

LSM 300 – The next generation of laser welding machines

The LSM 240 is a very successful laser welding machine. With more than 100 units in the field the machine has become the standard of the diamond tool industry. With the experience gained during the last 10 years and with the feedback of the customers, Dr. Fritsch was able to make a lot of minor improvements.

However, constant improvements can only be implemented to a certain extent. Therefore it was decided to redesign the machine to make some big improvements instead of many small ones.

The major distinctions between the LSM 240 and the new LSM 300 laser welder are its speed and "intelligence": The LSM 300 is about 30 - 35 % faster while running normal blades, drop segment blades are even faster. This was possible by using a new, faster controller, faster servo motors and by changing the blade loading unit from pneumatic drive to electric drive.

The automatic blade loader can be adjusted in speed according to the weight of the blades and thus uses the optimum speed to transport the blade safely. As the demand for larger blades increased the blade loader was enlarged to handle blades up to 800 mm in diameter.

The set-up time is reduced by an estimated 25% by using an improved blade clamping unit with a quick-change system, by adjusting the segment magazines without tools and by using an improved software with supplementary functions.

New measuring sequences have been introduced. It is now possible to measure bigger blades at several positions before welding to make sure that the roundness of the steel centres is sufficient. If necessary the machine will adjust the welding position automatically to ensure best welding quality.

A further innovation is the measurement of the drop segment lands. The cut-outs of some steel centres for the drop segments are not very precise and were always a potential quality problem in the past. The LSM 300 is able to optionally measure the drop segment land at two points and correct the welding position accordingly.

The automatic blade measuring system has also been improved. The former fork light barrier has been replaced by a state-of-the-art reflective light switch using laser technology. That makes the measuring sequence much faster.



Another highlight is the possibility to use other laser sources than the well known CO₂ lasers.

Modern fibre lasers which belong to the family of solid state lasers offer much better operating costs than CO₂ lasers.

Generally it can be said that a CO₂ laser has a lower investment cost while the cost of operating the laser source is much in favour of the fibre laser. Lower power consumption, lower service cost and no need for laser gas reduce the running cost up to 20%.

As the solid state lasers work at a shorter wave length, more safety precautions have to be provided.

The LSM 300 is equipped with a new mirror optic which is designed for CO₂ lasers as well as fibre lasers. This gives the diamond tool producer the possibility to use his existing laser source and switch to a more cost effective model whenever he wishes.

The LSM 300 will be officially introduced during the Stone+tec trade fair in Nuremberg / Germany (May 20 - 23, 2009) at the Dr. Fritsch booth 7-212, hall 7. ♦

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