

A Korean company is looking for partners to transfer its magnetic flux-controlling technology under License agreement

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RICHIEDI MAGGIORI INFORMAZIONI

A Korean company is now looking for technology-transferring partners to commercialize its magnetic flux-controlling technology. The technology helps hold or detach a magnetic body through controlling magnetic force with the arrangement of the permanent magnet rotating freely with a coil. It helps solve the problems left with EPM (electro permanent magnet). Manufacturers of automobile components, electromagnetic locks, deadbolt, safety equipment etc are sought for license agreements.

Background of work-holding technology As a key role in automated process of manufacturing facilities, work-holding technology is to hold and lift the parts securely using unknown work holders. These work holders help improve the efficiency of production by creating smooth operational process and helping facilitate quick transitions from one work station to another. Magnetic holding/lifting devices hold/ attach magnetic objects on a workbench through strong magnetic force generated by the permanent magnet. The objects can be detached when the devices control and stop the magnetic flow from the permanent magnet. ***EPM*** Currently, EPM (Electro Permanent Magnet) developed in 1980 is mainly used as work holders such as internal device attached to mould clamping of injection machine, mould clamping of press machine, chuck of factory machine, and etc. EPM magnetises and holds alnico magnet with high current magnetic field. Alnico magnet controls Nd magnet's flux flow path by magnetising N-S and S-N at high power (~ 10 seconds). Here are some problems of EPM as below. 1) As a controlling magnet, alnico magnet coercive force is about ¼ of Nd. 2) EPM limits holding force, magnetic circuit structure, size and layout due to alnico's placement. 3) The hysteresis curve requires control of power supply fluctuations when coil heating and ambient temperature rise. 4) As EPM magnetises alnico is with high current magnetic field, it is necessary to remove holding object and module's residue current. 5) EPM requires many devices such as power supply and wire, UPS (Uninterruptible Power Supplies), residual eliminator, cooling, controller. ***New magnetic flux-controlling technology*** Since 2008, the Korean company has focused on the development of work-holding technology. In 2019, the company originally developed magnetic flux-controlling technology which enables the devices to hold and detach objectives by controlling magnetic flux path with DC (small). In other words, this technology helps hold or detach a magnetic body through controlling magnetic force with the arrangement of the permanent magnet rotating freely with a coil. The detailed concept of the magnetic flux-controlling technology is as below. 1) Only Nd magnets with high coercivity are used in this technology 2) Possible to implement various magnetic circuits such as single sided holding, double sided holding, optimization, module array, and etc. 3) Easy to control instantaneous (1 second) magnetic flux flow with low DC current magnetic field 4) 100% holding and 0% release control (no instability) ***Applications of magnetic flux-controlling technology*** The Korean company has total around 42 patents of this technology in Korea, US, Japan, China and EU. This technology has been applied to following areas: - Steel industry: technology transfer agreement including R&D for steel lifting - Semiconductor: R&D collaboration for clamping on Probe station - Automobile: R&D collaboration for autonomous car assembly (technology transfer is scheduled in 2021) - OLED (Organic Light Emitting Diode): technology transfer for manufacturing process - Machinery applications: technology transfer or R&D for

automation, locks, chucks, clamps, magnetic drills, grippers and robot hold In addition to, it can be applied into aero-space industry like space docking, spacecraft hatch, spacesuits, and etc. It can also be applied into train industry like filter (iron filings), coupling device, and etc. The Korean company now is planning to commercialize its magnetic flux-controlling technology under license agreement. Any companies within above-mentioned industries are considered.

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