



TEAM DESIGN

EBEC Challenge 2018.

Zagreb, 14.3.2018.

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1. INTRODUCTION

Welcome dear engineers!

Congratulations, you have been chosen among huge amount of applications! You have been chosen to participate in category Team Design. You are prepared mentally and physically to wrap up your sleeves because you have some serious work to do.

Your answers showed us that you are creative, intelligent and now you have the opportunity to prove it. Show us that you handle physics, that your math is better than Pitagora and you are more precise than Swiss.

Team Design is a competition where participants put their practical knowledge, creativity and skills to work in order to build a functional physical prototype in limited time frame and with limited amount of materials. Team Design task **was designed and successfully tested** by the members of student organisation BEST Zagreb.



The topic of Team Design task was **top secret** until last moment and it had been known only to members of T.O.P.I.C. Task Force. The task will lead the most creative ones and the most skillfull ones to the victory, respectively, to the regional competition that will be held in Niš. It is important to combine functionality, appearance and profitability of the prototype that is going to be

built. In next chapters you can find description of the task, the method of assessment and available tools for usage during competition.

GOOD LUCK WITH MAKING THE PROTOTYPE! LET THE BEST TEAM WIN!

2. INA

It is our honour to present you this year's partner – **INA (Industrija nafte, d.d.)!** INA, d.d. is a medium-sized European oil company with a leading role in Croatian oil business and a strong position in the region. INA Group is comprised of several companies completely or partially owned by INA, d.d.

INA-Industrija nafte, d.d. (INA, d.d.) is a medium-sized European oil company. INA Group has leading role in Croatian oil business and a strong position in the region in the oil and gas exploration and production, oil processing, and oil and oil products distribution activities.

INA was established on January 1, 1964 through the merger of Naftaplin (company for oil and gas exploration and production) with the refineries in Rijeka and Sisak.

INA, d.d. is a stock company having MOL Plc. and the Republic of Croatia as its biggest shareholders, while a minority of shares is owned by private and institutional investors. INA shares have been listed at the Zagreb stock exchanges since December 1, 2006.

INA Group is comprised of several affiliated companies wholly or partially owned by INA, d.d. The Group has its headquarters in Zagreb, Croatia. Apart from Croatia, INA has business operations in Angola and Egypt in the oil and gas exploration and production segment. INA manages two refineries: in Rijeka and Sisak.

INA manages a regional network of 495 petrol stations in Croatia and neighboring countries. At the end of 2010, the modernization and revitalization

of the retail network was initiated.

INA is committed to doing business in accordance with sustainable development, which means that it strives towards integrating economic, environmental and social factors in its daily operations. Trying to make energy available, INA wants to be a driver of social and economic development, taking care of people and the environment while fostering responsible business operations and local partnerships.

3.TASK

Because of the undercutting of the African lithosphere under Eurasia was a big earthquake. As a result of the earthquake, all INA oil platforms were sunk. The Croatian people are scared and are searching help from the most intelligent engineer heads! :)

How this never happened again INA has come up with a floating oil platform. But they need your help with the construction of a prototype of a crane that would work on such a platform.

Your job is to use the enclosed materials to lift the crane on the floating platform:

- the platform should be dimensions up to 70 x 50 cm
- the minimum lifting height (measured by the vertex) to the top is 30 cm
- the maximum height of the structure is 120 cm
- the minimum height of the crane construction is 40 cm.



4. START UP KIT

TOOL	AMOUNT
SCRIPT	1
PENCILS	4
PENS	4
ERASER	1
A4 PAPER	4
SCHEDULE	1
FLIP CHART	
POST IT	
RULER	1

Tools and materials listed in the table below are assigned to each team at the beginning of the design team.

5. BEST SHOP

→ In the room where the Team Design is being held you can find BEST shop

in which you can find additional materials and tools that will help you build your prototype.

- BEST shop will open 30 minutes after the beginning of the competition, but you are allowed to look at the materials.
- Materials can be bought with BESTcoins, the newest currency used only for this competition. In the beginning you have **600 BESTcoins**.
- The prices of materials will be determined by organizers. You can not buy more than 30 % of total amount of certain material in shop.
- **Bought materials can be returned to shop for 50 % of paid price**
- Tools can be borrowed by contacting organizers that will put you on a waiting list for certain tool. You can borrow the tool for **10 minutes maximum!** If you need the tool again you have to be put on a waiting list again.

The tools that can be borrowed are listed in the table below:

6. PRESENTATION

The presentation of your solution should also be mad

Name of the tool	Amount	Name of the tool	Amount
whetstone paper	a lot	meter	3
drill	1	Phillips screwdrivers	5
hammer	6	screwdrivers level	5
hot glue gun	10	lug wrench	1
pen	3	papertape	a lot
paintbrushes	8	saw wood	3
stapler	1	saw for plasterboard	6
pliers	3	Scotch tape	a lot

pliers for cutting wire	3	scalpel	7
key	a lot	terminal	1
protractor	a few	triangles	a few
marker	5	The files	1

do along with building your prototype. While presenting talk about the elements of construction and the functionality but don't forget to tell a story about your prototype.

- Presentation is being prepared while you're building your prototype.
- Duration of presentation is 5 minutes.
- Presentation will be evaluated by professional jury.
- **Be interesting!!!**

7. TESTING THE PROTOTYPE

- Final testing will gather all the competitors, professional jury and audience. Every team will have the place for presentation of their prototype.
- Teams will present their prototypes one at the time.
- After presentation, competitors have 2 minutes to prepare their prototypes for testing. After that period of time, none of the modifications or adjustments are permitted
- **While presenting their work, competitors shouldn't touch their prototype.**
- To start the testing turn the ventilator in a direction most convenient for your prototype to work.

8. EVALUATION

Maximum number of points:100

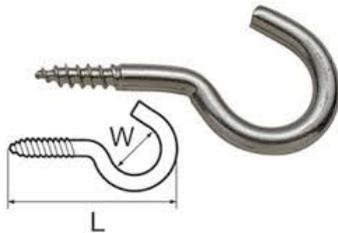
Criteria:

- the lifting and lowering of weight- maximum 1 minute 30 seconds per weight
- the minimum time for lifting weight is 3 seconds, maximum 10 seconds
- the minimum time for lowering is 2 seconds and maximum 10 seconds

If the lift or drop exceeds the default time frame, you get 3 points less per second of the total number of points.

You will test 3 different weights which are standardized.

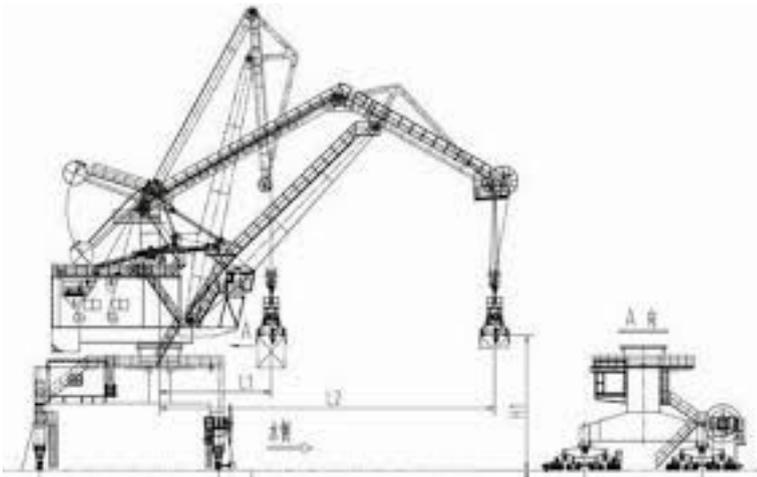
In your prototype you should be able to replace the weight (mustn't be connected to the crane).



In the final grade enters presentation, design and overall impression. Th

	BODOVI
PREZENTACIJA	0-15
DIZAJN	0-15
UKUPNI DOJAM	0-20

ese points are awarded to you by an expert jury:



**IF YOU HAVE ANY QUESTIONS PLEASE ASK OUR GIRLS/
GUYS WITH BLUE HELMETS ;)))**