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## OBJECTIVES

CEDRAT TECHNOLOGIES develops customised ElectroMagnetic Actuators, which are dedicated to customer's specific applications when off the shelves standard products are not suitable. They cover a wide spectrum of applications and markets such as industry, automotive (for example, e-Lift 3 project with PSA), air & space, medtec, etc.

Fig. 1: Valve ElectroMagnet Actuator developed for the e-Lift3 project

## PRESENTATION

CEDRAT TECHNOLOGIES's customised Solenoid Actuators are designed to be:

- Reliable since the coils are located at the fixed part of the actuator and the mobile part is made of iron
- Robust (simple parts, robust interface, adapted guiding)
- Compatible with severe environments (high temperature, vacuum, etc)
- Mass production-ready

Fig. 2: e-Lift3 ElectroMagnetic Actuators integrated in a 3-cylinder thermal engine

## ADVANTAGES

- High acceleration
- High force density
- Easy integration
- Easy to manufacture

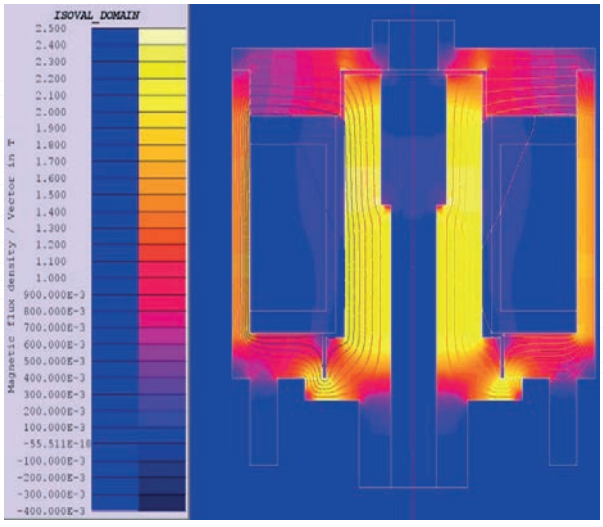


Fig. 4: 2D model of an ElectroMagnetic Actuator using the Flux software

Fig. 3: CTEC's winding machine

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## VERSATILITY

CEDRAT TECHNOLOGIES's customised electromagnets have been used in different ranges of:

- stroke: 1mm to 6.6mm
- force: 5N to 120N

Fig. 5: Valve ElectroMagnetic Actuator 1, developed for a fluidic application

## EXAMPLES OF ACTUATORS PERFORMANCES

This table summarizes the main characteristics of ElectroMagnetic Actuators already designed and manufactured by CTEC.

| | UNIT | VALVE ELECTROMAGNETIC ACTUATOR 1 | VALVE ELECTROMAGNETIC ACTUATOR 2 | UNLOCKING ELECTROMAGNETIC ACTUATOR | BRUCE PIN-PULLER |
|---|---|---|---|---|---|
| Stroke | mm | 1.8 | 1.7 | 3 | 6.6 |
| Magnetic Force | N | 120 | 30 | 5 | 40 |
| Mobile mass | g | 100 | 8 | 21 | 8 |
| Size | mm | Ø41<br>Depth 86 | Ø20<br>Depth 23 | Ø32<br>Depth 23 | Ø32<br>Depth 57 |
| Application | | Fluidic | Thermal engine | Space (ECSS Compliant) | Space (ECSS Compliant) |

## APPLICATIONS

- Valve actuation
- Locking and unlocking
- Pin-puller
- Contactor

Fig. 6: Valve ElectroMagnet Actuator developed for the e-Lift3 project

Fig. 7: BRUCE Pin-Puller

Fig. 8: Space certified Unlocking ElectroMagnet Actuator