SHAPA TECHNICAL PAPER 2

Ten Key Steps to Ensure Sound Solid Handling Contracts Between Purchasers and Vendors

1. The crucial factor is to secure plant that works well. The cost of inadequate performance and 'teething troubles' can far outweigh superficial initial cost 'savings'. Prepare a 'Cost/Liability assessment or life cycle costing for production delays, rectification provision and performance shortfall. Read the Rand Report and a follow up investigation, (1,2) on the performance of Solids handling Plants if you like horror stories, and then make a judgement that includes optimum exposure costs.
   It is considered good practice to agree a performance specification. Do not let the contract price dominate the buying decision.

2. Do not depend on Penalty clauses or Litigation for insulation against problems.

   - (a) No contractor can economically meet realistic consequential damages for almost unlimited liability on a full production facility.
   - (b) The root causes of operating problems are almost invariably due to behaviour
     characteristics of the bulk material as a result of product conditions not

   accommodated because of inadequate up-front investigation. (c) Disputes occupy enormous unproductive and unrecoverable time. A supplier who provides service in the event of difficulty is invaluable. Value that.

3. Identify and specify the main features relating to the bulk solids that are of interest. Some factors are peculiar to, and known only by, the user. For example, the significance of particle attrition and segregation to product quality, purity, appearance, solubility, perhaps density condition for packing and the like. Draw these features into the specification with an indication of their realistic importance. Encourage the supplier to ask questions if anything in the specification is unclear. If the supplier needs information about certain characteristics because they are key to his type of equipment then he should say so and perhaps indicate the outer tolerances.

4. Base the specification on measured relevant values on the bulk material that are verified, agreed and bounded by realistic limits. For example, wall friction with specific material of contact, bulk density in defined conditions, shear strength in given conditions of compaction, range of ambient conditions, maximum residence periods to be accommodated, and the like.

5. The purchaser should be prepared to pay for realistic up-front costs to secure relevant information about the duty, flow and handling properties of the product. It is proper that these costs are borne by the plant user particularly if the plant user is the only one who knows the values of these properties. Failure to appreciate the importance of these values and to secure their valid measurements is the single most common cause of all solids handling contract problems and disputes, with cost implications that usually overwhelm vendor price variations. This information should be issued from one source and not determined by all parties invited to quote for a contract.

6. Secure prior agreement about what should be done, should the material condition fall outside the agreed specification. Sometimes supply, process or production changes introduce significant variations not catered for within the original design. In some cases a 'representative' sample, as with some pharmaceutical developments, is not available at the initial contract stage. The name of the bulk material is never enough to be the basis of a contract, neither is particle size distribution adequate to assess material behaviour. 'Moisture content' is usually very significant. A description 'similar to ', can only be used as a rough guide, not a contract condition. Co-operation, not an arms lengths relationship, is essential between parties to secure best results.

7. Research the supplier, thoroughly check their track record. Also check their technical and financial resources, test facilities, design experience and customer list, degree of specialisation in the form of equipment to be supplied. Ensure they are capable of producing what you want.

8. Ensure the correct degree of importance is assigned to requests for documentary evidence. Do not place unnecessary demands on suppliers. Year 2000 compliance and ISO 9000 documentation do not ensure that flow takes place in a hopper, but a good technical specification will.

9. Establish a realistic time frame for both the tender stage and the contract itself. Allow due diligence on pre-contract investigations, with sufficient time for approval and modifications of drawings as required. Make crystal clear what authority and responsibility is given by 'approval'. If for information only, then do not delay or jeopardise progress by wide circulation for 'comment'.

10. The purchaser should include a contingency for the effect that 'extras' have on the timescale of the main contract. The procedure for incorporating changes should take account that design variations incur inevitable delays for consideration, even if the changes are not finally implemented. The significance of such contract 'interference' should not be under-estimated.

Remember:-

Reputable purchasers and suppliers honour the spirit and ethics of good business relationships. Clear progress payments on time and do not withhold total reserves because of minor features.

The Engineering Construction Industries Association has published a **'Code of Fair Contracting Practice'** that is a model of a balanced, commercial relationship.

Solids Handling contracts have to go further in defining contract conditions.

The Institution of Mechanical Engineers publication - **'Guide to the Specification of Bulk Solids for Storage and Handling Applications'** sets out the background for defining relevant bulk material properties as the basis of a contract.

References:

1. Merrow. E.W. 'Linking R & D to problems experienced in Solids Processing'. Chem. Eng. processing May 1985, p 14 - 22.

2. Merrow et al 'Understanding cost growth and performance shortfalls in pioneering proces plant', Rand Corporation Report Section V. 1981.