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.

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

ADVANTAGES

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

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

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

Fig. 3: CTEC’s winding machine

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

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

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

EXAMPLES OF ACTUATORS PERFORMANCES

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

<table>
<thead>
<tr>
<th>UNIT</th>
<th>VALVE ELECTROMAGNETIC ACTUATOR 1</th>
<th>VALVE ELECTROMAGNETIC ACTUATOR 2</th>
<th>UNLOCKING ELECTROMAGNETIC ACTUATOR</th>
<th>BRUCE PIN-PULLER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>mm</td>
<td>1.8</td>
<td>1.7</td>
<td>3</td>
</tr>
<tr>
<td>Magnetic Force</td>
<td>N</td>
<td>120</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>Mobile mass</td>
<td>g</td>
<td>100</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>Size</td>
<td>mm</td>
<td>Ø41 Depth 86</td>
<td>Ø20 Depth 23</td>
<td>Ø32 Depth 23</td>
</tr>
<tr>
<td>Application</td>
<td>Fluidic</td>
<td>Thermal engine</td>
<td>Space (ECSS Compliant)</td>
<td>Space (ECSS Compliant)</td>
</tr>
</tbody>
</table>

APPLICATIONS

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