Interview

Markus Bruderer, Managing Director of BRUDERER AG: Test runs with our presses have revealed many a surprise.

Josef Hafner, Technical Manager of Series Production at BRUDERER: Some measurements have little or nothing to do with the punching presses.

Back to basics

How we can really compare high performance punching presses

(gk) Today modern measuring devices enable us to measure the smallest distances and paths, minimal changes in dimensions. Yet this vast range of measuring techniques hides many a danger, for not every measurement that can be taken is truly relevant in practice. This is especially the case with high performance punching presses which have extremely high demands on precision, tolerances and rigidity. Where quite often like is not compared with like. We asked MD Markus Bruderer and Josef Hafner, Technical Manager of Series Production, which criteria are really relevant when comparing one punching press with another.

As we continually strive towards increased productivity, it is the increased speed that is often the deciding factor. It's not surprising therefore that more and more manufacturers are trying to stake their claim in the high performance punching press market. So how does someone looking to buy a press know which press is best for him?

Hafner: It is important to stop and think about what the press is really required to do. Measuring technology in the 21st Century offers us so many opportunities that one tends to acquire measurement-related data using the simplest techniques and then re-interpret these in punching-technology terms. However, the development of complex progressive dies over the last few years has complicated this and it is not altogether right to abstract the process in this way. What we really should be doing is stamping with a punching tool and comparing the products that are produced.

Surely it is difficult for every customer to carry out a special test run?

Bruderer: It's not difficult at all, we do it all the time. When we presented the 2500 we had two customers who brought their own tools with them – no new tool therefore, but a tool that had already been running on another press producing parts. They even had the material with them. One particular customer from the USA even had just under 10 tons of material transported to Switzerland. We set up the press with the customer's tool and the material he supplied and carried out a test run under realistic and professional conditions.
The advantages of our design were immediately apparent to the customer: The cutting edges were considerably better due to the 4-point contact of the ram. Furthermore, because of our feed, we could run the press at higher speeds and because of the outstanding accuracy of the press, the electric motor lamination packs were of better quality, despite being produced

at twice the speed.
It was a similar story with 2 other tools we were testing, when carrying out test runs with the 2500 – we found we could at least double the speed whilst increasing the accuracy. That is the best proof that the press in question is superior to the press currently or previously in use. That is relevant for the customer. He's not interested in by how many µm a specific part will change when under load. Moreover it is what part quality he can produce at what speed that is important.

But not every prospective customer can pack his tool and material and head for Bruderer AG for a test run. Surely it's a question of capacity?

Bruderer: Sure, it's a question of capacity. However you do need to remember one thing: Particularly in the production of electric motor lamination packs, money is earned by buying steel in bulk, using good tools, which are not inexpensive, and the ability to run a press at high speed. If I can punch faster, more steel can be fed through, I can deliver more quickly and my press is ready for the next project more quickly. Furthermore, if the tool life can be increased by 30-40% this automatically means

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that for each tool 30-40% of the costs can be saved. This equation is fairly simple, but it always leads to the same result – the extra price you pay for our presses, which are more expensive than most competitors', pays for itself within just 2 years, approximately.

Surely you can't make a decision without any technical parameters or measurement values…..

Bruderer: That's correct. Initially a prospective customer can look at the parameters, which we also use to evaluate the quality and performance of a press, to assess whether or not the press is suitable for his requirements. When making comparisons, however, he should make sure that it is not just the press forces that are compared, but also the press and table dimensions. Only then is a meaningful comparison possible. Yet many measurement results that are used by other press manufacturers to make comparisons are correct as far as measuring technology is concerned – yet are totally irrelevant from a stamping technology point of view.

Markus Bruderer: One single test run is far more meaningful than the most extensive quality report. The productivity and life of a press is better demonstrated by the quantity and quality of the parts produced in a test run.

For example?

Hafner: An example used by many is the height of the press bolster plate: Often, quite correctly in technical terms, manufacturers tend to argue that due to the extra thickness, the rigidity of the bolster plate is 1.5 times greater than that of a competitor's. That sounds like quite a difference, but what does it actually mean in practice? I have taken the trouble and calculated it through in an example: when running under a full load, the dimensions on a centrally loaded BSTA 50 L will deviate by a total of 500 µm. The overall deviation on a press with reinforced bolster plate would be 491µm. This has no influence whatsoever on the stamping process itself – and

that's what counts.
By comparison the clamping plate is, by definition, merely the "interface" between the press and the tool, and is of secondary importance for stamping quality. The same applies for details like the distance between the pressure columns on the ram, dimension of the bolster drop-through hole, dimension and fixing of the guide pillars and many other features. Design features like these or statements like "our parallelism is 3 µm better" are not usually of any great importance in practice, and of no true interest to the customer, serving only to confuse him. Yet it remains to be proven that nearly all theses parameters do indeed have an influence on the cutting accuracy or precision of parts and are truly relevant in practice. What's more: All dynamic measurements – whether with or without tool – are not standardised in any way. This basically means that there is no one opinion shared by all press manufacturers. Some manufacturers prefer it this way, knowing that competitors could more easily reveal weaknesses on their presses, which, ironically, would be irrelevant anyway. Generally speaking, we do not advocate such comparisons as they have very little to do with the overall and complex process. Such measurements are merely a gross simplification of the punching process. Worse still: Some measurements have little or nothing at all to do with the stamping process: When measuring the bottom dead centre passage from stroke to stroke, the whole drive is subject to a tensile load pulling downwards. If running correctly, however, there is a pressure load on the ram. Any forces that occur when stamping – e.g. when coining at BDC or cutting above – are not taken into consideration.

Bruderer: I would just like to emphasise once more: A single test run is far more meaningful than the most extensive quality report. The productivity and life of a press is better demonstrated by the quantity and quality of the parts produced in a test run.

Are the differences established by doing so really so considerable?

Bruderer: Test runs on our presses have revealed many a surprise. One customer, who processed extremely difficult material, had to resharpen his tool approximately every 50.000 parts. We considered this to be more frequently than necessary, so we suggested a test run here in Frasnacht. The customer agreed and sent us the tool and enough material for 500.000 parts. We stamped all the parts without even the slightest sign that we needed to resharpen the tool, giving the customer an impressive demonstration of the high performance of our press. You wouldn't find something like that in a comparison table. Of course, this is an extreme example with a very difficult material, and yet it proves that our design is quite simply better. Anyone who doesn't believe this, and doesn't own a Bruderer [press], or would like us to carry out a test run is very welcome to visit us in Frasnacht.

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