



A newsletter from The Da Vinci Institute, an international centre of excellence in the Management of Technology, Innovation and People (MOTIP) and from Technology Top 100, for people seeking to improve business performance through a greater understanding of technology management.

Tips is a news journal for people eager to know more about the management of technology, innovation and people.

It is intended to offer new insights to the fundamentals of managing technology and the human-technology interface.

It also seeks to share the lessons learned by enterprises who have benefited from managing technology innovatively and successfully.

Contributions and comments are therefore welcomed.

Please email them to the Tips production editor, Neville Barber, at [nabarber@mweb.co.za](mailto:nabarber@mweb.co.za).

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The Da Vinci Institute for Technology Management (Pty) Ltd  
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Registration Certificate No. 2004/HE07/003

AUGUST 2008

# tips

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# Forging a good idea into a tangible product



**Many good ideas sparked by braai-side bravado vapourise in the sobering light of dawn. Not the Butte Braai Tongs.**

The idea of braai tongs that illuminate food cooking on a braai won a South African Bureau of Standards DISA award for excellence in 2007.

The judges said the tongs were a 'very clever braai tool that involves cunning design' and gave them top honours in the Home and Office Ware category of last year's DISA awards.

The owners of the original idea, Todd Broome Utensils cc, having discussed the concept at many a braai, believed they had an idea that was marketable to sophisticated outdoor entertainers.

They founded Cape Town-based design company with the unconventional name of Dot Dot Dot XYZ, and began the design and development process.

The initial meeting between Todd Broom and XYZ laid the groundwork including the idea, non-disclosure agreements,

budget, timescales and potential market. The companies also arranged a braai - all in the cause of workshoping the idea - and lashed a small torch to a conventional pair of tongs as a prototype.

Early discussions on the market positioning of the tongs covered global trends, market reach, technologies, ergonomics, the user interface and economies of scale.

Then research began in earnest, not only on the tongs, but on the materials the target market would find acceptable.

Having scoured literature worldwide for ideas that could be used and finding little, XYZ evolved and patented the idea of placing the light between the blades of the tongs.

Many ideas were sketched and two-dimensional graphical representations interrogated, so designers could grasp how the product would look and work.

Next step was virtual prototyping, a process XYZ calls a mechanical design de-risking process. It's a computer-aided design analysis to ensure that the mass-produced product conforms to the design intent.

Then a foam prototype was made to get a feel for the ergonomics of the tongs in use.

Says Byron Qually, design director of XYZ:



"We cross-pollinated all the desirable points from each concept and came up with a final solution."

For example, one concept's form intuitively conveyed information to the user, probably operating in the dark, on how to hold the tongs and where to find the light's 'on' button.

Although the exterior product looked relatively simple, much time was spent on engineering its interior workings and selecting the most appropriate materials for its manufacture.

"This was important," says Qually, "as the tongs would be used in a demanding environment, probably at night with open flames, high temperature and acidic cooking ingredients which could attack the product.

"We also considered the chance that the user might not be sober and would need a straightforward operation."

Through various physical mock-ups, XYZ's engineers evaluated how much force a person could comfortably use to open and close the tongs, and translated the answer into a spring design concealed in the product's handle. To ensure the production plant could assemble the product easily, the tongs' stainless steel blades were designed to clip onto the handle from the outside.

Due to the high-end market at which the product was aimed, mechanical details such as clips, springs and screw points were designed to be invisible to the user,

ensuring a clean almost organic form.

The prototype was evaluated and minor refinements made to the design. Says Qually: "It's crucial to work through all the ideas at the early stages. The more time spent evaluating the process and techniques, the less rework required later. It would be expensive to remake a metal mould at a later stage, for example."

XYZ employs product designers alongside electro-mechanical, industrial and mechanical engineers and, through its collective 60 years experience, has in-depth knowledge of product development across industries.

"Our process includes conceptualisation of the product, the use of technology and finally the product itself. We usually start

The Butte Torch Tongs are made of polished stainless steel and incorporate a light to illuminate food being braaied in the dark. The light projects through the centre of two hinged blades and is activated by pressing the tongs against the body or any other surface.

This intelligent light source automatically switches off after 90 seconds. The light can be removed and the tongs washed. The movable parts are shrouded in matt moulded elastomer that produces an ergonomic fit in the user's hand. Use of on/off LEDs keeps power consumption low.

Richard Perez, operations director at XYZ says that taking an idea from conception through the design, development and manufacturing processes requires a multi-disciplinary approach with in-depth knowledge and a range of experienced skills.

"Some people with good ideas think the process can be handled by a designer, or an engineer, or a toolmaker. None of them can handle the process in isolation. It is important for designers and engineers to work together. Their expertise is complementary."

from the outside in, and then work from the inside out to make the product work. And throughout the process we need to ensure that the product is both aesthetically pleasing and technologically sound."