



Building our industrial future

Hinkley Point C Supply Chain – be part of it



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About us

EDF is the world's leading nuclear power utility and one of Europe's largest energy companies with 38 million customers across Europe and 156,000 employees worldwide.

EDF Energy is the largest producer of low carbon electricity in the UK and produces around one-fifth of the country's electricity from its nuclear power stations, wind farms, coal and gas stations and combined heat and power plants.

EDF Energy operates 15 nuclear reactors at sites across the UK and has published plans to build four more - two at Hinkley Point C (HPC) in Somerset and two at Sizewell C (SZC) in Suffolk, subject to the right investment framework. NNB Generation Company (NNB GenCo) is the nuclear new build subsidiary of EDF Energy and will run HPC and SZC.

www.edfenergy.com

Be part of it

Hinkley Point C Supply Chain

Now more than ever, it's a great opportunity to get involved in preparations for the planned Hinkley Point C nuclear power plant in Somerset. This £16 billion project is intended to provide a boost to UK manufacturing and skills as well as delivering a power station that can power 5 million UK homes with affordable, low carbon electricity.

This booklet provides you with a step-by-step guide on the procurement opportunities and the process involved in becoming a qualified supplier equipped to meet the specific needs of the nuclear industry. It also includes a list of contacts you might need to help you through the process.

Working together to deliver Hinkley Point C

EDF Energy wants to work with UK companies in this multi-billion pound national infrastructure project - our studies show that 57% of construction costs can be spent in the UK.

As the first nuclear power station to be built in the country since 1995, the Hinkley Point C project team is doing everything possible to ensure that UK manufacturers are capable of winning their share of contracts to provide high-tech components such as valves, pumps and pipes.

Requirements for supplying to the nuclear industry are stringent. The UK is known as a world class manufacturer of equipment such as valves, pumps, pipes and chillers, with many companies already supplying other industries including the oil and gas industry.

However, the detailed verification and quality control required for components that will go into a nuclear power station are unique and there are relatively few companies in the UK that already have the mechanisms in place to provide this level of detail about their own manufacturing supply chain.

Alongside advice on how to qualify as a supplier to the nuclear industry in their own right EDF Energy is also facilitating meetings between UK firms and their French counterparts who are experienced in the nuclear industry. By encouraging collaboration of this sort, the company hopes to create a legacy from this project of UK firms being ready to compete for other nuclear contracts in the UK and around the world. There are already hundreds of billions of pounds worth of nuclear projects planned or underway around the world.

By pooling their experience and capabilities British firms working with French and other international companies that have specialisms in the nuclear area could be better placed to pool resources and export their skills on this world stage.

EDF Energy will have around 80 manufacturing related contracts of their own to let. In addition, the company's key supply partners (Areva, Beyer, Costain and Alstom) will need to let many sub-contracts for manufacturing work.

The manufacturing needs arise from the main areas of construction for the new nuclear power station which are; civil works, marine works, turbines, instrumentation & control, nuclear steam supply systems and nuclear fuel.

Some contracts available include tunnel segments, tunnel boring machines, rebar and steel liners, heat exchangers, pumps, valves, pipes, cable tags, fixings and cables.

Supporting local businesses and national skills

Local businesses and UK workers given specific support so they will benefit from the Hinkley Point C project.

As part of its campaign to ensure the wider positive impact of construction at Hinkley Point C EDF Energy is helping to equip local businesses to win contracts to support the building of the new nuclear power station.

Working with Somerset Chamber of Commerce the company is helping local firms to find new ways to collaborate to secure a share of £500 million worth of contracts for the services needed to support the operation of the site during the nine years of construction. In big construction projects these contracts (such as providing thousands of meals every day, plumbing and electrical work in accommodation blocks), would often go directly to multi-national facilities services companies. However, EDF Energy is trying to create a bigger positive legacy for the project by equipping local businesses to compete for such work by working together.

If it succeeds this arrangement would mean local companies will feed workers with produce grown and prepared by local firms and transport workers to site whilst the site and offices will be cleaned by local companies too.

EDF Energy is also working to ensure local people are suitably skilled to work in the local businesses and on the project itself. The Construction Industry Skills Centre, built in collaboration with Bridgwater College, close to the Hinkley Point C site, will help equip local people with the skills needed to work on a wide range of construction sites including Hinkley Point C and so will help build a skilled workforce in the south west. A similar centre, the Energy Skills centre has been developed to focus specifically on the technical and engineering skills needed in the energy industry across the UK.

£30 million has already been awarded to more than 130 local small and medium sized businesses and a further £40 million has been spent with similar sized businesses across the region, with over 70 benefiting from the early site-enabling works already completed.

The positive impact from a multi-billion pound investment into the local area will be felt for generations to come. Local businesses and communities will benefit. The new skills and knowledge that construction workers and those who work on-site during the operation of the station will create a pool of expertise that we hope will attract more businesses to the region. The employment and new skills will also bring benefits to individuals, and their families, and UK economy.

The company's desire to use local businesses is based on robust business benefit for the project, including encouraging supplier loyalty, building sustainable local partnerships in a local supply chain, and reducing transport and accommodation costs.

An accommodation office will provide information to the workforce about high quality local accommodation while they are working on site. EDF Energy will also provide its own high-quality campus accommodation for workers, which will help provide for workers' needs in purpose-built facilities.

The Hinkley Point C project team has signed groundbreaking labour agreements with trade union partners which will ensure that all workers on site will benefit from best in class working conditions. It also guarantees that, irrespective of where workers on site come from, they will be paid the same rate for the job according to a framework agreed with trade union partners. This builds into the project a structural incentive to avoid the costs associated with bringing in workers from far afield and so will encourage EDF Energy and its partners to offer as many jobs as possible to local people.

Be involved working on site

The construction site at Hinkley Point C will be a safe, efficient and good working environment where we deliver on time and on budget.

The success of the Hinkley Point C construction will depend on successful delivery on site. To ensure success EDF Energy will not start work until we are sure we are ready and until we are sure that we will not have to stop.

Being ready means that we will have a stable and secure engineering design and we will have a schedule of work which is built around the needs of construction and has been developed hand-in hand with our key delivery partners. It means having the right industrial relations and a spirit of partnership with our trade unions. Underpinning all of this will be a consistent set of expectations on values and behaviours for everyone on site, whichever company they work for and whatever their role.

The right culture will ensure that everyone feels part of the project; it will contribute to productivity, improve cost effectiveness and support certainty of delivery. It will also ensure early identification of any issues so they can be rapidly addressed. It is essential to have the best processes and people in place as early as possible, and to engage constantly with the local community and supply chain.

The largest number of people on site will come from our delivery partners which include the UK firms that are set to benefit from the Civil engineering contracts. Bylor (a joint venture between Bouygues TP and Laing O'Rourke) will lead on the main civils works, Costain will lead on the marine works and Kier Bam covering the earth works.

The other main contracts for on-site work cover the mechanical and erection work which includes the nuclear reactor and its related systems and the conventional electricity generation systems. We also aim to appoint preferred bidders for mechanical and electrical erection, plus HVAC by Q3 2014 which gives British companies further opportunities to support these contracts, either directly or through the supply chain. Our partners for this work, Areva and Alstom will have substantial erection contracts which could be open for UK companies in their supply chain.

Nuclear Safety Culture permeates an organisation from the top down and supervisory training for both on-site personnel and those operating on the shop floor is of paramount importance. EDF Energy is working closely with the Tier 1 Contractors,

ensuring that the supervisory teams are properly trained and ready. Work also continues with skills bodies such as the National Skills Academy for Nuclear Manufacturing and the Nuclear AMRC to implement training programmes for supervisors across the manufacturing supply chain.

The emphasis on getting everything ready before we start, including achieving stability of design and getting all permissions in place, means that we know that once we start we will be able to finish without delay and with minimal complications. We are using technology in order to help us to do this. 4D design involves taking the engineering designs and building 3D computerised models to illustrate the most complex elements, which can then be transformed into real life mock-ups. This innovative approach can mean that when we tackle the trickiest parts of construction we've effectively practised the sequencing before we have to build for real, helping us get it right when it really matters.

It also means we can look at the intricacies of the build and anticipate any challenges before they arise. It allows us to understand the plot plan in terms of actual space, the time taken to construct and the best order in which to do things – allowing us to take the schedule planning to a higher level of detail than was possible in the past.

And we have already signed a truly groundbreaking labour partnership with trade unions which provide clear frameworks for working conditions and pay which ensures that all workers on site will benefit from best in class working conditions in return for their commitment to safety, quality and high productivity.

The agreements play a key part in EDF Energy's commitment to work together with unions and delivery partners to create a climate for positive, stable industrial relations. Putting these agreements in place early is an important step towards ensuring the project is ready for delivery. It demonstrates a partnership approach between EDF Energy, unions and delivery partners and our joint commitment to the success of the project. It means that the project will be characterised by stable industrial relations and a focus on safety, quality, efficiency and high productivity.

HINKLEY POINT C SUPPLY CHAIN ORGANISATION



How to be part of it

Hinkley Point C (HPC) will create exciting commercial opportunities for businesses during both the construction phase and once the plants are operational.

Exciting opportunities for all

The planned £16 billion investment in the proposed Hinkley Point C nuclear power plant in Somerset, followed by a second proposed development at Sizewell C in Suffolk, will create exciting commercial opportunities for businesses during both the construction phase and once the plants are operational.

It is expected that around 57% of the Hinkley Point C project construction value could be spent in the UK, building skills and expertise for the future.

Vital to the success of these projects is a robust supply chain capable of delivering components, equipment and systems to the highest safety and quality levels. We are keen to work with a wide range of businesses – international, national and, importantly, local firms that are located nearby.

Hundreds of contracts available

There are many manufacturing contracts available at Hinkley Point C for businesses during the construction phase.

The route to a share of these is varied: Companies could work directly for EDF Energy or for one of our key delivery partners or indeed further into the sub-contract supply chain.

There are approximately 180 Tier 1 contracts, which can be split into the following areas:

- Mechanical, Electrical and HVAC – 13 Contracts
- Technology Systems around the reactor, turbine generator and C&I – 6 Contracts
- Equipment Items and Components – 51 Contracts
- Systems and Erection – 36 Contracts
- On-Site Construction – 13 Contracts
- Off-Site Enabling – 6 Contracts
- Site Services, Logistics and Operations – 61 Contracts

How to become a qualified supplier?

Supplying equipment and services to the nuclear industry is different. Why? Well it starts with the very nature of the raw material used to harness the energy we produce.

Nuclear energy must be treated with great respect, and the nuclear industry has built robust and diverse safety measures into the physical plant, ways of working, organisational design and culture to ensure positive solutions are robust, safe and sufficient at all times.

Protecting our plant, people, the public and the environment is our number one priority, and this is why working in nuclear is different. We expect the supply chain to understand and build in robust and diverse safety provisions into their organisation as well. This does not just mean defences in safety and quality, but must stretch to organisational design and cultural defences too.

The nuclear supply chain is key to the safe reliable operation of a nuclear plant through proving high quality components and equipment to install into our power stations.

As a qualified supplier, you will be able to demonstrate you can meet the stringent requirements to work in this industry – from demonstrating robust design and procurement capability, a robust manufacturing process focussed on “right first time” quality, independent assurance processes to provide independent challenge and oversight of the work, through to support of the installation and commissioning phase of the project. Finally for some manufacturers there will be requirements to support the operational power plant which could be 60 years and beyond.

We call this “The Hinkley Point C Nuclear Supply Chain Journey”. This section of the booklet will highlight the key steps in this journey that we will take together,

MANUFACTURING

6 Site Installation and Commissioning

7 Operational Power Station

N A L C U L T U R E

and will explain the nature of the journey and the key attributes, skills and experience you will need as a supplier to be successful. So let us start the journey now.

1

HPC Design Work Packages Contract Templates

With the HPC design ready to go to market, the strategy of packaging the work agreed and “industry recognised contract templates” approved and ready for use, we can now begin to engage with you – the Hinkley Point C nuclear supply chain. There are six stages of the journey:

- NNB GenCo Procurement
- Supplier Design
- Supplier Procurement
- Manufacturing
- Site Installation and Commissioning
- Operational Power Station

In order for all the phases to be successful the supply chain delivering components, equipment and systems to the Hinkley Point C Project must have the:

- Right Organisational Culture

So you now understand the journey stages, we can take you through each stage in turn and explain the standards and expectations required to become part of the Hinkley Point C Supply Chain.

2

NNB GenCo Procurement Phase

We will engage the supply market to “pre-qualify” suppliers against certain packages of work. The focus during this pre-qualification phase is to tease out supplier capabilities to delivery the package of work successfully. Areas of interest during pre-qualification are highlighted below:

- Health and safety statistical analysis (usually last 3 years)
- Design and manufacturing capability
- Statement of good standing (Fraud/criminal act checks)

- Position on Insurances
- Financial stability of company and parent companies where necessary
- Experience/capability
- Qualifications and experience of the supplier resource pool
- Experience of working on major projects
- Supplier environmental policies and procedures
- Security (both physical and IT related sites, personnel, IT systems)
- Capacity
- Understanding of Ability to Construct (CDM) regulations

Once pre-qualification is complete, and if successful, then the supplier may be invited to bid against a formal package of work. The assessment will be extensive, and will be structured according to the needs of the work. Typical areas of evaluation are:

- Detailed technical evaluation
- Health, Safety, Environment assessment of the technical submission
- Ability to work to CDM regulations – for site works only
- Supplier assurance regime
- Organisational culture assessment (including Nuclear Safety Culture)
- Manufacturing Inspection controls (including a Quality Management Systems assessment)
- Supplier strategy around ITPIA (Independent Third Party Inspection Agencies checking during manufacture stage)
- Non-conformance /deviation/ concession management processes
- Project management and controls capability
- Supplier’s controls over their own “Supply Chain”
- Risk register assessment
- Organisational strength
- Experience / competency / capacity
- Assess the supplier’s strategy around using “local suppliers”
- Assessment of ‘security’ controls within supplier and supplier’s IT system
- Credit risk checking – detailed financial health check
- Capability to support components / equipment and systems for 60 years plant operating life

All suppliers competing for contracts for new build components and services will be assessed on their ability to deliver against predefined criteria. The criteria will test the supplier's ability to meet the needs of the works.

The assessment for safety classified contracts will include an audit on the preferred bidder to examine the supplier's management systems and, on a case-by-case basis that a sample of subcontractors, including their nuclear safety culture - ensuring that the organisation and its leaders understand the importance of nuclear safety, and ensuring that robust and diverse solutions are built into their organisation and the supply chain that it supports.

As you can see, we will be extremely thorough when choosing the right supply chain partners. It's critical to the success of building HPC that we choose the right suppliers who can deliver components, equipment and systems to the desired safety, quality, programme and cost levels.

As NNB GenCo are a 'Nuclear Site Licensee', we are regulated by a number of organisations, including ONR. The Office of Nuclear Regulation (ONR) provide advice and guidance to Licensees on the expectations and controls that supply chain organisations should have in order to ensure components, equipment and systems are supplied to the desired nuclear safety and quality levels.

For more information on ONR's role and guidelines please refer to the "Regulation" section of this booklet and the "help" section under the following references:

- Nuclear Safety Technical Assessment Guide 77 (TAG 77) - Procurement of Nuclear Safety Related Items or Services
- Nuclear Safety Technical Assessment Guide 49 (TAG 49) - Licensee use of contractors and intelligent customer capability

3 Supplier Design Phase

The industry we work in requires the Licensee to understand and control the work relating to nuclear safety undertaken within all of its suppliers and this is called the philosophy of the "Intelligent Customer".

So what is this?

It is a methodology and practice that at its core demonstrates that no matter what work is delivered outside of your organisation, you must have the ability and capability to maintain an overall knowledge, management and control of the work that has been let. Hence you are, in turn, an intelligent customer, as you must have intelligence of all the activities you have sub-contracted.

This is extremely important in our industry and in the design phase, as latent errors built into the design are very hard to rectify once entered into the manufacturing stage. Hence part of the requirements when starting the design phase is to understand what design work will be sub-contracted, and then applying appropriate Intelligent Customer controls to ensure you receive what you requested.

Having been chosen as one of the successful suppliers and awarded a contract, the next phase is the Supplier's own "design development, review and acceptance" process.

During the design phase, suppliers must:

- Ensure their Quality Management Systems are to the Design and Construction Rules standards
- Understand and work to specific international and UK design standards (RCC-M/RCC-E/ASME/British Standards and other non-nuclear standards)
- Demonstrate you have produced a design compliant with all the requirements
- Demonstrate a strong design control, design change and acceptance process
- Demonstrate a strong ability to cascade these requirements into, and maintain control of design in, their supply chain
- Robust controls around modifications to design
- Understand and deploy the "Intelligent Customer" Philosophy to the sub-tiers of the supplier's supply chain
- Have a strong and robust control over documents and records management

4 Supplier Procurement Phase

Similar to our Procurement phase, depending on the level of safety significance of the components, equipment or systems being manufactured, we would expect the supplier to utilise a comprehensive system for assessing the capability of their sub-tier supply chain.

A Tier 1 Supplier must have, and be able to demonstrate, oversight and control over the Supply Chain in areas such as:

- Design, design change and acceptance – so that the design meets the requirements of the purchaser
- Design modification
- Non-conformance, concession and deviation management
- Control of product conformity including that of raw material quality / traceability back to source
- Protect against NCFSI (non-conforming, fraudulent and suspect items)

- Ensure a clear cascade of client (NNB GenCo) contractual requirements into the sub-tier supply chain contracts.
- Robust assessment of the sub-tier quality management system arrangements
- Retention of documents and records during the contract are paramount (design, procure, manufacturing, fabrication and inspection records)
- Appropriate inspection and assurance oversight is deployed to the sub-tier supply chain to ensure “right first time quality”

We will reserve the rights in our contracts to “approve” the sub-contract supply chain of the Tier 1 supplier, so we can demonstrate we are an Intelligent Customer, by understanding the supply chain underneath the whole project. This will form part of the contractual arrangements.

5 Manufacturing Phase

Manufacturing is a key aspect of the supply chain journey. In this section we aim to help manufacturers to understand both the expectations and standards during the manufacturing phase, but also what help and advice is available for potential manufacturers that want to take the journey with us.

Quality Assurance

For the HPC Project, requirements relating to Quality Assurance are expressed in contractual terms in the “General Quality Assurance Specification” (GQAS), Reference ECUK100053. This specification is based on ISO 9001:2008, and includes additional requirements placed on the contractor to meet the needs of the nuclear industry.

Nuclear Island Codes

For the HPC project, the Design and Construction Rules for Mechanical & Electrical Components of Nuclear Island are detailed in the RCC-M & RCC-E codes which are part of the collection of design and construction rules for nuclear power plants.

All structures, systems and components are specified and designed to provide a required engineering functionality. This functionality will have an influence on safety and so requires an appropriate safety classification to be assigned. This classification (or grading) will affect the design, material selection, and manufacturing and construction activities.

Conformity Assessment of Pressure Equipment

For conventional pressure equipment, conformity assessment against PER99 will be requested. For nuclear pressure equipment, in order to satisfy the Office of Nuclear Regulator’s (ONR) expectations described in Safety Assessment Principles (SAPs),

Component Safety Class	Part of RCPB or HIC?	Mechanical Component requirement	Design Code
1	Yes	M1	RCC-M1
	No	M2	RCC-M2 or ASME III with supplements or KTA with supplements
	No	M3	RCC-M3
2	No	M2	RCC-M2 or ASME III with supplements or KTA with supplements
	No	M3	RCC-M3
3	No	M2	RCC-M2 or ASME III with supplements or KTA with supplements
	No	M3	RCC-M2 or Harmonised European standards with supplements (or any code complaint with PED, with supplements)
	No	NR	Harmonised European standards (or any code Compliant with PED)

What the codes mean:

RCPB Reactor Coolant Pressure Boundary

HIC High Integrity Component

RCC-M Design and Construction Rules for Mechanical Components

RCC-E Design and Construction Rules for Electrical Components

KTA German Nuclear Code Reference

PED Pressure Equipment Directive

M1 Mechanical Component Classification (reactor coolant pressure boundary and High-Integrity Components)

M2 Mechanical Component Classification (nuclear classified items not isolated from the reactor coolant pressure boundary, where fuel clad integrity not required)

M3 Mechanically Classified System (nuclear classified items which do not come into contact with reactor coolant, but perform barrier role)

NR Not Required (no need for mechanical component classification)

a specific strategy has been developed with the involvement of Conformity Assessment Bodies either contracted by the Licensee (Independent Third Party Inspection Agency or EDF SA User Inspectorate) or by the contractors.

Product Quality

Product quality is not only vital for ensuring nuclear safety but they can almost be considered to be synonymous. In order to demonstrate that structures, systems and components meet their safety functional requirements it is necessary to establish that sound design concepts, rules, standards, methodologies and proven design features have been used, and that the design is robust.

Records

Manufacturers will be required to provide records to demonstrate compliance to the specified intent. This requirement is not unique to the nuclear industry; however the industry does have specific record requirements related to products that are safety classified.

Records form part of the demonstration that plant and equipment meet the design intent and safety requirements and therefore the identification, generation, completion and retention of records associated with the supply of components, equipment and systems will form part of the contractual arrangements between purchaser and supplier at all levels of the supply chain. In particular the records for material traceability, verification and surveillance activities.

As a general rule it is important to ensure that all lifetime records, including those generated by subcontractors are compiled concurrently with the activity to which they relate. This minimises the risks of failure and prevents the use or installation of components, equipment and systems that may prove to be substandard on record review and requiring considerable rework.

Manufacturing Surveillance & Inspection

In accordance with ONR Technical Assessment Guide (T/AST/077) dedicated to "Procurement of nuclear safety related items or services" and IAEA guidance dedicated to "Grading the application of Management System Requirements", the Licensee has developed specific arrangements dedicated to the surveillance of suppliers' products and activities. Surveillance can be directly performed by the Licensee (Manufacturing Inspection Team – MIT) and delegated to internal (EDF SA Manufacturing Inspection Body – CEIDRE) or external bodies (conformity assessment bodies – CABs).

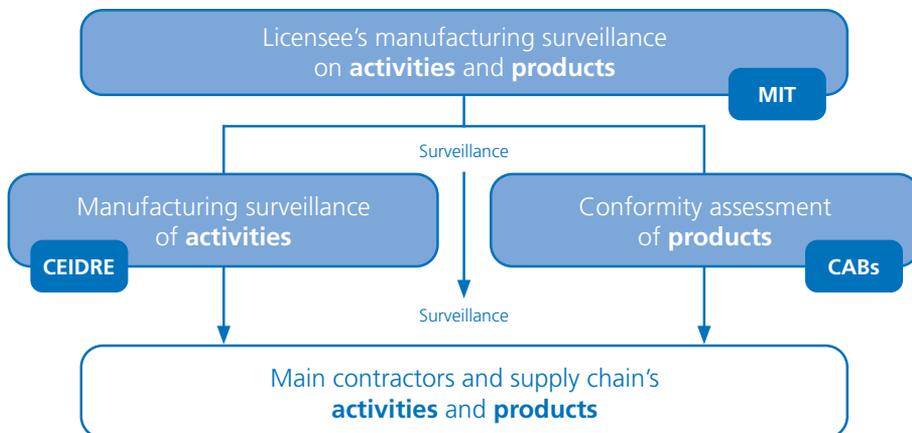
Surveillance performed by CEIDRE is focused on activities and processes. The objective is not to duplicate the "product oriented" surveillance process but to provide the Licensee with additional confidence in the capacity of the suppliers to implement critical activities identified either by the suppliers (whatever the level in the supply chain) and/or the Licensee.

Critical activities (forging, welding, Non Destructive Tests, Mechanical tests...) can be either Quality Related Activities (QRA) as described in the UK General Quality Assurance Specification or activities identified as critical either by the Licensee on the basis of the experience feedback or by the supplier itself.

In particular, suppliers are provided with guidance for the identification of their QRAs and are required to provide the Licensee with lists of those QRAs for review and acceptance. QRAs also need to be formally identified on the quality plans applicable to manufacturing activities.

Quality Plans

It is essential that suppliers carry out their activities in a controlled manner utilising quality plans as appropriate and verify that all specified procurement requirements or technical characteristics have been satisfied before offering an item or service for acceptance and release.



The supplier must also ensure that those involved in the quality plan activities are trained and competent to perform their role and that records of their competency are available.

Quality plans allow the purchaser to check in advance that the supplier has fully understood the detailed requirements of the technical specification, and that the supplier has the necessary assurance activities in place to deliver items that will meet the technical specification.

Quality plans should show the entire sequence of steps to realise the item or service and details of hold point release. These need to be available for review by involved parties, before work starts and in sufficient time to allow these parties to review and annotate them with hold, witness and review points and to question the sequence or referenced documents.

A completed quality plan should demonstrate that all appropriate steps have been taken to deliver the product to purchaser requirements. In particular for many items in the nuclear sector there are many requirements for traceability and quality assurance.

Non-Conformances

All organisations within the supply chain should, as part of their quality management arrangements, operate consistent arrangements for the categorisation and management of non-conformances.

These arrangements should enable the identification, segregation, control, recording and reporting of non-conformances against the processes, procedures or specifications. The arrangements should also include preventative actions to eliminate the cause of potential non-conformances. Suppliers are positively encouraged to report any potential non-conformances; no matter how they have arisen.

The identification, reporting and resolution of deviations should not be seen as a negative but as an indication that the achievement of the purchaser's requirements is of prime importance. The control of any deviation from the technical specification is fundamental to the achievement of quality and therefore the integrity of the item.

What does this all mean to you as a supplier who wants to manufacture components, equipment and systems for HPC?

It means that during the manufacturing phase as a qualified supplier you must:

- Be prepared for a full assessment of your quality management systems in the form of visits, and of your sub-suppliers
- Have the ability to produce and execute detailed quality plans (including testing and inspection plans)

- Develop high quality method statements of manufacture, and have robust processes for approving them internally and with NNB GenCo
- Have very strong controls of safety, quality, schedule and costs in the sub-tiers of the supply chain
- Ensure all process, manufacturing and test equipment has a robust inspection, testing and calibration regime to ensure accuracy of this equipment at all times
- Develop and implement an NCFSI strategy (non-conforming, fraudulent and suspect items) to protect against such risks in the finished components, equipment and systems
- Conduct frequent testing of manufacturing cell quality controls
- Employ qualified/certified skilled people for certain processes e.g. nuclear welders
- Have clean rooms for assembling high integrity nuclear component assemblies, equipment and systems (protect against foreign material ingress)
- Have robust non-conformance/deviation/concession processes with full traceability and processes to inform NNB GenCo
- Be prepared for independent third party checking and inspections by NNB GenCo
- Understand and work to the industry codes and standards for nuclear and conventional components, equipment and systems
- Document and certify production during manufacture

There is an area of quality control that is often over-looked, and that is 'post manufacturing quality protection and controls'. By this we mean protecting the quality of the manufactured items up to point of installation and commissioning.

Quality packaging, FME controls (Foreign Material Exclusion), storage and protection of installed components need close examination and strategies put in place to mitigate such risks. Operational experience feedback and lessons learnt in our industry and wider industries point to a lack of forethought on this topic historically, and the HPC Project have recognised the risks and will put mitigating strategies in place.

As a competent manufacturer, you will be expected to operate to the highest standards of quality control post manufacturing. This is to protect the raw material, components, equipment and systems from physical or environmental damage, the ingress of foreign materials, and the storage of components in suitable conditions to protect it from damage and degradation. With this in mind, suppliers must:

- Develop, test and manufacture quality packaging

- Be able to protect any equipment from damage from the environment
- Have appropriate FME controls in place all the way through the manufacturing cycle
- Provide quality storage facilities with the correct protection in place
- Provide secure locations to store components to nullify risks from damage / sabotage / unapproved changes to the component
- Ensure that once installed, quality protection is in place from this point to the point of commissioning that system

6 Site Installation and Commissioning Phase

Contracts for building the plant varies from 'turn key' projects through to supply and erection and to supply only. The level of support required from each contractor during this phase will vary according to their specific contract(s) and the components, equipment and systems they are supplying.

However it is recognised that the supplier is the greatest source of technical expertise on their plant or equipment. The plant will be installed by the contracted erection contractor. The installation of plant and equipment will be carried out to processes and procedures agreed between the supplier, the erecting contractor and NNB GenCo. The individual expertise of each supplier will be key to the correct installation leading to the safe reliable operation of the station for around 60 years.

The supplier will have supported the design and procurement function to ensure their plant or equipment is correctly matched to the technical specifications and the station's needs. This will be verified during the testing and commissioning phases.

The testing and commissioning phases will include:

- Verification of correct erection and installation of the equipment,
- Demonstration of the correct function of the equipment both as:
 - individual item(s) of equipment
 - an integral part of the station's safety and commercial capability

These will need the supplier and installation contractors support. This support will vary but may require technical support on site or access to their technical experts for advice and analysis of results. Any shortfall in performance will be scrutinised and the supplier will be involved with restoring the performance of

the plant. Due to the nature of commissioning this support will always be urgent to minimise delays and commissioning is always on the critical path.

To ensure the continued reliability of the plant, support for maintenance during the construction phase will be needed; including supply of spares and maintenance and test equipment.

The contract is not complete when the manufactured and certified parts are delivered to Hinkley Point C, the supplier has a significant role to play in the site installation and commissioning phases too.

7 Operational Power Station

The station will be operated by approximately 900 staff during normal operating conditions. During the refuelling outages (every 18 months) the number of personnel on site can almost double.

There is significant contract involvement with the routine operation of the plant which covers:

- Facilities management and support services
- Routine and specialised maintenance
- Engineering support

The contracts will vary from Long Term Service Agreements with the major suppliers for significant items of plant, to external maintenance personnel which are contracted to perform certain tasks in support of the Maintenance department. All these tasks are often focussed tasks to suppliers with specific expertise, such as valve maintenance; special test support such as Integrated Leak Rate Testing (ILRT) of Containment penetrations; and instrument calibration services.

In terms of Facilities Management, it is recognised that there is a volume of support work required to keep the overall site in good order and running efficiently. Certain types of skills or trade can be readily sourced from the wider industry, such as cleaning, painting, light electrical work and so on. Important as these activities are, they fall outside the key skill-set needed to safely operate and maintain a nuclear power station. In the UK, this type of work has generally been contracted out with positive feedback. Outsourcing these activities allows our core employees to focus on safe reliable operation.

So, dependent on the package(s) of work you are interested in, you may have to support the station for its entire operational life of 60 years, and potentially beyond.

Organisational culture

Having the right organisational culture in place will play a big part in achieving excellence during the Hinkley Point C project and all of us will play a part in achieving a safe nuclear future.

The safety of our future nuclear power station depends on the quality of the work we do today and although we might already have quality standards and organisational processes in place, it is the culture of the organisation that will ultimately define how rigorously those standards are implemented.

Getting it right first time is relevant in all phases of the project and it starts with having the right design which meets the requirements of the safety case. Getting it right first time requires the application of robust standards supported by a culture which demands excellence.



Even the simplest of construction projects or the most basic of designs might ultimately play its part in the success or failure of the future operating nuclear power station. Future nuclear safety will in part be dependent on the quality of the work we do today and our job now is to minimise the introduction of errors into the finished product. To achieve this we have introduced a programme of cultural development which supports manufacturing and construction excellence.

We recognise that people are fallible and that individuals are influenced by the organisational culture and processes that surround them.

Our aim is to develop organisation culture in line with internationally recognised standards for nuclear safety. We do this by providing knowledge, tools and techniques for leaders and individuals so that they can achieve the highest possible standards of safety and quality and thus support future nuclear safety.

We have developed a “Nuclear Safety Culture” policy which outlines the key values and behaviours that we as the client will operate to, and as part of our supply chain, our expectations are that you will develop your organisational culture to the same standards, and influence your sub-tier supply chains to do the same. Cascading these principles through the supply chain is key to embedding a strong and united organisational culture for the project.

Regulation

As a “Nuclear Site Licensee”, we are regulated by a number of external bodies, including:

- ONR (Office of Nuclear Regulation)
- EA (Environmental Agency)
- OCNS (Office of Civil and Nuclear Security)

The role of the respective regulators is to ensure that the Hinkley Point C Project performs its activities within a suite of rules or conditions. These rules and conditions are set down by Government to ensure that the safety, security, and environment of the plant, people, community and nation as a whole are protected.

Each regulator places conditions on the licensee to control the work and activities we undertake, and it is important that the HPC supply chain understand the role of the regulators and the obligations placed on us by the regulators, as some of these requirements will be cascaded into the supply chain via contractual conditions.

For more information on the role of these regulators please review the “Need help?” section of this booklet.

Conclusion

So now you have experienced “The Hinkley Point C Supply Chain Journey”. We have explained the stages and the requirements and expectations placed on the supply chain, and what it’s like to be a supplier in this exciting market sector.

The nuclear sector is entering a renaissance period, and through working with us, our project will help your organisation to grow your skills and experience in the nuclear sector.

So now it’s over to you. Are you ready for the journey? We hope so, and look forward to engaging with you in the future, as we move forwards on this exciting and ground breaking journey.

Be part of it!

Need help?

EDF Energy

Marc Lachaise

Head of Procurement

T: +44 (0)20 3219 8322

E: marc.lachaise@edf-energy.com

Chris Squires

Lead Supply Chain Engagement Manager

T: +44 (0) 203 219 6681

E: chris.squires@edf-energy.com

Bylor (a joint venture between Bouygues TP and Laing O'Rourke)

Paul Dickinson

Procurement Leader

T: +44(0) 7884 113396

E: pdickinson@laingourke.com

Costain

Sarah Jane Waith

Supply Chain Manager – Infrastructure

T: +44 (0)7717 838851

E: sarah-jane.waith@costain.com

Areva

Angela Starigk

Project Procurement Manager

T: +33 (0)1 36 96 83 21

E: angela.starigk@areva.com

Alstom

Gavin Pritchard

Project Director for the Conv. Island contract

E: gavin.pritchard@power.alstom.com

Additional help available

There's a range of help and advice available to get your business ready to be part of the nuclear renaissance:

Office of Nuclear Regulation (ONR)

Find below website links to ONR's technical guidance on Procurement and Intelligent Customer Capabilities.

W: www.hse.gov.uk/nuclear/operational/tech_asst_guides/ns-tast-gd-077.pdf (Procurement of Nuclear Safety Related Items or Services.)

W: www.hse.gov.uk/nuclear/operational/tech_asst_guides/ns-tast-gd-049.pdf (Licensee use of contractors and intelligent customer capability)

E: ONRenquiries@hse.gsi.gov.uk

Environment Agency

Find below website links to EA's information and guidelines on Environmental Permitting of Hinkley Point C

W: www.environment-agency.gov.uk/business/sectors/132474.aspx

E: enquiries@environment-agency.gov.uk

Office of Nuclear Security (OCNS)

Find below website links to OCNS's Civil Nuclear Security guidance and publications

W: www.hse.gov.uk/nuclear/ocns/publications.htm

E: OCNS.Enquiries@hse.gsi.gov.uk

Nuclear Advanced Manufacturing Research Centre (Nuclear AMRC)

Dedicated to helping UK businesses become suppliers of choice to the global civil nuclear industry.

W: www.namrc.co.uk

Nuclear Industry Association (NIA)

The Trade Association for the UK's civil nuclear industry.

W: www.niauk.org

The National Skills Academy – Nuclear Manufacturing

Representing the nuclear manufacturing industry to stimulate, coordinate and enable excellence in skills to support the Nuclear Programme.

W: www.nuclear.nscademy.co.uk/nsa-nuclear-manufacturing

AFCEN

Association for the rules governing the Design, Construction and Operating Supervision of the Equipment Items for Electro Nuclear Boilers.

W: www.afcen.com

E: afcen@contact.fr

RCC-M UK User group, hosted by TWI with support from NAMRC

Created in 2013 to assist UK supply chain companies with their use of the RCC-M code: enables requests for code interpretation or modification, identifies users' issues of common interest or concern, allows sharing of knowledge or experience with other users and facilitates training in the code by approved providers.

Companies wishing to join should contact:

E: john.wintle@twi.co.uk

E: p.bunting@sheffield.ac.uk





edfenergy.com

NNB Generation Company Limited, 40 Grosvenor Place, Victoria, London, SW1X 7EN. Registered Number 06937084.

Visualisations of completed development are illustrative, and subject to planning approval.

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