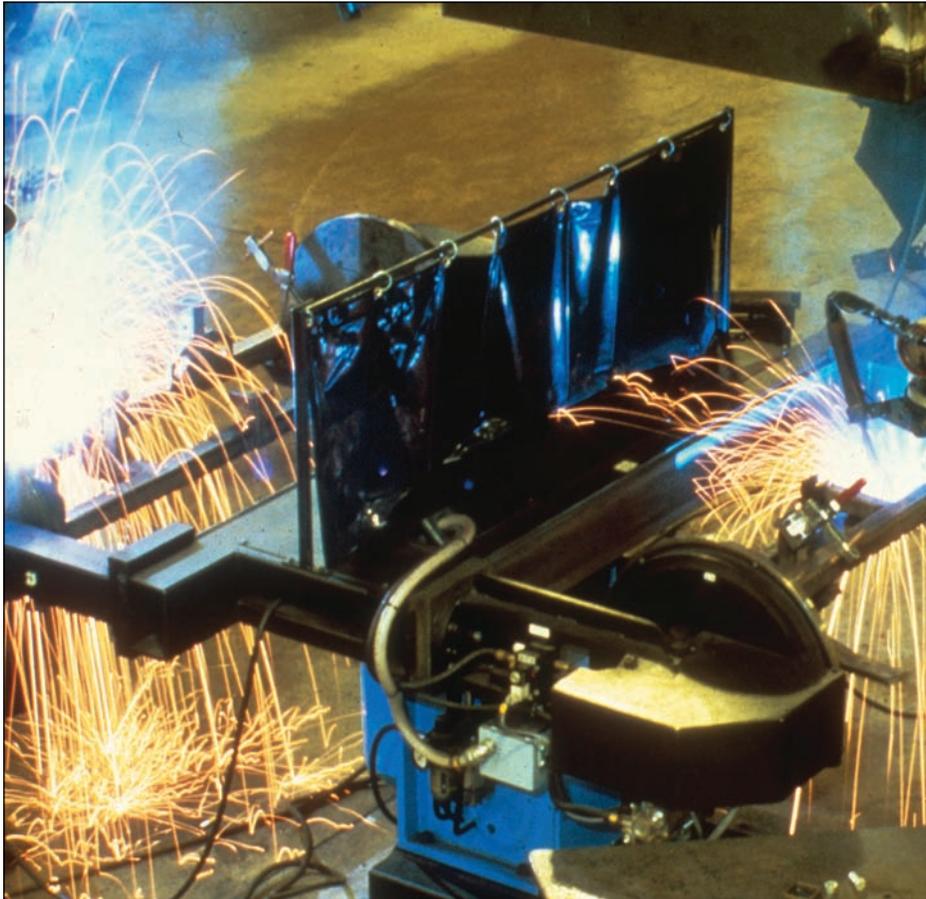


ECONOMICS OF WELDING AND CUTTING



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CHAPTER 12

ECONOMICS OF WELDING AND CUTTING

INTRODUCTION

The success of a business is usually measured by its profitability, based on the ability of the company to hold costs to the limits defined by competitive selling prices. The costs associated with welding and related processes can readily be approximated for any job when the factors affecting those costs are known and appropriate estimating methods are used. Welding costs must be accurately determined if the estimate is to be used successfully for bidding, for setting prices, or for comparing welded construction to a competing process.

The cost elements of a product are those related to materials, labor, and overhead. Only welding materials such as filler metals, gases, and fluxes are considered in the chapter, and only the labor directly involved in welding is specifically addressed. Thus, information related to base metal costs as well as layout, forming, fitting, and other metalworking is not included. Overhead costs are not addressed in detail in this chapter because the amount of overhead varies from industry to industry, and the method of distributing overhead costs also varies.

To facilitate the development of welding cost standards, factual information and guidance that can be adapted to suit individual enterprises are presented. Because of the importance of cost estimation for automated systems, detailed information is provided on methods of estimating cycle time in the production of weldments by means of automated arc welding and resistance spot welding. A cost model developed to estimate the manufacturing costs specifically for resistance spot welding is described in detail.

Many of the procedures employed to estimate welding costs can be adapted to estimate brazing, soldering, and thermal spraying costs, as the processes are similar in many respects. Information specific to these processes is presented in the sections “Economics of Brazing and Soldering” and “Economics of Thermal Spraying.”

To extend the usefulness of this information and enable its application to a wide variety of industries, material cost units are stated in pounds (lb) (kilograms [kg]) and cubic feet (ft³) (cubic meters [m³]), and labor cost units are stated in worker-hours (h). Users can convert the cost units to the dollar or other currency values by applying the cost of consumables and their specific labor and overhead rates.

THE COST ESTIMATE

A cost estimate is a forecast of expenses that may be incurred in the manufacture of products or components or in the implementation of new processes or operations. In addition to manufacturing costs, a typical cost estimate includes administrative, handling, warehousing, and storage expenses as well as data related to profit. Data derived from an accurate cost estimate can contribute to management decisions such as the following:

1. Establishing the selling price of a product for quotation purposes and for bidding and evaluating contracts;
2. Ascertaining whether a proposed product can be made and marketed at a profit, considering existing prices and anticipated competition;
3. Determining whether parts and assemblies should be fabricated in-house or purchased from a vendor;
4. Determining the amount of investment required for the acquisition of the tools and equipment needed to produce a product or a component using one process as compared to another;