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CAMBRIDGE COOLING SYSTEMS: EMPOWERING INTERNATIONAl operations

Ken Mark wrote this case under the supervision of Professor Mary Weil solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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David Jansen, chief operating officer (COO) at Cambridge Cooling Systems (CCS), was meeting with his senior management team as they prepared for two conference calls, the first with CCS’s Italian division and the second with its Indian division. CCS was a manufacturer of industrial cooling systems. Industrial cooling applications had several industrial applications. For example, cooling units were needed to control heat and humidity in office environments, to refrigerate perishable items such as food and medical supplies, and to dissipate heat generated from machinery. All cooling applications used coolants, either liquid or air, and a system through which heat could be absorbed and ejected into the atmosphere or into a body of water.

On March 5, 2017, the senior team led by James Boland, in charge of project management, was trying to determine why several projects had stalled in both Italy and India. “We’re behind schedule on our current two projects in each country, and we’re not able to get any usable information about the next major orders for our forecast,” said Boland.

Jansen, who had joined the company just the previous month, had made CCS’s international operations his first priority. “Let’s sit down and go over the objectives for each of the two conference calls,” he said to Boland. “I’d like to understand the issues as you see them. Then let’s work together to create a plan to get the projects back on track.” Jansen reported to Harris Gould, who was the chief executive officer (CEO) of CCS and the third-generation owner of the firm.

**Cambridge Cooling Systems**

The rapid adoption of residential air conditioning in the United States in the 1920s spurred development of other residential and industrial cooling technologies around the world. In 1934, William Gould founded CCS in Cambridge, Ontario to build customized refrigeration and cooling systems for the food industry. CCS’s growth accelerated when it began supplying product to the Canadian military, building customized cooling units for engine rooms and food storage warehouses.

Saul Gould, the next generation, took over the family business in 1995 and expanded into South America, a region experiencing rapid growth. Initially, the plan was to build cooling units at CCS’s plants in San Antonio, Texas, shipping them south as needed. As demand continued to increase, Saul built a factory outside Mexico City to serve the Central and South American markets.

In 2009, Saul retired and Harris Gould took over from his father as CEO. Between 2010 and 2012, Harris purchased three international rivals—two based in Italy and the third in India—with the expectation that CCS would become a global player in the standard and customized cooling unit industries.

**Products**

There were four general types of cooling systems (see Exhibit 1). Once-through cooling systems were the simplest of the four designs and relied on a flow of water from a river, lake, or well as the coolant. Water was pumped through a filter, which mechanically screened out debris, and then sent through pipes to absorb heat generated from mills and power equipment. For applications where a limited amount of water was available, an indirect once-through cooling system could be used, whereby heat was dissipated by passing the coolant through a tower, relying on evaporation to reduce the temperature. The cooled water was then returned through the system, and any evaporated water was replenished.

Evaporative cooling systems transferred heat to a cooling tower via coolants running through pipes. The pipes carried the heated coolants to a tower where water was sprayed over the pipes, cooling them and dissipating heat into the atmosphere. Dry cooling systems worked by transferring steam through an array of tubes, where fans channelled colder air over the tubes.

Hybrid cooling systems contained a combination of any of the three technologies. Hybrid systems were needed when geography or the application required more than one technology to conserve water or power. For example, a hybrid cooling system could use evaporative cooling technology when air temperatures were hot and use dry cooling in colder, humid conditions.

Industrial cooling systems could be purchased as standardized items or as customized products. Standardized cooling systems were typically only either evaporative or dry cooling systems, and were made to fit within a 10-foot cube space, to be connected to the office or the factory’s cooling system with minimal alternations. In cases that were more complex, customized cooling systems had to work within existing factory layouts, to serve a specific cooling purpose, or to deliver a specific level of cooling capacity.

By 2017, CCS was the largest industrial cooling-systems manufacturer in North America focusing on small unit installations. In general, CCS’s solutions were smaller than the size of a 40-foot shipping container. Its products excelled in remote, arid conditions, and they were used in mining, oil and gas, and military applications. The company kept a record of every customized device it had made, providing its engineers access to over 80 years of designs.

While CCS had many competitors, a key success factor had been its focus on combining a deep understanding of customer requirements with engineering design to deliver a product that performed to specification, but that was often 80 per cent of the price of its competitors’ product. CCS’s strength was its ability to design cooling systems for harsh environments—high heat, high salt, or remote locations.

CCS had seven distribution centres located throughout Canada and the United States, allowing it to ship standard product to 90 per cent of its customers for delivery within 48 hours of receiving an order. Standard products could be customized, at a higher cost per unit, according to customer specifications, requiring a two-to-three-week lead time.

The market for industrial cooling solutions was estimated to be worth US$13.5 billion[[1]](#footnote-1) in 2016 and was expected to grow to $17.2 billion by 2021.[[2]](#footnote-2) Industry competitors included several large players, such as General Electric, Siemens AG, and ABB Inc.

**Manufacturing Operations**

CCS had six manufacturing facilities, located in Canada, the United States, Mexico, Italy, and India. In addition, it had seven regional distribution centres throughout North America. It employed about 1,400 people in total, 70 per cent of whom were hourly manufacturing workers. The CCS facility in Mexico City, Mexico, was built in 2001, and international expansion beyond North America was the focus in 2010 when the company purchased Gaurav Khan Enterprises in Delhi, India. This company manufactured cooling units for food manufacturers and logistics providers who produced customized and standard products in Delhi and northern India. In 2011 and 2012, CCS purchased two Italian firms, Galeazzo S.p.A. in Rome, which produced customized and standard cooling units, with a focus on food manufacturers and industrial cooling, and Moretti Industriale in Palermo, which manufactured large standard cooling units, and had 50 per cent of the market in Italy for small and medium-sized units.

The manufacturing of cooling systems began with the purchase of raw materials and specialized parts. Each of CCS’s manufacturing locations focused on the range of cooling technologies, with the objective of serving their local and regional market. Tubes, panels, and brackets were machined and welded together according to specifications, and control systems—electronic parts purchased off the shelf and customized with CCS’s software programs—were installed. Most cooling systems were fully assembled and tested at the factory. Customized systems often required partial disassembly for transportation. At the customer’s site, the cooling system was positioned, and re-assembled if necessary, under the supervision of a CCS engineer.

Many CCS factories had standardized products that were stocked on a regular basis. These were generally manufactured on an assembly line, in a dedicated part of the factory. Customized products were manufactured in “cells” using flexible equipment. There were separate cells for each of the four technologies in each factory. The only exceptions were Mexico and the United States, where no customized dry cooling systems were manufactured. CCS had sales of $260 million in 2016 (see Exhibit 2).

Staff at the Cambridge head office included 50 people working on product design for custom orders and new product development. CCS had several patents, which helped to provide a layer of protection against competitors. Its engineering department continued to develop new designs, relying on a combination of product knowledge, input from customers, and more than 80 years of industry experience producing and designing cooling systems.

There were no engineering or product design personnel in Mexico and the United States, and manufacturing staff in these two countries worked with engineers in Cambridge to design products and troubleshoot issues. CCS had four engineers and one product designer in Italy, and one engineer and one product designer in India. In principle, the operations in both Italy and India had been expected to operate independently, designing products for local and regional customers. In practice, however, control over engineering designs was given to Cambridge, and each custom and standard design was optimized by CCS’s Cambridge office before it was finalized.

**Sales and Marketing**

CCS employed a direct sales force and had non-exclusive independent distributors. The focus of the sales team was to target three primary markets: food manufacturing, mining, and the oil and gas industry.

By channel, CCS sold about 66 per cent of its products in Canada and the United States, and 34 per cent to international customers (see Exhibit 3):

Direct selling accounted for approximately two-thirds of sales, with distributors accounting for the remainder. About 65 per cent of CCS’s unit sales were custom designs. There was the potential for plants to supply units to other regions globally. Typical transportation costs for in-country customers were 2 per cent of the price of a unit; in-region (North America) costs were 5 per cent, and out-of-region costs were in the 10 per cent range.

**David Jansen—preparing for the conference calls**

Jansen had a 25-year career in operations, most recently working at a large industrial equipment firm as global vice-president responsible for the company’s lean manufacturing and high performance efforts in plants around the world. He joined CCS as COO in October 2016.

Jansen’s first task after joining CCS was to visit each company operation. The Italian and Indian divisions operated autonomously, managing their own sales force and engineering and manufacturing operations. The Cambridge head office provided technical product design support. The international division, comprised of CCS’s Italian and Indian units, was managed from Cambridge, with Giovanni Rizzi as managing director for Europe and Samaira Anand as managing director for Asia. Rizzi and Anand communicated frequently with each of their divisions (Italy and India, respectively), speaking to the respective country leaders and emailing documents such as engineering specifications, requests for quotes, technical manuals, and responses to customer queries when needed.

CCS had seen declines in both gross margin and operating profit in the past two years. The firm had enjoyed significant success servicing the food manufacturing industry in Canada and the United States, but this cyclical market was now reducing capital investments. Meanwhile, the international division had not lived up to expectations, with sales and profit margins below those of the company’s North American operations. The international companies in Italy and India had failed to be profitable since they were purchased. The primary source for information suggesting the units were underperforming was the fact that capacity utilization in the factories in Italy and India was lower than in CCS’s Canadian and Mexican units. No sales or profit forecasts had been created by or given to the Italian and Indian units by CCS; they had been allowed to manage sales and production on their own.

The company’s link to Cambridge was with mechanical and electrical engineering: technical and design drawings were reviewed in Cambridge and compared against CCS’s collection of past projects.

The conversation between Boland and Jansen that day in March 2017 went as follows:

Jansen: Can you tell me about the business in general and what you did to get international’s commitment to the projects?

Boland: We have two projects in Italy, one for a Turkish appliances manufacturer and one for an Italian food manufacturer. They’re highly customized transformers that require a great deal of collaboration between our Italian engineering team and our mechanical and electrical engineering resources in Cambridge. Not to mention we need to get information about purchasing costs and sales prices to prepare our financial reports.

We’ve been working with Rizzi in Italy since our acquisition of both Euroelettro and Marnate. I met him when we did a tour of our facilities in late 2013, and I was impressed by his deep knowledge of sales, operations, and manufacturing. He was very eager to show us what the Italian division could do, and we spent the better part of three days touring the facilities. We covered a wide range of topics, and he seemed to have connections with Italian, Turkish, and Eastern European manufacturers and service firms, which was exactly the target we were going after. The issues arose when we came back and started working together.

We could not get him to commit to any of the plans or delivery targets that we had set out. He was always very busy, so it was very difficult to get a hold of him in the first place. I tried to email him a few times to tell him I could speak to the operations director, the sales director, or the manufacturing director in Milan or Venice, but I never received any responses. When I called each of the three directors to find out more information about their businesses, they were very polite but they didn’t want to divulge any information. They did promise to get back to me and I received high level information, but it wasn’t the data I was after.

“We need more time to analyze the data we have before we send it to you,” Rizzi would say to me. Or he would say, “We are very focused on our work, and while we would like to take the time to research the answer to your question, you have to trust that we will follow through on the project.”

The challenge is that these are high value contracts with strict timelines, and other customers are looking at how we perform on these before giving us their order. I’ve been emailing Rizzi weekly for updates and I think I have to step it up—maybe an email a day just to say hi?—because I’m not getting any responses. I’ve even gotten someone on our senior management team to email him.

Jansen: Do you have a copy of that email?

Boland: Yes I do. It reads: “Rizzi, need an update on the project which is now behind schedule. Can you contact Boland with the information he needs please, ASAP [as soon as possible]. Regards, Jim.”

Jansen: I see. Did you get senior management to send these emails on a frequent basis?

Boland: Only since October 2014. I was able to pry answers out of Rizzi before that. He was answering questions with nice long paragraphs from January 2014 until about April 2014. That’s when I started noticing his answers were getting shorter and shorter.

Jansen: What do you think happened?

Boland: As you know, we need to have quite detailed answers to our questions, so I had to send back documents that he had sent to me. I was trying to be helpful, using “track changes” mode in Word to indicate where more information was needed. Rizzi had sent me the document himself—he had gathered the information for me—but when I did not hear from him, I emailed the sales director and sent him the document instead. Maybe Rizzi was upset that I went to a subordinate with the issue?

In any case, we think that Rizzi is trying to keep a close eye on all of the departments in the division, and he’s not delegating enough. But that’s just my feeling.

Jansen: What do you hope to achieve from this conference call?

Boland: I haven’t been able to speak to Rizzi since July as we’ve been quite busy managing our projects. I want to be able to catch up with him and re-establish our working relationship. More importantly, I want to know how our Turkish and Italian projects are going, I want detailed cost information, and I want to know what we’re planning for in terms of future sales. I don’t need him to give me the details tonight, I just need him to recommit to a schedule. And I would like him to tell me if he feels we’re not doing something right, we’re not communicating enough, or we’re saying the wrong things.

Jansen: Okay. Tell me about our call with India.

Boland: It is easier to communicate with them because they are fluent English speakers. I met Samaira, our managing director, when we visited in late 2013. There is a lot of opportunity in Asia and they were very pleased to see us. They made sure that we understood they were committed to growing sales in India and in Asia in general. They seemed to know many of the top CEOs of the firms in India.

I received a very detailed strategy and operating plan, which was impressive. It outlined each of the contacts they planned to go after and the types of products they’d sell, and it even had a detailed timeline. But the plan didn’t seem very useful after a few weeks.

Jansen: Why is that? Did they change course?

Boland: They didn’t seem to follow the plan. We were suddenly going after different targets. Which was fine. During our conference calls, they’d commit to the targets we mutually set. I would ask them if they had any issues with the targets—which seemed ambitious—but they assured me that business was rapidly growing and they’d be able to move forward with them.

But they’d miss target after target. Usually, there was a specific reason for each miss. There was a new regulatory requirement; the procurement manager at the customer’s firm had changed; or there was an issue with raw material delivery. There seemed to be a good explanation for whatever issue popped up. The challenge was that it seemed none of these issues were within CCS’s control—they just happened and the setback would cost us time, money, or both. Our sales and profit targets in India were constantly being renegotiated. Our India team would verbally agree to them but then proceed to cut them down over the next three months.

“This is the reality of working in a fast-paced but developing world,” they’d say. In addition, there was—and is—very high turnover in the senior management ranks. The owner and his son, our managing director, continue to run the firm, but they’ve seen a complete turnover of their senior team of five individuals every two months. That’s right—we seem to have a different sales director every week.

As was the case with Italy, I was emailing the sales and engineering directors for information when Chandra did not seem to respond on time, or if I was rushed, or if the project was part of their job. But I’d only get the information I needed when I spoke to Chandra over the phone. So in the end, I started to schedule regular half-hour calls with Chandra to catch up. It’s a difficult way to do business.

Jansen: What is your objective for the call with India?

Boland: I’d like them to give me a straight answer on the sales targets we have to set for our next quarter. I don’t want them to agree to something that will be changed next Tuesday, when some unexpected issue hits. I want to know we can count on the figures we get from them.

And I want them to find a way for us to have multiple contact points, for me to be able to email sales or operations or engineering, to get the details I want so I don’t have to rely on calling Chandra’s mobile phone for half an hour every morning or evening. We’ve got amazing communication tools—email, fax, etc.—but I’m relying on my one phone call a day to get things done.

Jansen: Thanks for the update. We’ve got an hour before our first call with Rizzi. Let me circle back to you in half an hour.

**Making Sense of the Situation**

Jansen had worked in a global role, and was familiar with both Italy and India, and how business was conducted in those two countries. Jansen walked to the factory, where he was scheduled to address his employees on a different issue. On the way, he thought about Boland’s dilemma and how he could be of assistance.

Exhibit 1: Cooling Systems

|  |  |
| --- | --- |
| **Type** | **Technology** |
| Once-through | Harnessed water cooling capacity |
| Evaporative | Relied on evaporation to dissipate heat |
| Dry | Utilized air cooling and piped coolants |
| Hybrid | Used some combination of two or three technologies |

Source: Created by case authors.

Exhibit 2: Sales by Production

Location

Sales ('000s)

(in US$)

Once-through

cooling

systems

Evaporative

cooling

systems

Dry cooling

systems

Hybrid cooling

systems

Cambridge

110,000

$

10

10

30

50

Mexico

35,000

$

20

10

0

70

United States

25,000

$

10

10

10

70

Italy

55,000

$

40

0

30

30

India

35,000

$

10

40

30

20

Production mix as a % of sales per plant

Source: Created by case authors.

Exhibit 3: Sales by Channel (in US$)

Location

Sales ('000s)

As a % of total

USA/Canada

Europe

Asia

Cambridge

110,000

$

43

100%

Mexico

35,000

$

13

100%

United States

25,000

$

10

100%

Italy

55,000

$

21

100%

India

35,000

$

13

100%

260,000

$

100

By Geography

Source: Created by case authors.

1. All currency amounts are in US$. [↑](#footnote-ref-1)
2. “Industrial Cooling System Market Worth 17.24 Billion USD by 2021,” Markets and Markets, accessed October 10, 2017, www.marketsandmarkets.com/PressReleases/industrial-cooling-system.asp. [↑](#footnote-ref-2)