CASTOOL
TOOLING SOLUTIONS

Industry Leader

Profile:

Paul Robbins

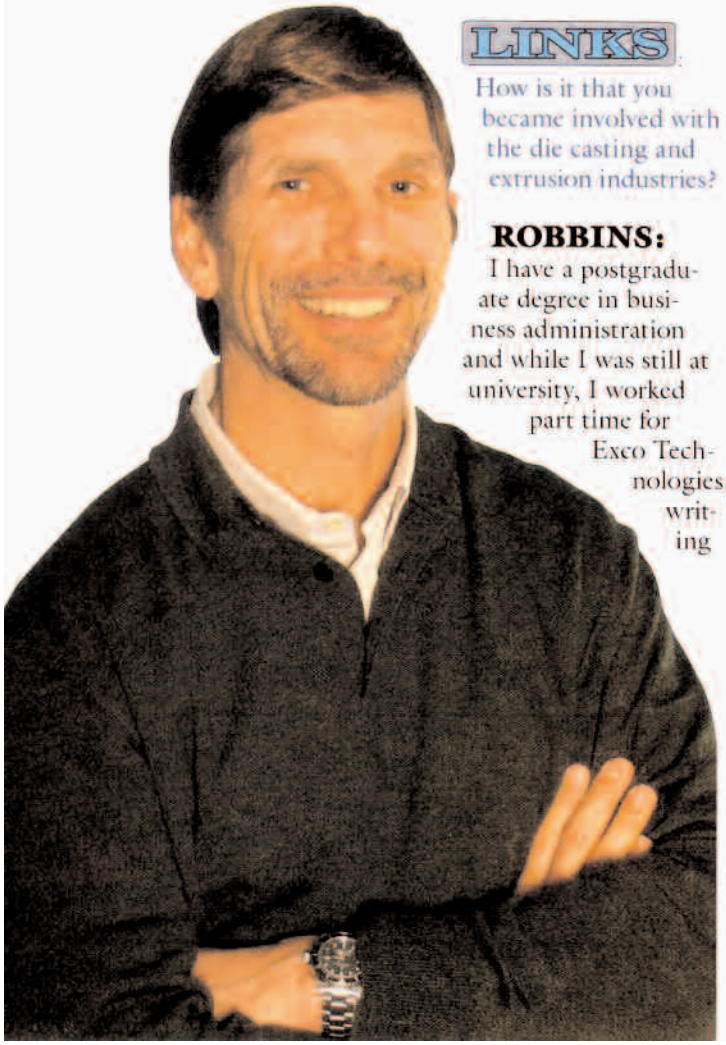
CASTOOL
Tooling Solutions
Toronto, Canada

Located on the outskirts of Toronto, Castool is a division of Exco Technologies, a multinational group of 15 companies and more than 2000 employees. Exco Technologies is a major technology provider serving the die cast, extrusion and automotive industries in the global market.

According to Castool General Manager Paul Robbins, "Our role is to design, build and support tooling and process related equipment used primarily by light metal die casters and extruders."

"Of course we benefit by being part of a parent company that includes such leading die cast mould builders as Exco Engineering, Edco and Extec, but Castool is very definitely a stand-alone operation. We have grown steadily in the past 15 years and now provide the most comprehensive line of world-class products and equipment currently available to the two industries we serve."

Recently LINKS talked with Robbins about his background, his management philosophy and the success of Castool.



LINKS: How is it that you became involved with the die casting and extrusion industries?

ROBBINS: I have a postgraduate degree in business administration and while I was still at university, I worked part time for Exco Technologies, writing CAM programs for their extrusion die division. After graduation, I joined Exco Tech in 1983 to run Canalloy, their steel division. I moved to Castool in 1987.

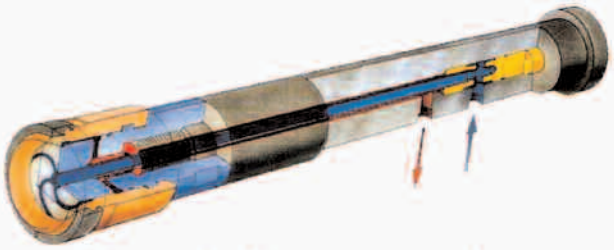
LINKS: Since then, I gather that there have been some major changes in Castool.

ROBBINS: Likely the biggest change over that time has been in the attitude of our employees. The perception that a customer has of any company depends to a large extent on the attitude of its employees at all levels. At Castool we adopted the motto, "Our success depends on the success of our customers." This may seem a pretty obvious statement and one that should be taken for granted, but industrial companies that are seriously customer-oriented are actually not all that common.

Secondly, "Anything that can be measured can be improved." Once everyone accepted that concept and became comfortable with it, we made a sincere commitment to ongoing improvement throughout the company. This had some surprising and positive results. For example, the mere fact of measuring and recording many things that hadn't been measured regularly before, seemed to almost guarantee immediate improvement.

LINKS: I imagine that this would certainly have an impact on both your productivity and the quality of your products.

ROBBINS: Well, Castool was the first tooling supplier in its field to have ISO9002 certification. Then, since some of our customers are second tier suppliers to the automotive industry, although we were not required to, Castool became the first tooling supplier to the two industries we are in, to achieve the considerably more stringent QS9000 certification.



Plunger rod with proprietary ring plunger

We have a special temperature-controlled calibration room where all measuring instruments are regularly cleaned and calibrated. It contains, for example, a computerized length measuring machine that has a guaranteed accuracy of one hundred thousandth of an inch. We also regularly test our inspectors, to be sure that their measuring techniques are consistent.

Quality is an interesting topic, because the market is now so competitive that quality is actually no longer a selling feature. Quality is not negotiable. It has to be a given. In fact, in promoting industrial products, the word "features" is increasingly being replaced by "benefits". What the customer today really wants to know is how your product will increase his profit. He wants the assurance of a measurable financial benefit.

LINKS: I have heard Castool referred to as a knowledge-based company. What exactly does that mean?

ROBBINS: A knowledge-based company is simply one that recognizes and profits from the fact that throughout the industrialized world we are now moving from an information economy into a knowledge-based economy. Let me explain:

Changing technology is driving the next wave of economic growth. To take advantage of that growth, we will have to apply not only the new technology, but also new thinking. But first, we should clearly understand the shifts in the economy from data to information to knowledge.

Data is the basic building block of both the information economy and the knowledge-based business. We collect data primarily in the form of numbers, words, sounds and images. When data is arranged into meaningful patterns, it becomes information. The importance of data as an economic factor first became apparent in the 1950s and 60s, when room-sized computers made it possible to collect, sort and store vast amounts of data. This then had to be programmed by users to produce information. With the advent of increasingly powerful, smaller and cheaper computers, as an economy we are now beginning the transition from information to knowledge. We can define knowledge as the productive and profitable use of information.

For a die caster, effective use of knowledge will have a positive impact on costs, cycle time, productivity and profit. Learning and education are obviously good for any company, but to be perfectly frank, the real point of knowledge-based strategy is to make more money.

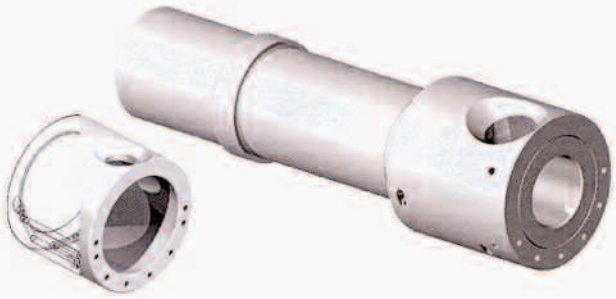
LINKS: How would we recognize a knowledge-based product?

ROBBINS: As well as being of considerable value to the user, typically, a knowledge-based product will be "smart". By smart, I mean that it will be electronically connected, not freestanding, so that its operation automatically changes with a changing need. Also, it will likely be customized for each particular installation. Finally, it will likely be easily upgradable

LINKS: Can you give me an example of a knowledge-based product made by Castool?

ROBBINS: The Castool temperature-controlled shot sleeve is a good example of a smart product. Together with the Allper plunger tip, it illustrates Castool's approach to a major problem in the cold chamber die casting of light metals.

For acceptable productivity, the plunger must pass through the shot sleeve quickly and smoothly. This can only happen if the shot sleeve is round and straight and also if the gap between the plunger tip and the sleeve always remains at about four thousandths of an inch. If at any time during the shot this gap exceeds four thou, the alloy is likely to penetrate the space and flash or



Shot sleeve with thermal control jacket

blowby can occur. This will inevitably cause excessive wear. If the gap becomes less than four thou, there is a danger of interference and inconsistent shot velocity. Scrap will result.

The problem is that when heated, metal expands. And a copper plunger tip expands at a much greater rate than the steel shot sleeve.

Castool's solution to this problem is to automatically control the temperature of the shot sleeve, thus making its ID more consistent during the shot.

The efficient heat transfer of the patented water-cooled plunger tip effectively restricts its thermal expansion. It also cools the biscuit much more quickly than a conventional plunger tip. This reduces the length of time that the mould remains closed and also allows a thicker biscuit. Even a few seconds reduction in a short cycle time will have an appreciable affect on productivity and profit.

In researching the flow of temperature through the sleeve during the shot, when upgrading our temperature controller, we used the finite element method. This required a computer to resolve more than two million mathematical equations, turning data into information. The computer modeling then converted information into knowledge.

LINKS: Where do you see your company in the coming years?

ROBBINS: The future for Castool looks good. Completing its line of products for die casters coincides with a growing market. The automotive industry wants to increase its use of light metals to reduce vehicle weight and fuel consumption... and most of the light metal now used by auto makers is die cast.
There has likely been more improvement in the technology of light metal die casting in the past 10 years, than in the previous 20. This is good for the industry and it is good for Castool.

LINKS: What advice would you give a die caster who wants to profit from the current movement toward a knowledge-based economy.

ROBBINS: I would suggest that he be constantly aware of the fact that providing the cheapest product that will do the job is often no longer enough. Today's buyer wants more value for his dollar. The die caster who can add the most value to the product he makes will get the business.

Many engineers who design parts to be die cast have no idea how large, how thin, how precise and how complex light metal castings can now be made with the aid of vacuum. For example, some components that have previously been made from two castings can now be redesigned into one. Parts that were machined after casting, can now be cast with the required close tolerances. Making walls thinner can reduce weight. Structural integrity can be improved and scrap reduced by eliminating porosity.

The number of ways to add value to his product is limited only by the imagination of the die caster, his knowledge of what now can be accomplished and his determination to succeed.