The Package Management Process

Packages can range from simple and small pump skids to complex gas turbine driving compression packages. However, the management principles are similar.

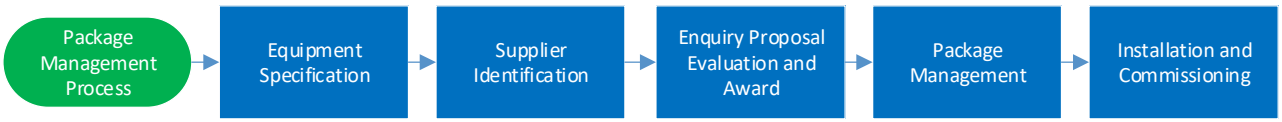

Figure 21.4 Package management process.

Equipment specification

Identification of requirements

The process starts with the mechanical engineer initially gathering requirements for the package using:

- Client specifications & standards.
- Legislative requirements.
- International and national standards.
- Information from the other disciplines.
- Information from site surveys (for brownfield projects).

Criticality assessments

A formal evaluation of the criticality of the equipment must be carried out to determine the level of quality assurance that will be required.

Data Sheets and Equipment Specifications

The mechanical engineer will then prepare equipment data sheets, specifications, and the supplier document requirements list. The mechanical data sheet contains the following items:

- Process data.
- Design and construction codes.
- Materials of construction.
- Site conditions and locations.

Equipment requisition

This package of information is then attached to the requisition which will be issued in procurement to allow the formal enquiry process to be carried out. The requisition contains requirements for the following items:

- Engineering documents.
- Interface documents.
- Manufacturing documents (welding and testing, material certificates).
- Site preservation and packaging.
- Commissioning procedures.
- Manufacturing Record Book and operations and maintenance procedures.

Supplier Identification

Potential supplier identification is normally an iterative process. Initial identification of potential suppliers can come from the organisation's approved vendor list, the client's approved vendor list, r from industry databases such as First Point Assessment List (FPAL). For more complex and expensive packages, suppliers will be invited to qualify for tendering via a questionnaire that covers technical, commercial, and safety performance. Mechanical engineers will input the technical section of this pre-qualification questionnaire.

Enquiry and Proposal Evaluation

On receipt of the pre-qualification questionnaire, supply chain will contact potential suppliers in order to pre-qualify them. This short list of pre-qualified suppliers will then be used by the procurement department when issuing the formal enquiry.

Supply chain single point contact

It is important to note that during the enquiry and evaluation phase, all contact with suppliers goes through supply chain in order to protect all

parties and prevent claims of favouritism or improper actions. Supply chain will collate the technical and commercial responses from each supplier and will issue the technical sections only to mechanical engineering. Commercial information will be retained by supply chain to avoid any commercial influences on the technical decisions.

Proposal distribution and review

The mechanical package engineer will then distribute the various technical sections to other appropriate disciplines, such as electrical and instruments for review and comment. The purpose of the review is to confirm compliance with the technical requirements of the requisition and to identify any instances of non-compliance. The package engineer will then collate all the comments and issue clarifications to supply chain to pass on to the suppliers.

Bid conditioning

Bid conditioning, if required, ensures bids are fully responsive to all the requirements that are specified in the enquiry documents and can therefore be evaluated on a like-for-like basis. Bid conditioning can include minor changes to specification when advantageous and provide better value for money to the procuring organisation.

Clarifications and technical bid evaluation

After a number of rounds of clarifications and deviation requests, all answers should have been provided for and the package engineer can complete the technical bid evaluation (TBE) and issue a formal report that will advise which suppliers have a technically compliant proposal.

Award recommendation

Supply chain will then review the commercial proposals from technically compliant suppliers and recommend award based on project cost, schedule, and contractual requirements.

Documentation for purchase

The package engineer will then revise the documentation for purchase, reflecting the agreed purchase requirements and reissue to the supply

chain department to allow contract award. Depending on the complexity of the package, it can take many weeks or months to go from initial enquiry issue to order award.

Tip: Many mechanical engineering packages are long leads in a project and may require more engineering effort earlier on. Ensure that procurement enquiry and lead times are adequate and still meet overall project schedule requirements.

Package Management

Package engineers are responsible for technical delivery of their allocated packages, which is achieved through a very structured and rigorously controlled process. The following steps are typically followed for all packages:

Kick- off meeting

This is normally carried out at the supplier's premises to ensure maximum supplier personnel attendance.

Pre-inspection meeting

This meeting allows the inspection team and supplier to be fully briefed on the required inspection requirements.

Supplier documents review and approval

The package engineer will receive and distribute supplier documents to other relevant disciplines seeking comments required to obtain approval. Mechanical engineering will review, collate, and code these comments before returning them to the supplier. Coding will be selected from one of the following:

Code	Description of code
1	Not Approved
2	Approved Subject to Comments
3	Approved
4	For Information Only

Typical supplier documentation coding.

This formal control of the supplier's documentation at each stage, combined with Quality Assurance (QA) and Quality Control (QC) will ensure that the specified equipment will be delivered.

Concession requests

During equipment manufacturing, it may not be physically possible to achieve compliance with a purchase order requirement specification without impacting the overall project and a concession request that will identify non-compliance will be raised. This will then be formally submitted to the client for acceptance. The package engineer will review, potentially with other specialists and technical authorities, and then decide whether to accept the concession. This may happen multiple times in very complex packages. An example would be a minor change in a valve specification to allow a shorter lead time valve to be procured from a sub-supplier.

Progress meetings, inspection visits. and witness testing

The package engineer and his/her supporting QA and QC team will regularly visit suppliers to determine progress and instruct any remedial actions. Package engineers typically do a lot of international travel to the various suppliers.

Factory Acceptance Testing (FAT)

FAT testing will be carried out in accordance with agreed procedures and attended by the package and QA engineers. Operators will normally attend the FAT and be part of the commissioning team as they take ownership of the new equipment.

Equipment release

On completion of the factory acceptance testing, (FAT), and associated documentation, the package engineer will formally release the package to be delivered to the intended worksite or into storage.

Training and final manuals

To ensure that the facility client operators can safely and efficiently operate the new equipment, they will be provided with the manufacturers' equipment-specific training and operating manuals.

Transport and storage

Transportation, especially for large items, must be planned in advance and may require quayside load-out, police road escorts, and specially-designed lifting beams. Many packages will have specific transportation and storage requirements such as disconnection of couplings, and filling with inert gases and preserving fluids. Proper preparation will minimise risk of damage due to extended storage.

Certification data book

The full certification and data book normally follows delivery and will contain all material and testing certifications, such as Certificate of Conformity and other documentation as specified in the requisition.

Installation and commissioning

The package engineer will provide support during installation and commissioning, often located on-site. Depending on the complexity of the equipment, the supplier may have a supporting engineer on-site during key phases.