

Produce In-House or Buy in?

Different Contract Compounding Models and Services

Sophisticated property profiles and additives that are tricky to handle make it difficult for raw-material producers to perform compounding themselves. A possible way around this is offered by partner companies for toll, contract, or licensed manufacturing. The provider, PolyComp, shows what raw material producers need to consider and what they should be prepared for.



Compounded products are packaged and stored ready for delivery to the customer (© PolyComp)

Globalization, new legislation, rising demand, customer requirements, and new competitors are creating a complex environment for plastics raw material producers. Many of these producers are therefore reassessing their business model and, if necessary, adapting it by, for example, integrating toll, contract, or licensed manufacturing into their supply chain. In advanced industrial fields, such as the aerospace, energy, medical, pharmaceutical, and automotive sectors, this practice is already being adopted. PolyComp GmbH, Norderstedt, Germany, has been in-

involved in the modification of engineering plastics as a contract compounder/ licensed manufacturer since 2000. Since 2013, the company has belonged to the Feddersen Group and employs about 50 people.

Besides many advantages, toll, contract, and licensed manufacturing also pose challenges. Every company should think over such a decision carefully. Before part of production is outsourced, a company must identify its own core competences. These competences bring a competitive advantage that it is vital to maintain and develop.

The decision for or against toll, contract, or licensed manufacture should be a carefully thought-through and planned process and involve all parts of the company: from Purchasing, R&D, and Production to Sales and Marketing (make or buy decision). With such a structured approach, all functional units should have a voice in this process. When the final decision to outsource has been made, this is then generally supported by everyone.

The obvious and most frequently cited reason for outsourcing production to third parties is cost. In addition, access to capacities, technologies, and markets »



PolyComp's latest compounding line (ZE65x50D from the ZE BluePower series, manufacturer: KraussMaffei Berstorff GmbH) was installed in the first quarter of 2018 (© PolyComp)

is another significant criterion. Whatever reason finally sways the decision, a whole range of aspects need to be considered.

Advantages of Contract Manufacturing

Since no investment in large plants of production capacities needs to be made, investment costs are reduced. To produce more flexibly, companies frequently use contract or licensed manufacturers as an extension of their own production facilities. They help out when demand exceeds the company's own capacity (swing production). In addition, improved plant utilization is an advantage of toll or contract manufacturing. Many large companies have specialized in large-volume business and accordingly installed corresponding extruder lines. By outsourcing smaller lots or specialty products to contract manufacturers, they can better utilize the capacity of their own plants.

Toll or contract manufacturers are often equipped with similar or equivalent production technology to the outsourcer. PolyComp, for example, uses twin-screw machines from KraussMaffei Berstorff like the large plastics producers. This allows rapid, smooth transfer of products to third parties without having to carry out intensive qualification work beforehand. The specific equipment of a contract manufacturer can therefore lend the outsourcer a competitive advantage. In addition, toll or contract manufacturing gives producers a regional or global produc-

tion presence. Companies that would like to establish themselves in another region or globally but lack their own production facilities in a particular area can employ a toll or contract manufacturer instead.

Toll or contract manufacturing is also used by companies in their emergency planning to maintain the availability of their products. In addition, outsourcing companies can respond more quickly to the requirements of their customers. They can work on new formulations in their own research and development facilities and "immediately" implement these, irrespective of their own production capacity.

What Needs to Be Considered

Besides the advantages, the following challenges also need to be considered. Firstly, companies lose a significant amount of control over their product through a contract manufacturing/licensing agreement. It is possible to suggest strategies to the service providers but they cannot be compelled to implement them. Therefore, it is important to cultivate a good trusting relationship with contract manufacturers. No contract manufacturer makes products for just one customer. Toll or contract manufacturers will therefore not be prepared to let customers dictate that their products should be produced before those of other customers or competitors.

Before selecting a suitable toll or contract manufacturer, it is important for

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companies to ensure that the quality standards and specifications of the service provider correspond with their own. Appropriate test methods should be available and used to ensure quality, even for challenging sectors such as the automotive or pharmaceutical industries. If a company is to have a product manufactured by a third party, suitable formulations and information must be made available to that third party so that the product can be manufactured according to the outsourcer's requirements. This is why it is important to find out first where the core competence of the company lies before the make-or-buy decision.

If a company does not have large quantities produced or only has products made on an irregular basis, it will be perceived by the toll or contract manufacturer as less strategic. This can make the company feel neglected as compared with strategically more important customers. Furthermore, without direct control over production, the outsourcer can no longer respond immediately to disruptions in the supply chain. Neither can the outsourcer any longer respond immediately to demand fluctuations or influence the customer service level.

Once a company has decided to outsource its production process, it must choose the concept that best matches its specific production requirements from three different outsourcing models: toll manufacturing, contract manufacturing or licensed compounding (**Table 1**).

| | Toll manufacturing | Contract manufacturing | Licensed manufacturing |
|---------------------------|--------------------|------------------------|------------------------|
| Owner product formulation | Customer | Customer | Customer |
| Raw material procurement | Customer | PolyComp | PolyComp |
| Product manufacturing | PolyComp | PolyComp | PolyComp |
| Quality control | PolyComp | PolyComp | PolyComp |
| Inventory control | Customer | PolyComp/customer | PolyComp |
| Logistics | Customer | PolyComp/customer | PolyComp |

Table 1. Division of tasks and responsibilities between the outsourcer and service provider in different compounding models (source: PolyComp)

Three Different Models

In **toll manufacturing**, the outsourcer remains the owner for the entire manufacturing process – starting with the raw materials, through the whole processing operation to the finished compound. The company buys in the raw materials and makes them available to the service provider for processing. The latter converts the raw materials into finished compounds and is paid for the compounding process by the outsourcer.

Although **contract manufacturing** is very similar to toll manufacturing, the two models differ in some essential points: in contract manufacturing, the service provider takes on responsibility not only for the production process but also for the purchase and supply of the raw materials. It buys these in accordance with the specifications of the outsourcer. Similar to toll manufacturing It is also responsible for ensuring that the end product meets customer requirements and

delivery deadlines are met. In addition, agreement may be reached for the service provider to take charge of inventory control and deliver direct to the end customer.

In **licensed manufacturing**, a manufacturer makes finished products under a license agreement. It has at its disposal the appropriate plant and equipment required for the manufacturing process. As in contract manufacturing, a licensed manufacturer is responsible for the purchase and supply of the raw materials and the manufacture of the end product in accordance with agreed specifications.

In recent years, PolyComp has successfully provided various models for contract manufacture. In close consultation with users, PolyComp examined and decided which concept best fitted into the configuration of the supply chain. Only by so doing can the outsourcing process of compounding minimize risks and avoid unnecessary costs within the supply chain. ■