smart analytics project – artificial intelligence for innovation in the metal and plastic processing industry

KiKaRo – AI-based camera control for robots used to load highly reflective parts into CNC machines

(Stuttgart) – Stuttgart-based SHERPA Robotics GmbH is planning to develop a fully automated, AI-based camera system for loading CNC machines in the metal and plastics processing industry. SMEs are particularly likely to benefit from this development, since these companies primarily deal with batch sizes of between 1 and 100, with frequent workpiece changes. This new AI-based automated system reduces the changeover time and, therefore, the working time involved, avoids operator errors made when the robot cell is being programmed, and eliminates the costs associated with conventional rotary tables and lifting devices. "KiKaRo" is the sixth project associated with the smart analytics cooperation network to be funded by the Central Innovation Programme for SMEs (ZIM) run by the German Federal Ministry for Economic Affairs and Climate Action (BMWK).

Small manufacturing companies in particular face the problem of small batch sizes with frequently changing parts. Up until now, special grid plates that have been customised for each blank have been used to feed the processing machines. The blanks are placed on these grid plates so the robot can follow the fixed grid pattern as it retrieves blanks. There is a huge amount of work involved in producing a customised grid plate for each blank and training the robot to follow a new grid pattern. The time-consuming changeovers and high costs involved have a direct impact on a business's competitiveness and make the system unappealing to many users.

In the future, the AI-controlled camera solution developed by SHERPA Robotics GmbH in Stuttgart will enable machine operators to supply blanks to a processing station by laying them out in any position on tables, pallets or in boxes, and then start

the loading process. The loading system detects the parts automatically, calculates the correct coordinates and gripping points, and places the parts in the machine in the optimum position. This solution optimises the process and enhances efficiency and flexibility significantly.

As camera solutions often cost more than the robot and are therefore too expensive for SMEs, SHERPA Robotics develops innovative camera systems that take account of the specific needs of SMEs. Mid-sized customers in Germany are already using these systems successfully.

This new AI-based solution also resolves a particular technical challenge that has so far proved problematic for camera systems – the handling of highly reflective component surfaces. Besides preventing operator errors and reducing both changeover time and the working time involved for users, this system also makes a key contribution to quality assurance. Consequently, camera-based robotics will finally make both technological and economic sense for small companies, too.

As part of the smart analytics cooperation network, the "KiKaRo" project is being funded by the Central Innovation Programme for SMEs (ZIM) run by the German Federal Ministry for Economic Affairs and Climate Action (BMWK).

Interested companies can get in touch with BioRegio STERN Management GmbH by sending an email to info@bioregio-stern.de or phoning +49 711-870354-0.

About smart analytics
The Central Innovation Programme for SMEs (ZIM) run by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) is funding an international cooperation network – smart analytics – for the development of intelligent and innovative analytical methods.
BioRegio STERN Management GmbH is coordinating the international smart analytics ZIM network in Germany. The project is being funded by the BMWK and includes 32 partners from Europe. As part of the project, the project partners are being given targeted support so they can submit applications for research and development to ZIM.

About SHERPA Robotics GmbH
SHERPA Robotics is the market leader for camera-controlled automation of CNC machines. This Stuttgart-based company develops and manufactures industrial robot

cells for small and medium-sized production batches. Its unique combination of a 3D camera and laser technology is revolutionising the set-up of new production jobs – and the system couldn't be easier to operate. Machine operators with no robotics expertise can automate repetitive, unappealing tasks with ease. The company's mission is to boost its customers' competitiveness – with customers ranging from SMEs in the metal and plastic manufacturing sector to corporate groups such as SIEMENS and BoschRexroth. You can find more information about the company at www.sherpa-robotics.com/en/.

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About BioRegio STERN Management GmbH:
BioRegio STERN Management GmbH promotes economic development in the life sciences industry, helping to strengthen the region as a business location by supporting innovations and start-up companies in the public interest. It is the main point of contact for company founders and entrepreneurs in the Stuttgart and Neckar-Alb regions, including the cities of Tübingen and Reutlingen.
The STERN BioRegion is one of the largest and most successful bioregions in Germany. Its unique selling points include a mix of biotech and medtech companies that is outstanding in Germany and regional clusters in the fields of automation technology and mechanical and plant engineering.

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