STUDENT COMPETITION

in Mechanical Engineering, Construction, Mechatronics and Electrical Engineering for general and technical universities as well as universities of applied sciences

TOPIC:

Mechatronic retaining and releasing system

Locking retainer with integrated damper

INNOVACE2018

START DATE
1 March 2018

DEADLINE
for competition documents:
31 August 2018

TRANSFER
E-mail: innovace@ace-int.eu
Mail: Attn. André Weßling

AWARDS CEREMONY:
October 2018

QUESTIONS
We will be taking questions in a web conference on 14 March, 5 PM. Please send us an e-mail to register for attendance by 12 March.

INVITATION

We will be accepting draft designs with technical documentation on function and feasibility (Part A) and a communication and control principle for interaction between locking retainer with internal sensors and smartphone (Part B).

Said element should be a damped locking retainer mechanism to be released using an external control device (smartphone). The type of lock actuation mechanism may be mechanical, electrical, hydraulic, or any combination thereof. The only specification on the shape and size of male and female combination is a general condition supporting a connection between rod and male at 5 mm in diameter. The retainer must be able to communicate its open or closed state to a smartphone. The mechanism must be able to hold double the weight of 10 kg with the receptacle (male) suspended in the retainer (female).

More than 30% of the kinetic energy should be absorbed in the retardation or damping mechanism in the receptacle (male). The mass should be guided into the receptacle without oblique impact. The damper should consist of a simple polymer buffer cut out from SLAB. Technicians at ACE will be pleased to assist in selecting and documenting the damping element.

PARTICIPANTS

Applicants and applicant teams must register once by e-mail to innovace@ace-int.eu at the beginning of processing.

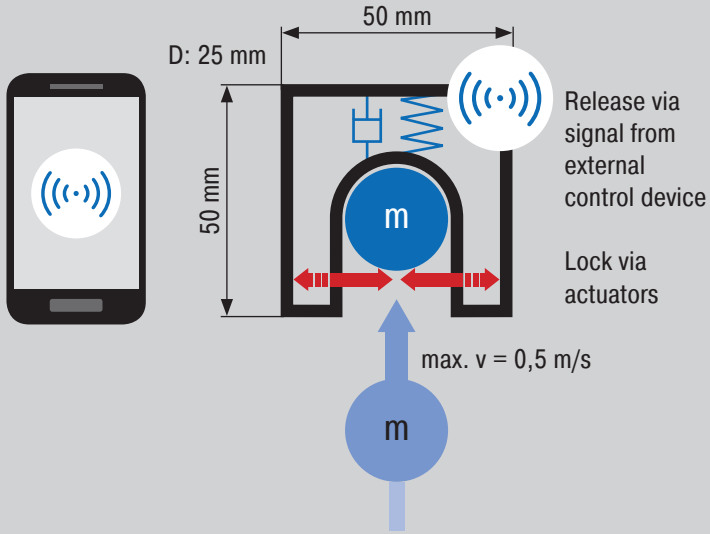
The chair, lecturer or professor accompanying the candidate or candidate team must be named.

PRIZE

The winning team or individual will receive a cash prize of € 5,000, and the accompanying chair of the winning team will receive additional support at € 2,000.

TECHNICAL SPECIFICATIONS

Overall dimensions:	50 x 50 x 25 mm
Kinetic energy:	E_{kin} = 1,25 Nm
Weight:	10 kg (suspended on receptacle)
Impact speed:	max. 0.5 m/s
Power supply:	smallest battery possible
Materials:	any materials or smartphone types may be used
Connection:	male at hanging weight over rod of 5 mm diameter



EVALUATION CRITERIA

Part A: **Design 1** (retainer with male/female design): 30 points

Design 2 (Locking and release system including a basic design for actuators and sensors): 30 points

Function 3 (energy supply): 10 points

Part B: Communications design: 30 points

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