

## FONDERIA DI TORINO S.P.A.

In November 2000, Francesca Cerini, managing director of Fonderia di Torino S.p.A.,<sup>1</sup> was considering the purchase of a Vulcan Mold-Maker automated molding machine. This machine would prepare the sand molds into which molten iron was poured to obtain iron castings. The Vulcan Mold-Maker would replace an older machine and would offer improvements in quality and some additional capacity for expansion. Similar molding-machine proposals had been rejected by the board of directors for economic reasons on three previous occasions, most recently in 1999. This time, given the size of the proposed expenditure of about (euros) €1 million,<sup>2</sup> Cerini was seeking a careful estimate of the project's costs and benefits and, ultimately, a recommendation of whether to proceed with the investment.

### The Company

Fonderia di Torino specialized in the production of precision metal castings for use in automotive, aerospace, and construction equipment. The company had acquired a reputation for quality products, particularly for safety parts (i.e., parts whose failure would result in loss of control for the operator). Its products included crankshafts, transmissions, brake calipers, axles, wheels, and various steering-assembly parts. Customers were original-equipment manufacturers (OEM), mainly in Europe. OEMs were becoming increasingly insistent about product quality, and Fonderia di Torino's response had reduced the rejection rate of its castings by the OEMs to 70 parts per million.

This record had won the company coveted quality awards from BMW, Ferrari, and Peugeot, and had resulted in strategic alliances with those firms: Fonderia di Torino and the OEMs exchanged technical personnel and design tasks; in addition, the OEMs shared

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<sup>1</sup> S.p.A. stands for *Società per Azioni*, literally, a business under share ownership, like a public corporation in the United States.

<sup>2</sup> In November 2000, the exchange rate between the euro and the U.S. dollar was about €1.17: \$1.00.

confidential market-demand information with Fonderia di Torino, which increased the precision of the latter's production scheduling. In certain instances, the OEMs had provided cheap loans to Fonderia di Torino to support capital expansion. Finally, the company received relatively long-term supply contracts from the OEMs and had a preferential position for bidding on new contracts.

Fonderia di Torino, located in Milan, Italy, had been founded in 1912 by Francesca Cerini's great-grandfather, Benito Cerini, a naval engineer, to produce castings for the armaments industry. In the 1920s and 1930s, the company expanded its customer base into the automotive industry. Although the company barely avoided financial collapse in the late 1940s, Benito Cerini predicted a postwar demand for precision metal casting and positioned the company to meet it. From that time, Fonderia di Torino grew slowly but steadily; its sales for calendar-year 2000 were expected to be €280 million. It was listed for trading on the Milan stock exchange in 1991, but the Cerini family owned 55% of the common shares of stock outstanding. (The company's beta was 1.25.<sup>3</sup>)

The company's traditional hurdle rate of return on capital deployed was 14%. (This rate had not been reviewed since 1984.) In addition, company policy sought payback of an entire investment within five years. At the time of the case, the market value of the company's capital was 33% debt and 67% equity. The debt consisted entirely of loans from Banco Nazionale di Milano bearing an interest rate of 6.8%. The company's effective tax rate was about 43%, which reflected the combination of national and local corporate income-tax rates.

Francesca Cerini, age 57, had assumed executive responsibility for the company 20 years earlier, upon the death of her father. She held a doctorate in metallurgy and was the matriarch of an extended family. Only a son and a niece worked at Fonderia di Torino, however. Over the years, the Cerini family had sought to earn a rate of return on its equity investment of about 18%—this goal had been established by Benito Cerini and had never once been questioned by management.

### **The Vulcan Mold-Maker Machine**

Sand molds used to make castings were prepared in a semi-automated process at Fonderia di Torino in 2000. Workers stamped impressions in a mixture of sand and adhesive under heat and high pressure. The process was relatively labor intensive, required training and retraining to obtain consistency in mold quality, and demanded some heavy lifting from workers. Indeed, medical claims for back injuries in the molding shop had doubled since 1998 as the mix of Fonderia di Torino's casting products shifted toward heavy items. (Items averaged 25 kilograms in 2000.)

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<sup>3</sup> The rate of return on euro-denominated bonds issued by E.U. governments was 5.3%. Francesca Cerini assumed that the equity risk premium would be 6%. Also, she believed that current bond yields impounded an expected inflation rate of 3% for the near future.

The new molding machine would replace six semi-automated stamping machines that, together, had originally cost €415,807. Cumulative depreciation of €130,682 had already been charged against the original cost; annual depreciation on those machines had been averaging €47,520 a year. Fonderia di Torino's management believed that those semi-automated machines would need to be replaced after six years. Cerini had received an offer of €130,000 for the six machines.

The current six machines required 12 workers per shift<sup>4</sup> (24 in total) at €7.33 per worker per hour, plus the equivalent of 3 maintenance workers, each of whom was paid €7.85 an hour, plus maintenance supplies of €4,000 a year. Cerini assumed that the semi-automated machines, if kept, would continue to consume electrical power at the rate of €12,300 a year.

The Vulcan Mold-Maker molding machine was produced by a company in Allentown, Pennsylvania. Fonderia di Torino had received a firm offering price of €850,000 from the Allentown firm. The estimate for modifications to the plant, including wiring for the machine's power supply, was €155,000. Allowing for shipping, installation, and testing, the total cost of the Vulcan Mold-Maker machine was expected to be €1.01 million, all of which would be capitalized and depreciated for tax purposes over eight years. (Cerini assumed that, at a high and steady rate of machine utilization, the Vulcan Mold-Maker would need to be replaced after the eighth year.)

The new machine would require two skilled operators (one per shift), each receiving €11.36 an hour (including benefits), and contract maintenance of €59,500 a year, and would incur power costs of €26,850 yearly. In addition, the automatic machine was expected to save at least €5,200 yearly through improved labor efficiency in other areas of the foundry.

With the current machines, more than 30% of the foundry's floor space was needed for the wide galleries the machines required; raw materials and in-process inventories had to be staged near each machine in order to smooth the workflow. With the automated machine, almost half of that space would be freed for other purposes (although at present there was no need for new space).

Certain aspects of the Vulcan Mold-Maker purchase decision were difficult to quantify. First, Cerini was unsure whether the tough collective-bargaining agreement her company had with the employees' union would allow her to lay off the 24 operators of the semi-automated machines. Reassigning the workers to other jobs might be easier, but the only positions needing to be filled were those of janitors, who were paid €4.13 an hour. The extent of any labor savings would depend on negotiations with the union. Second, Cerini believed that the Vulcan Mold-Maker would result in even higher levels of product quality and lower scrap rates than the company was now boasting. In light of the ever-increasing competition, this outcome might prove to be of enormous, but currently unquantifiable, competitive importance. Finally, the

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<sup>4</sup> The foundry operated two shifts a day. It did not operate on weekends or holidays. At maximum, the foundry would produce for 210 days a year.

Vulcan Mold-Maker had a theoretical maximum capacity that was 30% higher than that of the six semi-automated machines; but those machines were operating at only 90% of capacity, and Cerini was unsure when added capacity would be needed. The latest economic news suggested that the economies of Europe were headed for a slowdown.

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