

# How to Build a Product that'll Outlast the Competition

Or, put another way, Why the Quality Justifies the Price



**I** guess you'd agree with this analysis: In fabricating a steel machine, if you can achieve high marks in the three most vital parameters, you're going to produce a more reliable product than those who get lower marks.

It seems to us that the three most important variables with hydraulic hammers, which are basically engaged with rock or concrete in a do-or-die battle for 'who breaks first', are these—  
—the quality and therefore the strength of the welds,  
—the precision of assembly. If you have one leg 2 cm shorter than the other, you're in for a lifetime of back problems,  
—fewer components mean fewer things to go wrong, and probably less wear.

We are, of course, taking it as a 'given' that the design can't be bettered. That seems reasonable in the case of Sandvik Rammer, since there are only two fundamental design principles embodied in all the hammers on the market, and Sandvik Rammer's acceptance has long been obvious from their leading market share.

And we're also assuming a high and consistent quality of raw materials.

## Finland is an Eye Opener

When we visited Scandinavia, a large question was exercising our minds, having recently come from China where we learned in depth about their low labour costs and were, frankly, pretty impressed with the organisation of their factories.

The question was, given Europe's high labour costs, how are their manufacturers dealing with the existing and growing competition from Asia?

The answer to this question turns out to lie within the three issues raised at the beginning. That became obvious, as we toured the Sandvik Rammer factory in Finland, where two impressions stood out. One was the lack of people to be seen. The other, that this is no normal steel fabricating plant full of noise, crashes and clangs—there was hardly any noise at all.

straight, especially on repetitive work, is a big ask. Obviously, some welds will be good, and others not-so-good. You might be able to visually pick out some inconsistencies, but it's more likely that the joint would show its faults by failing some time in the future.

On the other hand, a robotic weld will be shown by X-ray analysis to be totally consistent throughout its



## Robotic Welding offers a Great Deal More than Simple Labour Savings

I'm happy to confess a certain amount of ignorance on this point. I thought that robotic welding was all about replacing humans with robots, and reducing labour costs. Well, of course, it is. But that's only the start of the benefits, and possibly the least important.

Robotic welding also eliminates the frailties that come with the humans it replaces, especially if they had a heavy party the night before—or the skill shortage has thrust them into the front line before they're ready.

In any case, expecting someone to produce accurate welds for eight hours

length, and get right down into the heart of the joint the way it's supposed to. The end result—longevity.

Unlike motor vehicle production lines where welds are usually administered while the object moves past various stations, most of the European factories are set up so that the Mountain comes to Mohammed.

Their system is to transport to the static robot a tacked-up object from a jig, whether it be a relatively small hydraulic hammer or a huge truck chassis.

The input device is an intelligent racking system that knows the location of finished versus unfinished items. As one guy quipped, "This system works all night without



complaint, feeding raw material and removing finished products, largely unsupervised, and doesn't take holidays or sickies!" Clearly that sort of productivity goes a very long way towards countering low labour costs.

The robotic welder grasps and turns its target as it works, ensuring that it's working down into a horizontal joint wherever possible, rather than trying to beat gravity. Clearly, in many conventional production line scenarios, that's simply not feasible.

The current generation of robotic welding devices will often use multiple heads to perform two welds at once, at opposite sides of whatever it's fabricating, so that the heat of the opposite welds is self-neutralising, eliminating metal distortion. This reduces stress on the welds and increases their life expectancy.

In a further process, welds are automatically shot-blasted before painting, and this expensive process is well-proved to eliminate most of the starting points for stress cracks in welds. We didn't see one Chinese factory that had shot-blasting technology—all we saw was sand blasting.

### The Mechanical Dentist

That's my name for this most remarkable chap, encountered at the Sandvik Rammer factory and at Volvo and Dynapac factories in Sweden. He takes over, when the robotic welding station has done its work.

In his usual configuration, the Mechanical Dentist sits in a big box, three metres square or bigger, with drop-down glass panels on three sides, so you can see what he's up to.

Victims are fed to the dentist by the conveyors of the intelligent racking system. He takes a look over the latest

arrival, reads his ID to ensure that he gets the correct treatment, and then whips off to get his first drill from a chain-driven inventory of perhaps 120 or 140 different tools.

Scrutinised by a sideshow of lasers that measure distances and angles, the victim is then drilled, milled, honed, threaded and otherwise dealt with under incredibly close tolerances until he's spat out into the racking system and replaced by the next terrified candidate.

As you'd expect, the Mechanical Dentist has built-in technology to determine when his drills are getting blunt or his accuracy is compromised by any other issue. And he produces an 'as built' report that stays with the component for its lifetime.

### Fewer Components means Greater Reliability

It stands to reason that if a hammer can be designed with fewer components, then all other things being equal, it should deliver higher reliability.

In our view, Sandvik Rammer deserves more credit than it's so far received, for the remarkable design achievements embodied in its 'in' series, picture on our front cover.

Introduced world-wide at the Melbourne ACE show two years ago, this range of hammers not only looks like the sports car of industry with its uniquely smooth design, but is promoted as requiring no maintenance. Not just a 'reduced maintenance' product, but no maintenance at all.

The 'in' range has now been in service long enough to show that this is not an empty promise, and the outcome was achieved by a quite remarkable reduction of about thirty percent in the number of components.



### The Answer to the Asian Challenge

The Europeans, then, are confronting the Asian challenge not by getting roped into a price war, but by delivering superior quality and better design for a higher price.

That may not be significant to you, if you only have an occasional job to do. But if breaking rock or concrete is a core part of your business, obviously the greater reliability and longer life will translate directly into dollars and cents.