

## MAGNETIC ACTUATOR CONCEPTION FOR MEDICAL INJECTION

### PROJECT OBJECTIVE

The FluMIn3 project, coordinated by Eveon, a Grenoble-based start-up, deals with a new generation of medical injection device, miniaturized and automated, suitable for any type of injection : intradermal, subcutaneous or intramuscular. The aim is to develop a smart syringe that can be easily used by people not belonging to the medical staff, to achieve safe injections, micro-doses of the product, sometimes very expensive, such as in the case of treatment of some cancers or auto-immune diseases.

In order to provide a genuine solution to the accidental needle stick injuries that may occur during injection administration, the needle stick of this innovative Injection Medical Device (IMD) is automated and retractable, invisible and unreachable. The needle penetrates to the desired depth level only when the device is in contact with the skin. In order to do that, non invasive tissue sensors detect and analyze the tissues. Thus, they enable needle penetration into the right skin area and the injection of the right dose. Handling becomes extremely easy. Finally, a MEMS micro-pump, based on the "wafer level integration" technology, accurately sucks up and injects very small volumes ranging from a micron to several milliliters.

### CEDRAT TECHNOLOGIES CONTRIBUTION

In this frame, CEDRAT TECHNOLOGIES is involved in the actuator conception used for the micro-pump's actuation. Selected in this project, for its technical know-how and innovation capabilities, CEDRAT TECHNOLOGIES is able to provide completely customised solutions. Following Eveon's specifications, a micro actuator has been developed from the new patented magnetic technology **MICA (Moving Iron Controllable Actuator)** to produce requested forces in the desired compactness. The  $\mu$ MICA keeps a good dynamic (10Hz-50Hz) with a weak mobile mass and no force losses.



Fig1: Innovative Injection medical Device - Eveon



Fig2:  $\mu$ MICA (Moving Iron Controllable Actuator) CTEC

NOTE	UNIT	VALUE
STROKE	400	$\mu$ M
PEAK FORCE	20	N
FREQUENCY	10 - 50	Hz
COPPER LOSSES	<5	W

Tab1: Characteristics of  $\mu$ MICA actuator



Co-financement:



For more information, please contact:

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