

180c To Build or to Contract: the Economics of Pilot Plant Decisions

Janine A. Toner and Jonathan H. Worstell

Small-scale chemical process facilities have traditionally been built to: 1. provide design data for a full scale production facility as yet not built; 2. provide a venue for studying the behavior of an existing commercial production facility. The former small-scale facility is called a pilot plant; the latter is called a model. In this paper, pilot plant refers to both small-scales. Pilot plants are generally capital intensive and they have high fixed operating costs. Therefore, two decisions must be made before committing to build a pilot plant. Those decisions are: 1. is a pilot plant required for scaling the process? 2. should the pilot plant be build in-house or should a contract; ie, toller, pilot plant be used? If the process contains recycle streams, highly exothermic reactions, or a unit operation new to the organization, then the decision may be to build an in-house pilot plant. Also, an in-house pilot plant may be appropriate for a process highly leveraged with respect to intellectual property. If the unit operation fundamentals are fully understood, then the decision may be to use a contract pilot plant facility. This paper discusses the decisions to be made with respect to building an in-house pilot plant or using a contract pilot plant facility. It also discusses the economics of such decisions.