition independent organisations provide risk assessment and risk mitigation solutions through inspection and certification. These solutions apply across the Design and Maintenance spectrum thus improving quality, safety, environmental and business performance. Other companies provide

service in a narrower but more specialist area, such as, Drilling, Down Hole completions, Sub Sea and pipe lines.

The professional engineer's role in these companies covers the full spectrum of skills from Technician through Incorporated Engineer to Chartered Engineer. The contracts awarded are discharged primarily on a project basis thus the Project Engineer and the Project Manager role will figure largely in this area. This demands full awareness of safe working practices, design codes and regulatory and environmental standards as well as business acumen all set against significant time pressure.

It is often the case that engineers employed in this area are self-employed contracted in and as a consequence will require both depth and breadth in expertise.

Maintenance Specialist Company

It can be argued that such organisations are not unique to the offshore industry and whilst this is true they do form an integral part of it and are therefore included. The main players in this area are probably the machinery specialist servicing rotating equipment such as GT and diesel driven generators and / or compressors, pumps as well as valves and ROV's (Remote Operated Vehicles).

These companies will employ the full range of professional engineers from technician through to CEng. The CEng will be assessing and resolving operational issues as well as implementing manufacturer's modifications and managing repair and overhaul programmes with significant commercial implications. There will be a strong technical connection with the original equipment supplier and vendor.

Construction and Fabrication Company

The competencies associated with construction and fabrication of Topsides is covered elsewhere. So far as the offshore industry is concerned the more specialist areas are concerned with "down hole" activities and includes design, fabrication and installation of "completion" equipment and tooling, "Christmas tree" fabrication and design, ROV, and sub sea pipeline design and installation. As in other areas professional engineers up to CEng level are required. The CEng level engineer being committed to new and novel designs which are often unique taking particular note of severe operating conditions of temperature, pressure and corrosive environment, where cost implications are significant.

Regulatory Organisations

The entire offshore industry is regulated through a combination of self regulation via the Approved Safety Case, Statutory Regulation such as PFEER and Industry standards developed through UKOOA. An engineer operating in this field has a duty to co-operate with the Operator or duty holder in complying with these, all of which are enforced by the Health & Safety Executive.

The professional engineers in this area will probably have operating experience as well as technical specialism. They will also maintain up to date awareness of inspection techniques, risk assessment and specialist corrosion issues so as to provide technical solutions to problem areas. In some specialised areas the CEng level engineer will be developing new operating methods and standards so as to minimise risk following an incident which will demand application of knowledge and experience of design codes.

Requirements for election or transfer to Fellowship

Applicants for Fellowship must hold a position of senior responsibility and must also demonstrate evidence of active CPD, including promotion of the engineering industry and support for young engineers.