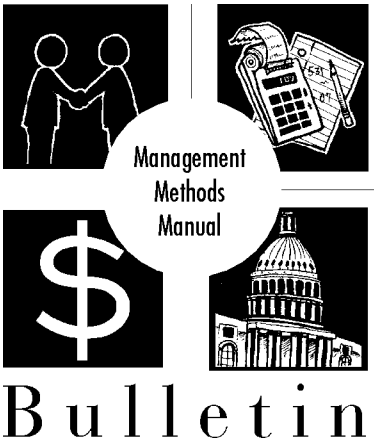


Bulletin

Bulletin No. MK 2
File: Marketing

Why Mechanical Contractors Should Furnish Equipment

Close examination of the major operating problems of owners, architects, consulting engineers, general contractors and mechanical contractors reveals one simple, yet almost startling fact: nearly all of these problems are common to all members of the construction industry, and can be solved only through a better understanding of the problems among these diverse groups.

It usually follows that any new construction method or procedure that benefits the owner of construction is readily accepted by everyone in the construction process.

One procedure, commonly known as "direct purchase" or "prepurchasing," while not new, is becoming a more widespread practice because on the surface it appears to offer some definite advantages in keeping down costs. However, there are some hidden pitfalls which ultimately not only increase costs, but also could delay completion of the construction project.

Further, it is not unusual for the total cost of prepurchased machinery, equipment and/or supplies plus the contractor's installation charges to total more than the contractor's bid were the contractor furnishing the total bill of material as well as installation.

However, it may be well to consider some of the advantages sought by Direct Purchasing:

A. To Permit Early Purchase of Long-Delivery Items to Insure Timely Deliveries and to Avoid Construction Delays

This objective at first appears reasonable and commendable, particularly when viewing stretched delivery days as a result of product shortages. (It is not unreasonable to believe long delays will exist at least for as long as worldwide demand continues for equipment, pipe, valves and fittings.) However, it seems appropriate to mention that first-time buyers or irregular purchasers

should not be surprised to find that entering an order does not necessarily or automatically insure the purchaser a place in line for delivery. Manufacturer's personnel, similar to other people, respond to pressure from repeat buyers or to emergency demands. Normally the Owner/Buyer is not personally acquainted with purchasing people and unfortunately may find himself being shuffled, stalled, juggled, or sometimes misled.

Looking at the reverse situation to long deliveries—such as a "down economy"—it is not surprising to find manufacturers lumping orders in order to fill out a production run. While such a practice effects production economies, it does not necessarily insure timely delivery.

The mechanical contractor, on the other hand, has long-standing acquaintenceships with suppliers, vendors, and manufacturers, and as a repeat, experienced buyer can expect and demand commitments to be honored.

B. To "Save" the Contractor's Markup for Overhead and Profit

It is only good business for an owner to seek maximum value in his construction contracts. The key phrase here is maximum value. An owner seeks a profitable return on his investment over the life expectancy of the contemplated plant. In like manner, a contractor is in business to realize a return on his "plant," which consists of men, money, material and expertise. For overhead and profit the contractor renders a service. It is not unreasonable to assume the owner will ultimately pay (at least, and perhaps more) the same price for service he renders himself. Any wise owner recognizes he gets things done through other people, people who know what they are doing. This is to suggest the qualified mechanical contractor is the owner's "other people."

C. To Provide the Engineer With Closer Control of Compliance with Specifications in Equipment Bids

This seems only logical, since the mechanical contractor would submit data to the engineer for approval prior to release for shipment anyway. There is no doubt an engineer has the knowledge and experience required in order to evaluate compliance with specifications.

However, closer control of compliance with specifications does not take into account one manufacturer's customary practice of providing certain required auxiliary apparatus installed as factory assembled vs. another's practice of shipping auxiliary apparatus as his subcontract from a distant sub-supplier; or one vendor providing drilled/tapped motor mounts and isolation units where another plans for the purchaser to make these arrangements.

Saying it another way, then, the owner's interest is output within certain tolerances, and this implies installed/operating outputs. While close compliance with specifications in individual components is an ingredient, it is not the entire recipe. While the engineer and owner's representatives can vouch for the soundness of each component, only the mechanical contractor is qualified to combine these components into an operative mechanical system.

D. To Incur Possible Cost Savings by Beating Price Increases

Certainly placing an order today gives price protection against a price change tomorrow, assuming the vendor doesn't, for perfectly legitimate reasons, change his mind. Here again the owner as an infrequent buyer finds himself at a purchasing disadvantage.

mechanical contractors, buying as repeat buyers, are in a strong position to insist that vendors/manufacturers keep their price and delivery commitments. If there is a critical scheduling problem, a letter of intent quite often accomplishes the same purpose, thereby giving the owner the best of all worlds.

E. If the Owner is Purchasing Production Equipment, the Owner Would Naturally Feel He had the Expertise in Selection Rather than the Installing Contractor

There is no quarrel with this premise. Usually it is the Owner's experience that triggers the decision "to buy direct and save all that time and money" in the other listed circumstances.

It is not the intent of this bulletin to dispute this action because this is probably the "exception" that justifies an Owner's prepurchasing decision. However, this bulletin emphasizes the risk the owner takes in prepurchasing. Not only is the owner undertaking tasks wherein he often is untrained and unskilled, but he is additionally exposing himself to the risk of his final completed cost being more than the cost would have been if he had issued a contract for furnishing and installing an operating system to a competent mechanical contractor.

Direct purchasing generally follows one of two procedures:

1. Equipment is purchased by owner, architect, or engineer prior to the awarding of a construction contract. Then, when the contract is awarded, the purchase order for the equipment is assigned to the mechanical contractor, thereby transferring responsibilities and rights having to do with purchase and payment for the equipment.

2. Equipment is purchased by owner, architect or engineer and merely turned over to the contractor for installation when it arrives at the jobsite. Under this arrangement, the purchaser retains full control and responsibility, both administratively and financially. Under the second precedure, the purchasing authority not only assumes the purchasing function of the mechanical contractor, but also assumes all other functions (except installation) normally provided by the contractor—including advertising for equipment bids, evaluating the bids, issuing the purchase order, handling procurement, expediting delivery, arranging receipt and unloading of equipment, and issuing payment.

Assuming for the moment that equipment has been ordered, it may be wise to now consider some responsibilities that normally belong to the mechanical contractor but which now become the domain of the purchaser.

It may be appropriate to recommend that the contractor should meet with the owner well ahead of time to clear up any possible misinterpretation of the meaning of: "the owner will furnish the equipment." It is not unusual for costly wrong assumptions to be made at this point, wherein the owner assumes he is buying some of the below-listed items while the contractor assumes the contract to be an equipment hookup only. It is possible neither party has considered where the equipment to be furnished is coming from, what pieces are included, what is required for proper installation, or who is responsible for a wide range of particulars.

Among items to be considered are:

- Transportation to town
- Delivery on the jobsite
- Rigging into final position

- Foundation and foundation bolts
- Electrical starter and controls
- Hookup to the chilled water/hot water distribution system
- Duct work tie-in
- Care, custody and control
- Warranty labor
- Output of the equipment
- Startup, test, balance and adjust.

Additional questions to consider might very well include:

1. What happens if the manufacturer failed to complete the shipment and some of the required parts and pieces are backordered? (To really illustrate this point, imagine the site on which the plant is to be built is remote, with limited or seasonal accessibilility, foreign, or government classified; and there is no way to ascertain prior to final assembly if all the pieces are present.) Or if there were a checklist, who ascertains whether the bill of material is complete?
2. What happens if the foundation bolts or templates are incorrect or missing altogether?
3. What happens if, because of a partial backorder, the equipment is shipped in cartons rather than assembled, even if specified “assembled”? Who assumes this responsibility?
4. If there is a change in the work due to a change order that requires a change in the equipment, who pays the difference and who is responsible for the “domino-effect” changes that could result from the equipment change?

Finally, it is only fair to note that the list does not include the coordination necessary between the vendor, the transporting carrier, the drayage/cartage company, the storage company and the insurance representative.

From years of experience, the mechanical contractor has developed knowledge and expertise of those seemingly unimportant details that can make or break a successful job. Being in a high-risk industry, the Mechanical Contractor has learned not to overlook or forget to plan for potential hazards. Here are some examples of details that are often overlooked when mechanical equipment is purchased by parties other than the mechanical contractor:

1. Transit Insurance. A mechanical contractor’s normal insurance program covers damages to equipment in transit. The Contractor carries this special insurance because he knows that the insurance provided by railroads and trucklines is inadequate. The insurance provided by these freight carriers is either limited to a predetermined number of cents per pound (generally much less than the value of the goods) or, in the case of nonregulated freight carriers, liability claims can be collected only through legal action. In no case does the equipment manufacturer assme liability for in-transit damage of equipment purchased F.O.B. factory.

2. Advertising for Bids. While this function does not appear complex, the mechanical contractor’s purchasing knowledge should be put to advantage in: (1) advertising or requesting bids from the most qualified manufacturers and sales representatives, (2) setting a uniform bid time and bid format, (3) advising equipment bidders of planned construction schedule, and (4) advising of any special or unique aspects of the project.

3. Receiving and Analyzing Bids. Although several different bids for mechanical equipment may meet the technical specifications, manufacturers vary in the manner in which they quote items of equipment. The experienced mechanical contractor can quickly spot subtle differences that might result in unforeseen extra costs to himself or to the owner as the project progresses. For example, the mechanical contractor is watchful for:

- Inclusion of accessory items which may or may not be specified, but which are sometimes not directly furnished by the manufacturer, such as safety relief valves, thermometers, etc.
- The stated exclusion of certain accessory items
- Types of vessel connections, e.g., flanged, threaded, plain end, grooved for Victaulic fittings, etc.
- Method of shipment (air, ship, motor transport . . . and what named carrier)
- Terms of payment
- Delivery commitments
- Method of packaging, including size, weight, number of pieces and unloading requirements
- Mounting details of motors and drives
- Extent of prefabricated refrigeration piping included for large refrigeration machines
- Whether bolts, nuts and gaskets are shipped/packed separately.

4. Issuing Purchase Orders. Specified wording is needed to cover inclusions, exclusions, terms and conditions of payment, warranty responsibilities, etc.

5. Obtaining Proper Submittal Data and Approval. Vendor's submittal data should be reviewed not only for compliance with Specifications prior to submittal, but also for dimensions, space requirements, piping connections and entry clearance requirements for installation.

6. Releasing for Production and Establishing Delivery Schedule. Follow-up is necessary to assure timely and official release, acknowledgement by manufacturer, and definite scheduling for delivery at the right time and place.

7. Expediting. Most manufacturers are locked into a fixed production cycle which cannot be altered or shortened once a certain point has been reached. Skilled expediting, therefore, should be conducted before reaching that point. Mechanical contractors are experienced in this function. During times when most manufacturers can obtain all the business they want, it is not uncommon to find many of them fail to expedite their own vendor-purchased items such as motors, drives, gears, coatings and even steel plate for vessel shells. This leads to numerous unnecessary delays in fabrication of the equipment. Through persistence and proper expediting techniques, a skilled mechanical contractor can assist the manufacturer in checking out all possible delays on vendor-furnished items.

8. Shipping. The mode of shipment can be critical. Details considered should include method of shipment (airplane, steamship, truck, rail, and in some foreign situations, pack animal), location of proper rail siding, need for open-top trailer, additional in-transit insurance, arrangements for straight-through truck and drivers if necessary, etc.

9. Receiving. Coordination and timing are extremely important in accepting delivery of equipment, especially heavy items such as boilers and chillers. Scheduling of trained personnel and proper unloading equipment must coincide with arrival of the shipment for proper handling. In many cases, mechanical contractors must obtain advance information from vendors regarding lifting lug points, distribution of weight and other necessary details for proper and safe handling and hoisting.

10. Clarifying Guarantee. Many more disputes concerning manufacturer's versus contractor's guarantee obligations arise in cases of direct purchasing than when equipment is purchased by the contractor. Such disputes never serve the owner's interests and result in time-consuming and expensive delays.

11. More Than a Purchase Order. It is generally agreed that if there is any single most important benefit resulting from direct or prepurchasing, it is that long-delivery items can be purchased early to avoid construction delays.

However, the mere issuance of a purchase order does not necessarily trigger the machinery to assure delivery at the designated time. Mechanical contractors know from experience that the only way to assure delivery is through constant follow-up. It takes a well-planned methodical system of checks and cross-checks to do that effectively. Some manufacturers (more accurately, some employees of some manufacturers) will give the novice expediter a quick satisfying answer—one which, if not checked out thoroughly, will later result only in dissatisfaction when promises are not kept.

As a case in point, consider what happened on one recent project in Houston, Texas. Seven months before a mechanical contract was awarded, a major nationwide industrial firm issued over $2,000,000 worth of purchase orders to 12 major manufacturers for 59 items of air conditioning and mechanical equipment. The purchase orders contained provisions for reassignment to a mechanical contractor as well as specifying shipping dates—some over one year in the future. The only reason for prepurchase was to gain lead time on long-delivery items so construction schedules could be maintained.

When the mechanical contract was later awarded and the purchase orders assigned, the mechanical contractor immediately communicated with all vendors to confirm the delivery dates. In virtually every case the vendor had neglected to pursue the terms of the original purchase order with respect to delivery dates, had failed to expedite paper work, and most importantly, had totally neglected the all important function of expediting outside-purchased accessory items of equipment, such as motors, gear drives, and even steel plate for vessel shells.

The results of prepurchasing on this project were:

• Of the 12 manufacturers, five replied they would in fact meet the originally promised schedules, but did not furnish satisfactory evidence that the current status of production would ensure on-time delivery, thus calling for additional checking. The other manufacturers replied they would not meet their originally promised schedule.

• Of 59 items of prepurchased equipment, only 12 items were shipped on-time as had been specified in the original purchase order. Twelve items were delivered 1 to 8 weeks late; 22 items were more than 4 months late.

These delays were incurred despite the best effort on the part of the mechanical contractor, but he was handicapped by not having been involved in the purchase from the outset. The contractor's expediting efforts included phone calls, telegrams, letters and personal visits to factories (one factory was visited six times!). In conclusion, no amount of expediting will help if not done at the proper time—and the proper time begins immediately after issuance of the purchase order!

Other recent examples of direct purchasing that were self-defeating are:

- An owner's representative took direct bids on major mechanical equipment for a school project the same day as mechanical construction bids were taken.

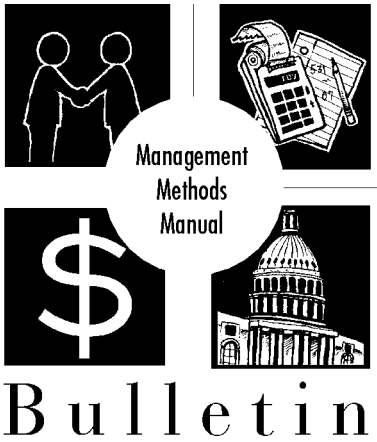
- Directly purchased roof-top air conditioning units, prepurchased for a school project, were shipped from the manufacturer's stock soon after purchase, and arrived at the project before any contractors were even set up to begin construction at the site. Special arrangements had to be made for a contractor to unload the equipment at the jobsite in an open field.

In neither of these cases were the client's best interests served. In the first case, where equipment and construction bids were taken at the same time, no time advantage whatsoever was gained for any long-delivery items. ‡In the second case, the owner suffered extra costs for non-coordinated receiving, and now risks damage to equipment which is unattended and unprotected at the jobsite.

Under normal circumstances, the mechanical contractor can provide a valuable service in coordinating and expediting equipment delivery. But when another party issues the purchase order, even with subsequent assignment, the mechanical contractor loses leverage in the expediting function. The responsiveness of manufacturer to contractor is an all important leverage, without which the contractor is limited in his ability to elicit full cooperation from the manufacturer in terms of expediting submittals, expediting deliveries, obtaining information, and other forms of vitally needed cooperation.

12. Even After Installation There Are Problems. Warranty date, start-up procedures, test-balance-adjust arrangements, punch-list corrections and warranty labor are just beginning at the end of the job. While a qualified professional mechanical engineer may be able to write a set of specifications that spell out these details in favor of the owner, nevertheless, this is just one more area in which the mechanical contractor has the expertise. The owner's competence is in the area of production or finance. The contractor's competence and advantage are in the areas of coordination of men, machines, materials and money.

Most construction is on a contract basis and the contractor is ultimately responsible that the system produces the specified output. The owner who purchases by contract can fairly anticipate his final cost. When equipment, materials or supplies are prepurchased, however, the owner hazards a "pay-as-you-go system", and nobody benefits—especially the owner!



Bulletin No. MK 3
File: Marketing

Diversification for Profit and Growth

Positioning our companies to maximize profits and survive has become a greater challenge today than in past years when the U.S. economy was growing at a rapid rate and profitable work was more attainable.

Most mechanical construction firms concentrated their efforts on performance of work. Little or no effort was made to develop marketing techniques that could increase profitability, diversification and growth.

A few mechanical firms recognized early that many opportunities for profit improvement and growth were open to them when they thought of themselves as being in the business of providing "construction services" in the broad sense. They recognized that mechanical expertise should be viewed as the talent base, rather than the more limited definition of services offered as a piping, plumbing or mechanical contractor in the traditional role of subcontractor.

When management recognizes and accepts the view that they should be selling their mechanical expertise as a construction service, this allows them to develop and broaden their marketing strategy. In turn they can take advantage of projects offering opportunity for increased profit margins.

The widening scope and increasing sophistication of services in the interest of growth—reducing competition and increasing opportunities for profit and survival—requires that we look beyond, while not neglecting, the subcontractor role. A contractor should seek direct contracts with owners and their representatives as part of a plan to market selected special projects where the mechanical work is predominant. Selling services on an all-trade basis as a "prime contractor" requires an intense study of the nature of services needed by construction users in your general market area. Conducting such a study will more than likely reveal that many construction users need construction services calling for multi-trade involvement (trades in addition to mechanical trades) under one firm's responsibility. Developing customer relationships with owners and their representatives and diversify-

ing services will also reveal opportunities to broaden management, make it more sophisticated, and challenge and motivate employees to upgrade their performance.

This diversification will change a firm's corporate philosophy and create a "corporate culture," which views the diversified markets as opportunities for personal and corporate profit growth.

The following is a partial list of conditions open to a diversified mechanical contractor, which are "projects of opportunity."

1. Direct award and contractual dealings with a responsible owner as a prime contractor, or with a firm representing the owner when that firm is contracted on an open-end negotiated contract. (Control over your own performance).

2. Project conditions calling for maximum performance to comply with tight schedule requirements of a profit-making owner firm. (Time is money).

3. Projects of a special nature that, due to complexity and schedule requirements, limit competiton.

4. Special projects, predominately mechanical in nature, requiring direct contracts with owners for multi-trade services, where the sophistication involved places mechanical contractors in competition with large construction or engineering constructor firms of the type we historically can compete well against.

Preparing for this slot in the market place opens the sophisticated mechanical contractor to many opportunities to provide process and power retrofit services.

5. Special projects where the nature of the contracted services are semifast tracked and the complete scope of work cannot be defined.

6. High volume, short duration projects as per (5) above, involving multi-trade staff and field forces, who must accomplish sophisticated, complex system repair, upgrading and additions.

Projects of this nature require large expenditures and turn finances over (usually without retainage) relatively quickly, allowing total profit margins to be absorbed in a short period of time for reinvestment in other projects. (Corporate and profit growth).

7. Special process and possibly power projects, contracted as a prime contractor to an owner, that call for mechanical systems and prefab piping erection, where the prefabricated piping is provided by others.

Opportunities for profit margin improvement are usually available in this type of project.

8. Special projects, usually process-oriented, where the work is multi-trade and contracted directly with an owner. In these there is limited design and construct capability required of the mechanical contractor working in concert with an owner's engineering department or owner's hired engineer. Projects of this nature can offer opportunity for negotiation.

9. Projects of a commercial, institutional or process nature, that offer opportunity to negotiate directly with owners in the "team concept of building." (See Management Methods Bulletin JM 1—Job Management Section.)

Diversification is a natural road to growth for any construction firm. The mechanical contractor, however, has many built-in advantages, not the least of which is that most work

is performed and managed by his in-house forces. This makes the transition to sophisticated "projects of opportunity" as a prime contractor (without competing or conflicting with the general building contractor he works with) an easy one for those so motivated.

Broadening services motivates personnel to grow. However, it requires management to select bright, competent people, suited to the rigors of the construction industry. Marketing will help create your future rather than waiting for it to happen.