

The modern way

Today's gunmaking methods are sophisticated, precise and efficient, which is why Longthorne believes if ever there was a Golden Age for gunsmithing, it is now

We were recently asked when we considered the Golden Age of gunmaking to be. Our answer was now, the present, as we have the skill, equipment and materials to improve upon the past.

One thing we can be sure of is that if CNC (computer numerical control) technology had been available in W.W. Greener's day, for example, it would have been utilised to its fullest potential, for the gunmakers of old were educated people and, as great tradesmen, used the best methods and materials available to them at the time. If these weren't available they designed and manufactured the machines themselves (Sir Joseph Whitworth 1857 being a classic example) – one only has to look at the prolific number of patents lodged around this period to see evidence of this.

Although at Longthorne we are able to make guns entirely by hand, by using CNC technology we can take out the donkey work, use stronger materials and be more consistent, especially with work requiring accuracy and precision, which in turn produces a better product. It also means that we can make all of our parts from billets of high specification steel instead of the forgings or castings frequently used in gunmaking; this

means we can also manufacture all parts in-house which allows us to control our quality.

Even gunmakers purporting to make guns entirely by hand today generally do so by buying in forgings or castings which can be investment casted or metal injection moulded. They probably also use barrel tubes produced by machine and some sort of mechanisation to process them, although it is usually less sophisticated than some of the modern and expensive CNC machinery available.

It takes at least equal skill (if not more) and several skill sets to be able to design and draw a product and then program and operate a CNC machine to achieve a perfect end result.

Designing any shotgun and bringing it to market is a complex process. In the first instance the parts have to be designed and then drawn on a computer CAD (computer-aided design) system, they then have to be programmed and FEA (finite element analysis) carried out, which involves testing theoretical loads to discover weak points prior to prototyping, something which modern manufacturing methods allow us to do. The prototypes then have to be made and field-tested, and it is only once this has been done and

approved that the parts are cleared for manufacture. But that's not the end of the story. They then have to be machined by a highly skilled engineer. It would be nice if the parts just plopped off a conveyor belt; but alas this requires some input – speeds, feeds, broken and worn tooling all have to be addressed.

Once we have our selection of component steel parts our gunmakers' skill comes in – similar skills to those used in toolmaking. There are always going to be some aspects of making a gun which can only be done by a human. Although all of our

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Despite significant advances in technology, there are always going to be tasks that only a human can do



Once the component parts have been put together, the gun is checked to ensure it operates flawlessly




components are made to exacting tolerances, when all the components come together the accumulation of tolerances can make each gun feel or react differently. As well as knowing where to place all the component parts to form a gun, our gunmaker has the ability to diagnose where and how to make the gun operate smoothly and flawlessly, knowing where to remove a little bit here, a little bit there. This can be as little as polishing off 10 microns or changing the direction of the surface finish of a sear to eliminate friction. This may seem like a minor task but it does make a difference. Spring tensions are also adjusted; this is normally done by adjusting the thickness of the V springs or resetting the shape of a wire loop spring.

The same principles apply to our stocks, to which the same care is applied. This is why we like to do a final fitting – just to make sure our client hasn't gained or lost weight since ordering the gun and to finely tune the gun to ensure that the point of aim is the point of impact. All of our guns are made to fit each individual client so they are all different.

When the gun is in the white and the stock has been fitted, we adjust the weight and balance (feel of the gun) and it is only when this has been done that it is ready for engraving and proofing. It is only because of the confidence we have in our guns that we are able to engrave prior to proofing; traditionally they would be engraved after proofing in case of failure.

So there you have it. A small insight into making shotguns in a modern era. It's hard to imagine that at some stage in the future the CNC machines we use now will be seen as old technology and will have been replaced by newer, more up-to-date equipment. ■



CNC machinery converts a design into coordinates on a graph, which are then used to control the movement of the cutter.

CONTACT DETAILS

To contact Longthorne Gunmakers:

■ Web: www.longthorneguns.com

■ Tel: 01772 811215

■ Email: admin@longthorneguns.com

■ You can also follow them on Facebook and Twitter: @longthorneguns