Colin Drury, Management and Cost Accounting – Reichard Maschinen GmbH

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This case is reprinted from Cases in Cost Management, Shank, J.K., 1996, South Western Publishing Company. The case was adapted by Professor John Shank, from an earlier case published by IMEDE (now IMD in Lausanne, Switzerland) and revised by Professor M. Edgar Barrett of the American International Graduate Business School.

This case was originally set in Western Europe in 1974, just after the Arab oil shocks of 1972 and 1973. National borders were still very important business barriers. But, the concept of open trade borders (EC-1992) was beginning to grow.

In June of 2000, Mr. Kurtz, managing director of the Grinding Machines Division (GMD) of Reichard Machines, was considering how he should handle a meeting that afternoon that would involve his sales manager, his controller, and his product engineering manager. The meeting concerned the introduction by a Belgian competitor, Bruggeman Grinders, SA, of plastic rings to take the place of steel rings which were a standard component in many grinding machines, including many of the machines made and sold by GMD.

The new plastic rings, which had only been introduced in April, not only appeared to have a much longer life than the steel rings, but also apparently were much less expensive to manufacture. Mr. Kurtz' problem in responding to the new ring was complicated by the fact that he had 25,000 steel rings in inventory and 26 tons of special alloy steel purchased recently for the sole purpose of making more rings. He knew that this raw steel could not even be sold as scrap because of the special alloys in it. He had been required to buy a full year's supply in order to convince a steel mill to make the special product. Overall, he was holding about $93,000 worth of inventory related to steel rings (see Exhibit 1).

For almost 100 years, Reichard had manufactured industrial machines which it sold throughout Europe and North America. It enjoyed a reputation for high quality, technology leadership, and excellent customer service. There were dozens of companies of all sizes who competed, one way or another, in industrial machines in Europe. Reichard was one of the leaders in several segments. Each division operated as a fairly autonomous profit centre. Corporate management, headquartered in Frankfurt, operated mainly as a holding company.

The Grinding Machine Division (GMD) had about a ten percent market share in Europe, its principal market area. GMD's one plant was located in Cologne and employed 400 production workers. Its different models were priced between $4500 and $7000, averaging about $6000. The machines were used in metal working plants in many industries. Their useful life was about ten years with normal maintenance.

Replacement parts in aggregate accounted for more than half of GMD's turnover. As is common for industrial machinery, margins on machine sales are often reduced in anticipation of higher margins on replacement parts over the life of the machine. This creates the opportunity for price discounting by parts suppliers on those replacement parts which are interchangeable across models and across manufacturers. The steel rings were one of the standard component items which were interchangeable.

In recent years Japanese manufacturers had entered Reichard's markets with lower priced spare parts. Other companies had entered with lower quality and lower priced machines and parts. Kurtz felt sure that competition would continue to intensify in the future. But, he was fully committed to Reichard's strategy of high quality, innovation and excellent service, at a price.

The steel rings manufactured by GMD had a useful life of about two months under normal machine use. A worn-out ring could be replaced in a minute or two. Different machine models required from two to six rings, but the average was four rings per machine. Usually, rings were replaced one at a time, as they were worn-out.
The sales manager, Mr. Goerner had learned of the new plastic ring almost immediately after its appearance and had asked when GMD would be able to supply them, particularly for sale to customers in Belgium where Bruggeman was the strongest competitor. In mid-May Mr. Hainz, the development engineer, estimated that the factory could be ready to produce plastic rings by mid-September. The factory already had a plastics injection molding department. The additional molds and tooling necessary could be produced for about $10,000, but would have to be specially designed which would take a few months.

At this point Mr. Hainz had raised the question about the investment in steel ring inventories which would not be used up by the end of September. Mr. Goerner said that if the new ring could be produced at a substantially lower cost than steel, the inventory problem was irrelevant. The steel inventory should be sold for whatever could be obtained or even thrown away if it could not be sold.

Mr. Goerner stated that Bruggeman was selling the plastic ring for about $340. per hundred. This was $15. per hundred higher than the price of GMD's steel ring even though the manufacturing cost of the plastic was much less. Goerner wanted the company to prepare to manufacture the new ring as soon as possible. Hainz suggested that until the steel inventories were exhausted they could be sold only in those markets where plastic rings were not offered by competitors. No one expected that the new plastic rings would be produced by any company other than Bruggeman for some time. This meant that no more than 10% of GMD's markets would be effected.

In late May, Mr. Metz of the headquarter group in Frankfurt visited Cologne. During a review of GMD's problems, the plastic ring case was discussed. Although the ring was a very small part of the finished machines, Mr. Metz was interested in the problem because the holding company wanted all divisions to establish comparable policies for the production and pricing of all such parts. Mr. Metz pointed out to Mr. Kurtz that replacement parts pricing and availability was a critical component of Reichard's business strategy. Metz saw no problem with GMD getting ready to produce plastic rings, although he was sceptical of the market acceptance of such a product. But, he added, "I would certainly expect you to recover your investment in steel inventory." Mr. Kurtz understood that he would need a very good story if he decided to scrap any of the steel rings or raw material.

A few days after Mr. Metz' visit, both Mr. Hainz and Mr. Goerner came in to see Mr. Kurtz. The former came because he felt that the plastic ring would completely destroy demand for the steel ring. New tests had indicated that plastic had at least four times the wearing properties. However, because the price of the competitive ring was very high, he felt that the decision to sell the plastic ring only in Bruggeman's market area was a good one. "In this way we would probably be able to continue supplying the steel ring until stocks, at least of processed parts, were used up."

Goerner said he was still strongly against selling any steel rings after the new plastic rings became available. If the higher quality plastic rings were only being sold in some areas, customer would soon find out. The result would affect the sale of machines, the selling price of which was many times that of the rings. He produced figures to show that even if the selling price of both rings were the same at $325 per hundred, the additional profit from plastic rings, which would cost $66.60 per hundred as contrasted with $263.85 per hundred for steel rings, would more than cover the "so-called" investment in the steel inventory in little more than a year at present volume levels.

Mr. Kurtz did not commit himself to a decision, but agreed to have another discussion in a week. In anticipation of the meeting, Kurtz obtained the following cost information from his controller comparing plastic and steel rings:

<table>
<thead>
<tr>
<th>Per 100 Rings</th>
<th>Plastic</th>
<th>Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>£4.20</td>
<td>$76.65</td>
</tr>
<tr>
<td>Direct Labor</td>
<td>15.60</td>
<td>46.80</td>
</tr>
<tr>
<td>Overhead*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>31.20</td>
<td>93.60</td>
</tr>
<tr>
<td>Selling &amp; Admin.</td>
<td>15.60</td>
<td>46.80</td>
</tr>
<tr>
<td>Total</td>
<td>$66.60</td>
<td>$263.85</td>
</tr>
</tbody>
</table>
Mr. Kurtz learned that the raw steel inventory on hand was sufficient to produce approximately 34,500 more rings (See Exhibit 1). Assuming that sales continued at the current rate of 690 rings per week, some 15,000 finished rings would be left on hand by mid-September without any further production taking place. It then occurred to him that during the next two or three months the plant would not be operating at capacity. The company had a policy of employing its excess labor during slack periods at about 70% of regular wages on various make-work projects rather than laying workers off. He wondered if it would be a good idea to commit additional resources now to the steel rings by converting the raw steel inventory into rings during this period and use some of this slack labor productively. If workers produced rings, they would be paid full wage rates.

**ASSIGNMENT**

1. What is the “differential” or “incremental” cost to produce 100 plastic rings?

2. What is the “incremental” cost, per 100 rings, to produce the next 34,500 steel rings?

3. What is the “differential” cost of the 25,450 steel rings which are already in inventory at the end of May?

4. Which is more profitable, the steel rings or the plastic rings? Be prepared to show the calculations which support your answer.

5. What actions do you recommend to Mr. Kurtz regarding
   - manufacture of plastic rings
   - further manufacture of steel rings
   - pricing of steel and plastic rings
   - availability of steel and plastic rings over the next 1 to 2 years
   - longer-run availability and pricing of steel and plastic rings

6. Assess the likely impact of your recommendations, both quantitatively and qualitatively.

**EXHIBIT 1**

**MEMORANDUM**

To: Mr. Kurtz, Managing Director

From: Mr. Politzer, Controller

Re: Steel Inventory for Rings

Date: 31.5.74

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>$</th>
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<tbody>
<tr>
<td>Finished Rings in Inventory</td>
<td>25,450</td>
<td>$67,149 (*)</td>
</tr>
<tr>
<td>Raw Steel in Inventory</td>
<td>34,500</td>
<td>26,400</td>
</tr>
<tr>
<td>(*) 254.5 x $263.85</td>
<td>59,950</td>
<td>$93,549</td>
</tr>
</tbody>
</table>
1. If we convert the raw steel to rings, the total of 59,950 would last about 87 weeks at our current sales rate of about 690 rings per week.

2. If we do not produce any more steel rings, we will have about 15,000 rings in inventory in September when we would be ready to begin producing and selling plastic rings.

3. We have exhausted all possible sources for selling this raw steel in bulk. Because of its special chemistry, it has no value to anyone else.

4. During our normal summer shutdown period (July and August), the factory could convert all the raw steel to finished rings, if you wish.