

PRESS RELEASE

From Sylke Becker
Telephone +49 69 756081-33
Telefax +49 69 756081-11
Email s.becker@vdw.de

Safety of standard PLC control validated yet again **“VDW Project of the Year” accolade awarded for outstanding study**

Hanover, 22 September 2017. – *As part of the Safety Day at the EMO Hannover 2017, the VDW-Research Institute, the research community of the VDW (German Machine Tool Builders' Association), awarded the prize for the “Project of the Year” yesterday for the third time, thus paying due tribute to outstanding research projects conducted by production-engineering academics in order to close knowledge gaps in regard to issues concerning certain specifics of machine tools, plus production technology and engineering.*

The winner of this year's prize is Dipl.-Ing. Nika Nowizki working for the Institute for Machine Components (IMA) of the University of Stuttgart, who in her study examined the field-evidenced reliability of automatic multi-spindle lathes from the Index company, with a view to ascertain the dependability of the ‘workpiece clamping’ safety function, which is actuated by means of a standard programmable logic control (PLC). “The characteristic reliability measures determined in the statistical analysis of the field data obtained are in some cases significantly higher even than those stipulated in the relevant standard,” reports Nika Nowizki.

Tightening the focus on machine safety

“The Safety Day at the EMO Hannover is a very good opportunity to raise public awareness for the highly important field of machine tool safety,” emphasises Dr. Alexander Broos, in charge of research and engineering at the VDW, the organiser of the EMO Hannover.

“We are particularly gratified to be able to address an international community at this year’s fair. That’s because proof of machine safety in a European context also concerns all those companies importing machines to Europe.”

Providing proof of machine tool safety is a relatively difficult process, because under statistical aspects hazardous scenarios are in fact relatively rare, but if they do occur they may have fatal effects. For example: if the safety function of workpiece clamping fails, it is possible that a “workpiece weighing several kilograms will be catapulted out of the clamping system at high rotational speed and may destroy the machine or even put people’s lives at risk,” to quote Nika Nowizki.

No accidents in more than 93 million operating hours

Many lathes (including their safety functions) are controlled by means of standard PLCs from prestigious manufacturers of control systems, some of which were installed as a standard feature even before the ISO 13849-1 safety standard was introduced about ten years ago. Machine tool manufacturers still want to work with this type of control system today, because it has given reliable service in the field. One important foundation for this field-proven dependability is the cascading of safety measures in the product safety standards, in this case the ISO 23125 Lathe Safety Standard, which has for many years now specified the standard for all important details of the safety functions, plus a sophisticated operating-mode system which in the case involved here is accommodated in a completely enclosed, automatic machine.

“Both manufacturers and users have hitherto always felt that the machines built to standard are very safe – without any scientific evidence to that effect,” says Nika Nowizki. “And now it’s more than just a feeling. We can provide statistically corroborated evidence confirming that the workpiece clamping function implemented with the standard PLC on the lathes examined complies with the stipulations laid down in the safety standards ISO 23125 and ISO 13849-1, and under certain circumstances even outperforms these.”

In her study, Nika Nowizki had examined the running times of 578 multi-spindle lathes with a total of 3,951 spindles. The machines were controlled with a standard PLC of identical type. The mechanical engineer analysed data reaching back as far as 1992 and her estimates covered accumulated operating hours for the machines examined of at the very least over 93 million, during which not a single safety-relevant accident had happened. The performance levels (PLs) rate a safety function's contribution towards risk reduction. The value(s) stipulated in ISO 23125 of PL = b, and PL = c for workpiece clamping, were unambiguously met in this study.

“This important finding, meaning proof of field-proven reliability for the current state of the art of workpiece clamping on lathes, should be taken into due account during the most recently initiated revision of the ISO 23125 standard,” adds Heinrich Mödden, consultant for machine safety in the VDW. “We are also taking this opportunity to issue an invitation to work on this revised standard. Of the most important global producers of lathes, last time it was mainly manufacturers from Japan and Germany who got involved. But also other other major lathe-producing countries such as China and Korea should become active.”

Comparable studies, says Nika Nowizki, are also possible with other machine tools. And there are already specific plans ongoing to conduct them. At the beginning of next year, the Institute for Machine Elements at the German Federation of Industrial Research Associations (AiF) will submit an application for an even larger project with different types of machine.

It should also be mentioned here that a VDMA Position Paper on workpiece clamping was presented on the EMO Safety Day, which for the first time laid down regulations for responsible handling of actuator-driven workpiece clamping devices at component suppliers, machinery manufacturers and operators. Because despite the exemplarily evidenced high level of control-system reliability, the safety of workpiece clamping in an operational environment remains an important issue, e.g. when use for the intended purpose and the maintenance of clamping devices are involved.

Author: Gerda Kneifel, Press and Public Relations, VDW

Photo:

Photo (from left to right): Sven Staiger, Index-Werke, Esslingen, Nika Nowizki, Institut für Maschinenelemente (IMA), University Stuttgart, Dr. Alexander Broos, Head of Research and Technology, Source: Rainer Jensen

Background

The VDW-Research Institute

The VDW-Research Institute, as a research community, synergises the needs of the VDW's member firms and other interested companies. It thus organises application-driven, pre-competitive shared research for the German machine tool industry. In eight working groups, topics are defined, project funding acquired, research orders placed, and research results edited. In addition, the VDW-Research Institute also handles tasks involving project management and controlling.

EMO Hannover 2017 – the world's premier trade fair for the metalworking sector

From 18 to 23 September 2017, international manufacturers of production technology will be spotlighting "Connecting systems for intelligent production" at the EMO Hannover 2017. The world's premier trade fair for the metalworking industry will be showcasing the entire bandwidth of today's most sophisticated metalworking technology, which is the heart of every industrial production process. The fair will be presenting the latest machines, plus efficient technical solutions, product-supportive services, sustainability in the production process, and much, much more. The principal focus of the EMO Hannover is on metal-cutting and forming machine tools, production systems, high-precision tools, automated material flows, computer technology, industrial electronics and accessories. The trade visitors to the EMO come from all major sectors of industry, such as machinery and plant manufacturers, the automotive industry and its component suppliers, the aerospace sector, precision mechanics and optics, shipbuilding, medical technology, tool and die manufacture, steel and lightweight construction. The EMO Hannover is the world's most important international meeting point for production technology specialists from all over the planet. In 2013, the fair attracted more than 2,130 exhibitors, and around 143,000 trade visitors from more than 100 different countries. EMO is a registered trademark of the European Association of the Machine Tool Industries CECIMO.

You will find texts and images relating to the EMO Hannover 2017 on the internet at:
www.emo-hannover.de/de/presse/pressemitteilungen/pressemitteilungen/pressemitteilungen.xhtml
You can also follow the EMO Hannover using our social media channels



http://twitter.com/EMO_HANNOVER



<https://de.industryarena.com/emo-hannover>



<http://facebook.com/EMOHannover>



<http://www.youtube.com/metaltradefair>