

Monforts 'RNC 400 Laserturn'

## Monforts signs cooperation contract on Laserturn technology with Fraunhofer IPT

**Mönchengladbach, September 2013 – The hybrid machine tool 'RNC 400 Laserturn' from Monforts combines traditional turning with laser machining. For example, this allows workpieces to be soft turned, hardened and hard turned in a single mount. This saves costs and improves quality. With a view to commercial exploitation of this patent pending technology Monforts signed a cooperation contract at EMO 2013 with the Fraunhofer IPT, based in Aix-la-Chapelle.**

Wear-protected parts are normally machined in several steps and on different machines: soft machining, hardening/coating and hard machining. Transferring parts between machines means long throughput times and logistic complexity. However, the market needs shorter delivery times - despite parts becoming ever complexer and a multitude of options and decreasing batch sizes. The long-established mechanical engineering company based in Mönchengladbach can now offer a series lathe, the 'RNC 400 Laserturn' which is also fitted with a laser and where parts can be hardened, alloyed or overlay welded in the machine before being finish turned. For example, the laser can harden the bearing seats for a drive shaft locally, followed by final hard machining in a single clamping. The application of laser turning technology reduces set-up, transport and idle times. The process also benefits from the exceptional stability and damping of the Monforts machines that are fitted with a hydrostatically mounted Z axis - an unbeatable advantage in hard and precision machining.

But the laser can do more and opens up completely new applications for turning: laser-supported chip removal of sintered ceramic materials such as silicon nitride. Previously this required a grinding process but this new process offers advantages, particularly when machining

25 contours. In this process the laser destabilises the material so that chips can be removed in a targeted manner with very little wear. For example, silicon nitride bearing inserts can be produced by bar machining sintered rod blanks with a surface roughness of  $R_a = 0.2 \mu\text{m}$ .

30 The beam is uncoupled by machining heads mounted on the tool turret with standardised, commercially available VDI 40 interfaces - protected against chips and cooling lubricants in a readily usable process. In addition, the laser system is fully integrated in the machine tool control system. This means that only one device, namely, the NC control system of the machine - has to be operated. Therefore parts-specific programs can be generated and adapted easily. No special knowledge of laser technology is required of the machine operator. It can even be retrofitted and integrated in current turning centre.

35 The market maturity of this hybrid machine is the result of many years of development work in the projects 'KombiMasch' (BMBF - German Ministry of Education and Research) and 'FlexProduCer' (Innonet). The result was a machine ready for use and a joint application for patent for the laser tool system. At the EMO show in Han-  
40 nover Monforts signed a cooperation contract with the Fraunhofer IPT for the commercial exploitation of this technology.

(Text length: 3245 characters, we would be pleased to receive a specimen copy)

(Captions:)

Hybrid machining with laser: the 'RNC 400 Laserturn' combines turning and hardening in one machine.

Lasers as everyday tools in the 'RNC 400 Laserturn': The beam guidance is protected in the tool turret (a Monforts/IPT patent), optical tools are located next to the machining tools with VDI 40 interfaces.

Hard turning of the hardening seats for bearings and shaft seals: Since workpieces do not have to be re-clamped after hardening, production accuracy benefits.

The laser heads for different machining scenarios are mounted in the same standard VDI 40 tool holders as conventional cutting tools - no special knowledge of laser technology is required.

Photos: Monforts

Monforts Werkzeugmaschinen GmbH manufactures a comprehensive range of high performance CNC turning centres with various configuration options for machining with sub spindles or 4 axes and flexible turning and milling centres with 5 axis machining. A special feature of all machines is the hydrostatic guide with a 10 year warranty on wear. Almost all modern machining processes can be performed on Monforts turning centres.

For further information please contact:

A. Monforts Werkzeugmaschinen GmbH, Prof. Dr. Dominic Deutges, Schwalmstrasse 301, 41238 Mönchengladbach, Tel.: 02161-9461-0, [deutges@monforts-wzm.de](mailto:deutges@monforts-wzm.de), [www.monforts-wzm.de](http://www.monforts-wzm.de)