ALLEGATO 2 VERBALE
BANDO N. 21552

DOMANDE PER ESAME COLLOQUIO CONCORSO 21552

19 Novembre 2020

Simone Corelli

Silvia Pesoli

355/113

DOMANDE DI MECCANICA
STATICA

35

50 A

Simone Coelli

Silvia Rescoli

STATICA – QUESITO 1

TREPPIEDE CON CARICO DISASSATO RISPETTO AL CENTRO

CALCOLO DELLA REAZIONE VINCOLARE R1

QUALI REAZIONI VINCOLARI NASCEREBBERO SE VENISSE APPLICATA UNA FORZA ORIZZONTALE?

OPPURE SE CI FOSSE UNA COPPIA DI FORZE ORIZZONTALI?

SDA

Simone Corelli

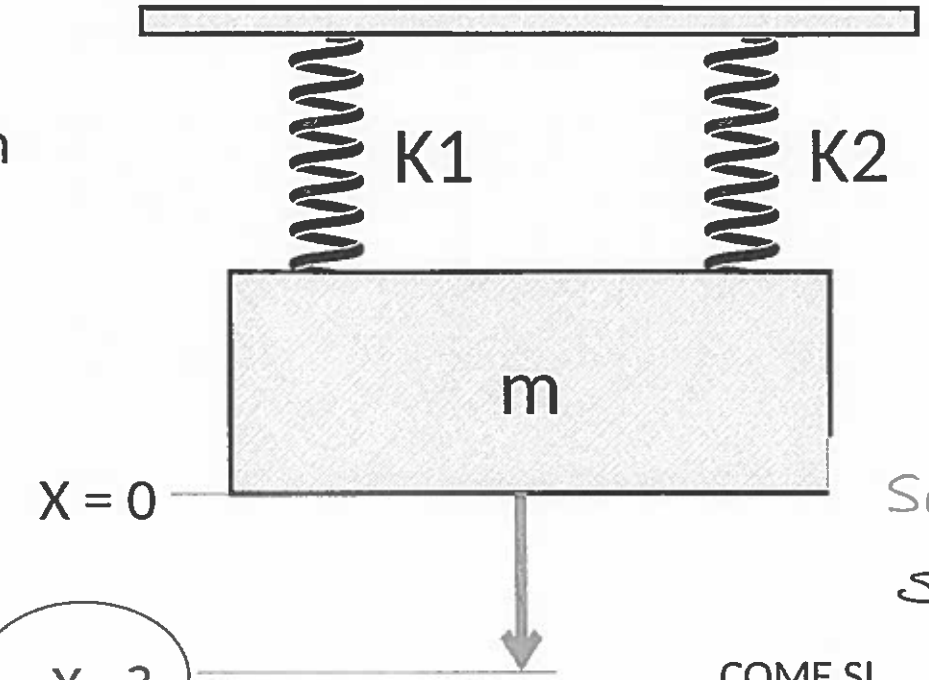
Silvia Rescoli

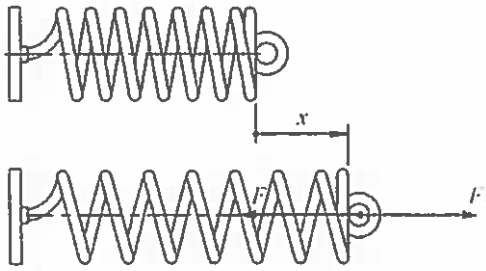
STATICA – QUESITO 2

SPOSTAMENTO DI UNA MASSA SOSPESA A MOLLE ELASTICHE

K1 = K2 = 50 N/mm

m = 100 kg





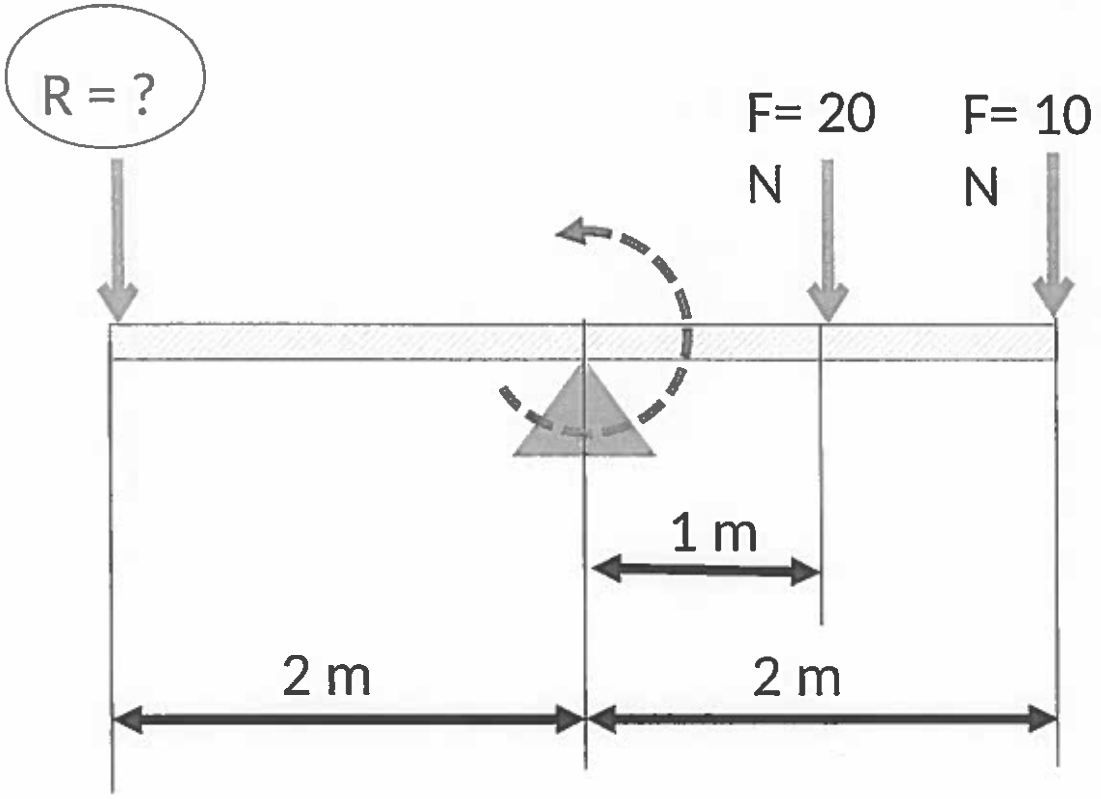
COME SI COMPORTEREBBE IL SISTEMA SE K1 FOSSE DIVERSO DA K2?
SE K1 FOSSE >> K2?

Simone Coelli

Silvia Peroni

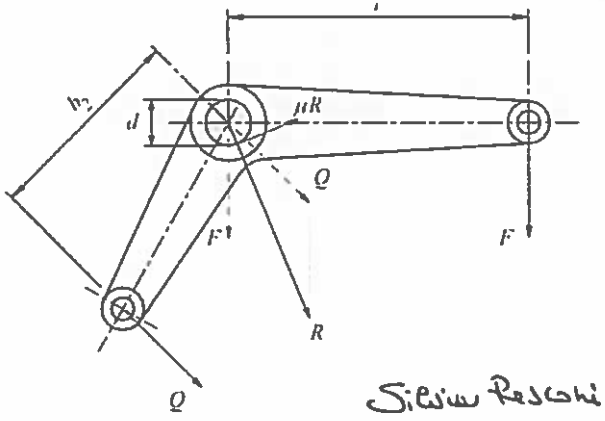
STATICA – QUESITO 3

CONDIZIONE DI EQUILIBRIO ASTA INCERNIERATA



QUALE COMPORTAMENTO DINAMICO SI AVREBBE SE UNA FORZA APPLICATA VARIASSE CICLICAMENTE PER ESEMPIO IN MODO SINUSOIDALE?

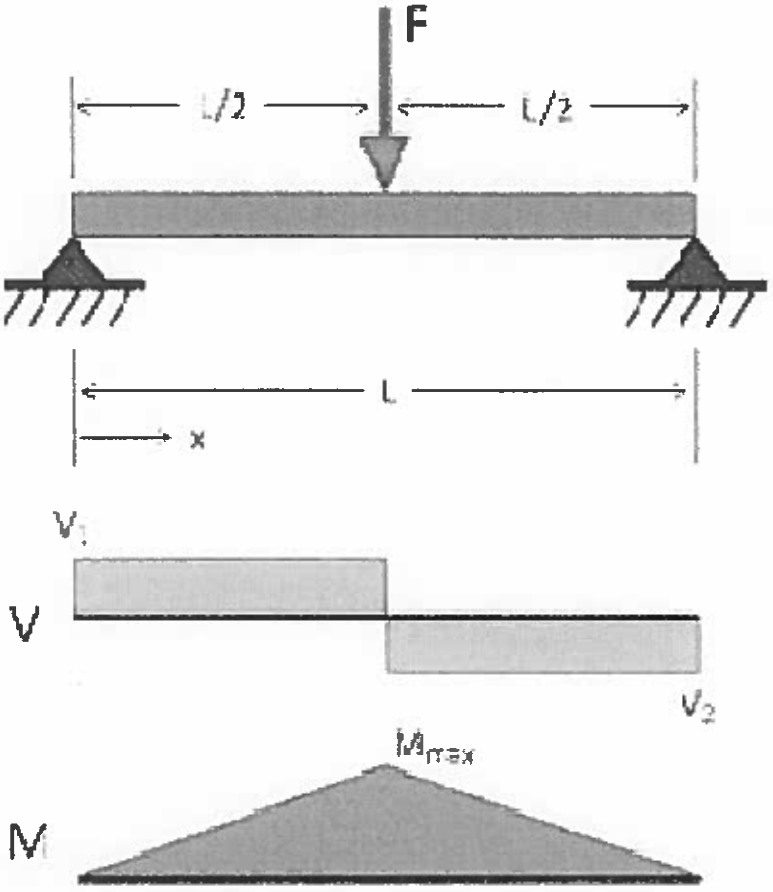
Simone Coelli



Silvia Pesoli

STATICA – QUESITO 4

TRAVE APPOGGIATA CON UN CARICO CONCENTRATO IN MEZZERIA



Silvia Rescigno

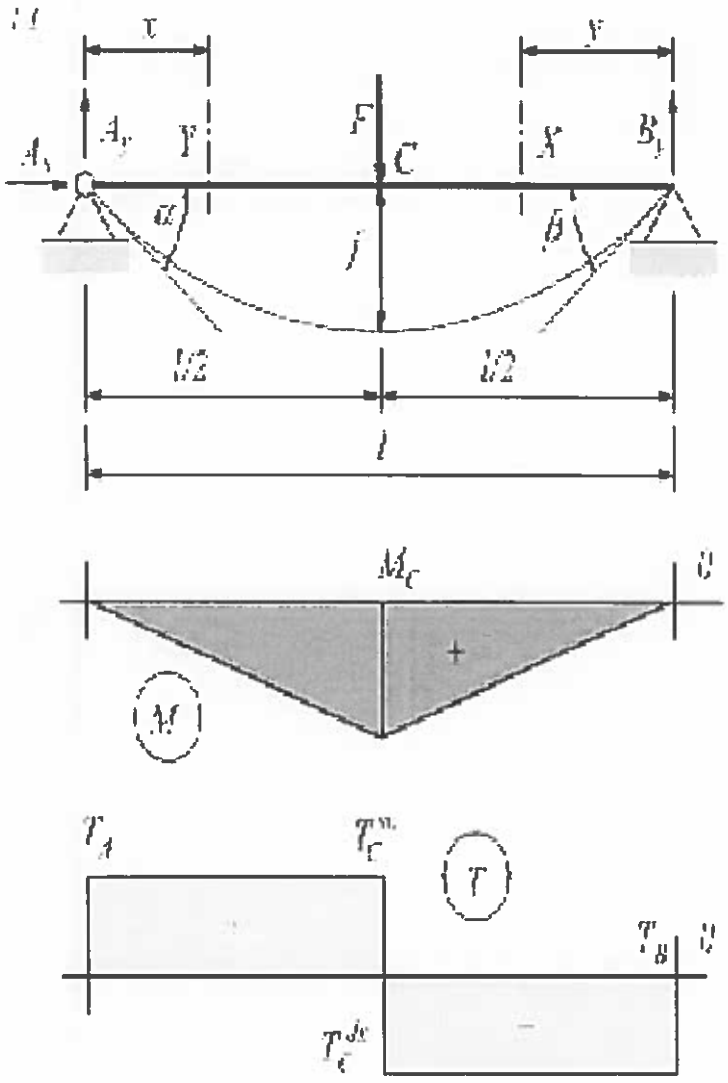
DESCRIVERE IL SIGNIFICATO DEI DIAGRAMMI

Simone Corelli

DEFINIRE IL LEGAME CON LA FORZA F

DEI VALORI V1, V2

COME SI CALCOLA IL VALORE Mmax?



Reazioni: $A_y = B_y = \frac{F}{2}$; $A_x = 0 \rightarrow$

Taglio: $T_A = T_X = \frac{F}{2}$; $T_B = T_Y = -\frac{F}{2} \rightarrow$

Momento flettente: $M_A = M_B = 0$; $M_C = \frac{Fl}{4} \rightarrow$

Rotazione: $\alpha = \beta = \frac{Fl^2}{16EJ} \rightarrow$

Freccia: $f_{l/2} = \frac{Fl^3}{48EJ} \rightarrow$

Simone Corelli

Silvia Rasori

DOMANDE DI TECNOLOGIA MECCANICA E DISEGNO TECNICO

Simone Corelli

Silvia Rasori

CONCORSO 21552 - DOMANDA PER ESAME COLLOQUIO

TECNOLOGIA MECCANICA– QUESITO A

UNI 5737 M6 × 0.75 × 40 – 8.8

- DESCRIVERE IL TIPO DI FILETTATURA
- DIAMETRO NOMINALE
- LUNGHEZZA DELLA PARTE FILETTATA
- PASSO
- NORMA DI RIFERIMENTO
- CLASSE DI MATERIALE

- Cosa rappresenta la tabella

PREFORI DI MASCHIATURA

FILETTATURA METRICA ISO A PASSO GROSSO

maschiatura M.	Ø interno max mm	punta Ø mm
1,6 x 0,35	1,321	1,25
1,8 x 0,35	1,521	1,45
2 x 0,4	1,679	1,6
2 x 0,45	1,838	1,75
2,5 x 0,45	2,138	2,05
3 x 0,5	2,599	2,5
3,5 x 0,6	3,010	2,9
4 x 0,7	3,422	3,3
4,5 x 0,75	3,878	3,7
5 x 0,8	4,334	4,2
5 x 1	5,153	5
7 x 1	6,153	6
8 x 1,25	6,912	6,8
9 x 1,25	7,912	7,8
10 x 1,5	8,676	8,5

FILETTATURA METRICA ISO A PASSO FINE

maschiatura M.	Ø interno max mm	punta Ø mm.
3 x 0,35	2,721	2,65
4 x 0,5	3,599	3,5
5 x 0,5	4,599	4,5
5 x 0,75	5,378	5,2
7 x 0,75	6,378	6,2
9 x 0,75	7,378	7,2
8 x 1	7,153	7
9 x 1	8,153	8
10 x 0,75	9,378	9,2
10 x 1	9,153	9
10 x 1,25	8,912	8,8
11 x 1	10,153	10
12 x 1	11,153	11
12 x 1,25	10,912	10,8
12 x 1,5	10,676	10,5

DIFFERENZA TRA:

- M8
- M10x0,75
- M10x0,75 [LH] (left hand)

Silvia Rasoli Simone Corelli

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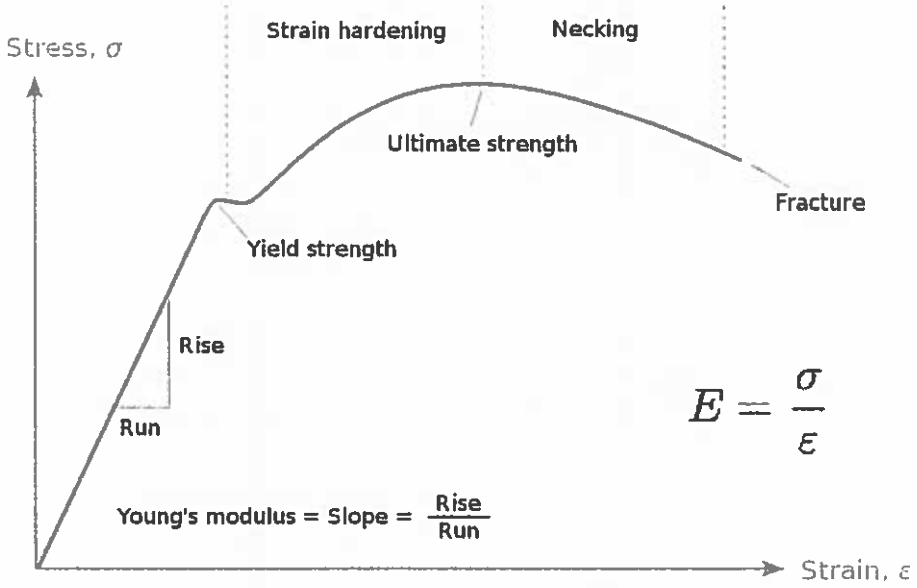
TECNOLOGIA MECCANICA– QUESITO B

PROVA DI TRAZIONE.

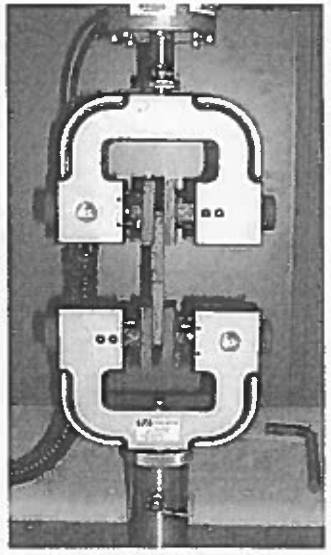
SPIEGARE COSA RAPPRESENTA IL DIAGRAMMA.

CHE TIPO DI COMPORTAMENTO HA IL MATERIALE?

MODULO DI ELASTICITA'

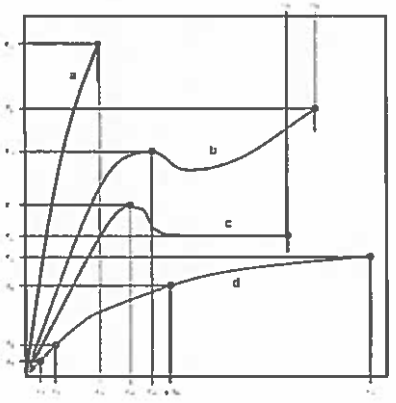


$$E = \frac{\sigma}{\varepsilon}$$



SPIEGARE LE DIFFERENZE TIPICHE NEL CASO DI ACCIAI AL CARBONIO DA COSTRUZIONE, ACCIAI LEGATI AD ALTA RESISTENZA, UNA LEGA DI ALLUMINO.

MATERIALI FRAGILI O ELASTOMERI.



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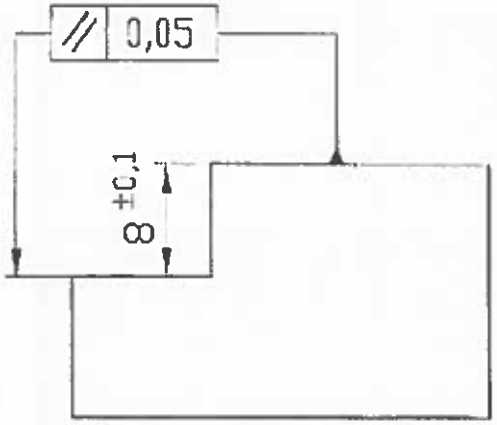
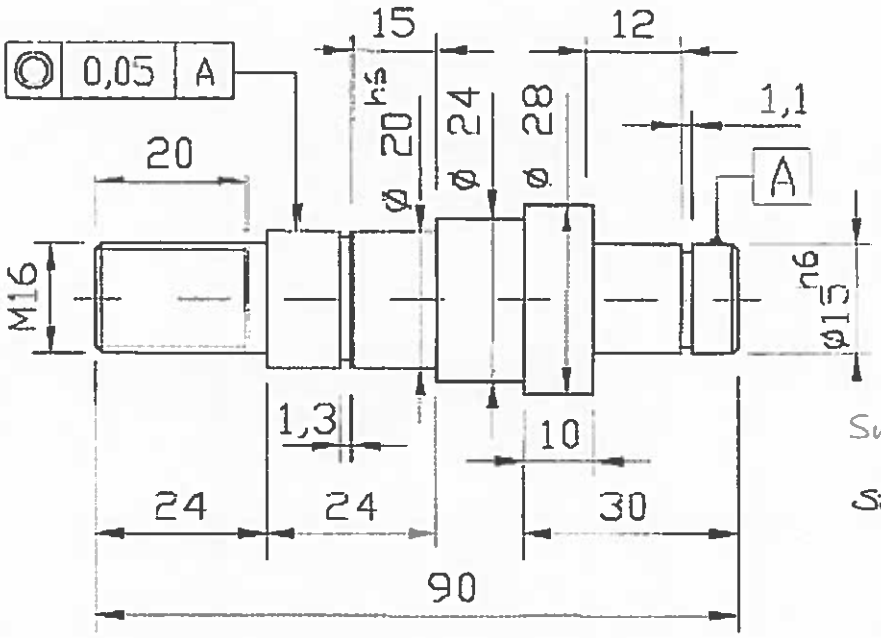
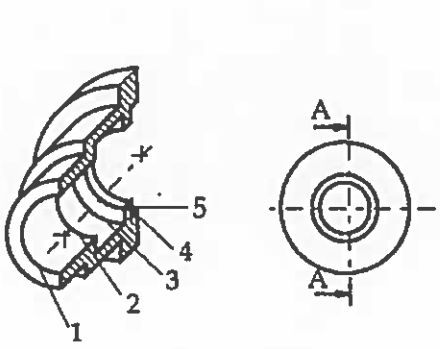
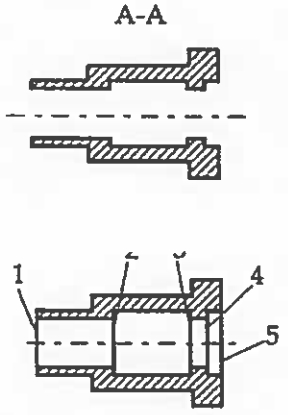
DISEGNO TECNICO – QUESITO C



IL SIMBOLO NEL RIQUADRO A TRE CASELLE INDICA UN TIPO DI TOLLERANZA? QUALE ELEMENTO VIENE PRESO COME BASE? QUALE SCOSTAMENTO MASSIMO SI AMMETTE?







Quale delle due sezioni è correttamente rappresentata?

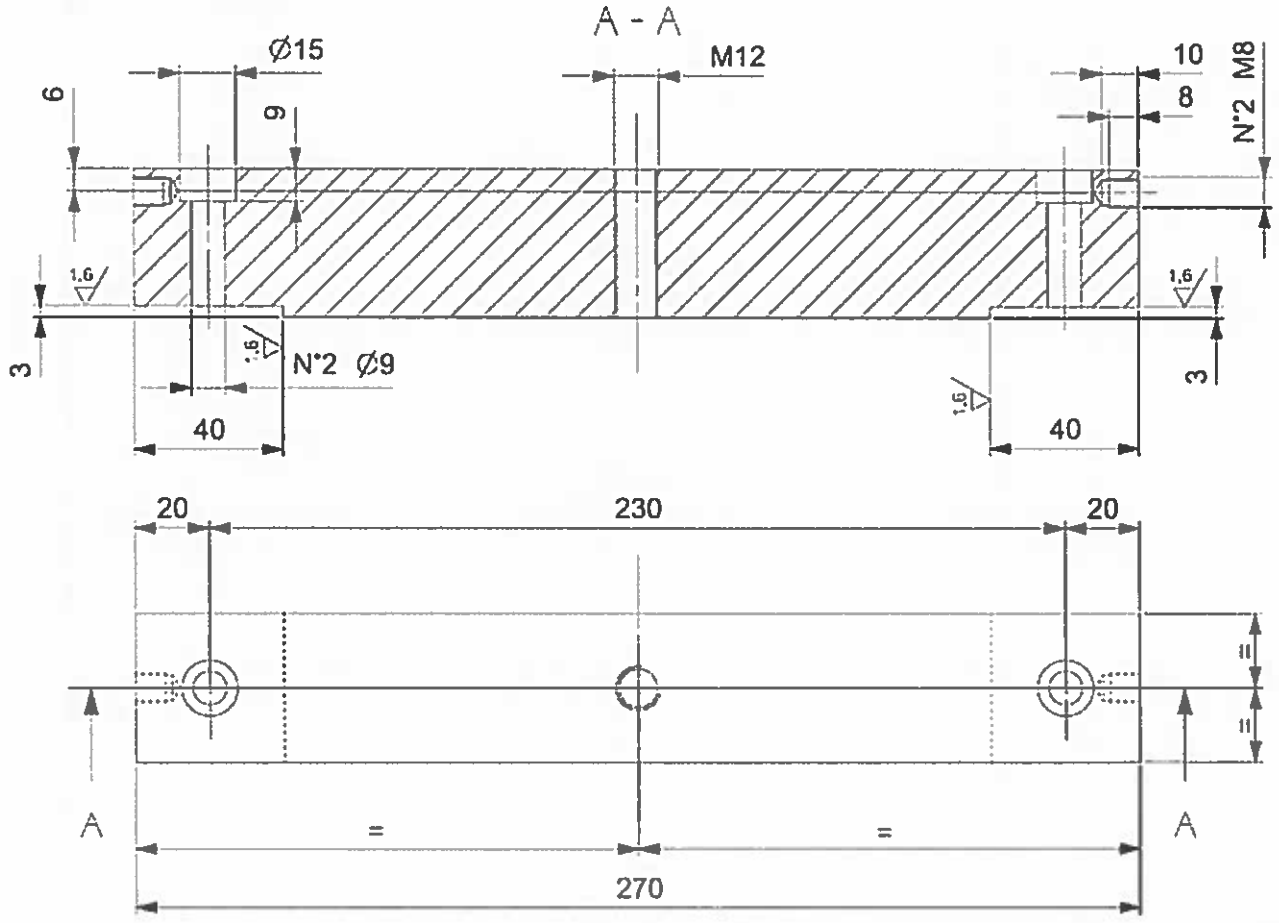
DISEGNO TECNICO– QUESITO D

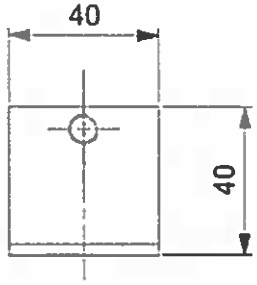
5/1 ✓ (1.6)

MATERIAL: ANTICORODAL

NUMBER OF PIECES: 02

DESCRIVERE GLI ELEMENTI PRESENTI NEL DISEGNO COSTRUTTIVO SPIEGARE IL PROCESSO DI LAVORAZIONE





Simone Coelli

Silvia Pascoli

Testo n. 1

At a time when many countries are locking down borders, limiting public gatherings, and encouraging isolation, the Diamond Light Source in Oxfordshire, UK, has been ramping up its intensity, albeit in an organised and controlled manner. The reason: these scientists are working tirelessly on drug-discovery efforts to quell COVID-19. It is a story that requires fast detectors, reliable robotics and powerful computing infrastructures, artificial intelligence, and one of the brightest X-ray sources in the world. And it is made possible by international collaboration, dedication, determination and perseverance. Synchrotron light sources are particle accelerators capable of producing incredibly bright X-rays, by forcing relativistic electrons to accelerate on curved trajectories. Around fifty facilities exist worldwide, enabling studies over a vast range of topics. Synchrotron light sources around the world are interrupting their usual operations to work on mapping the structure of the SARS-CoV-2 virus.

Sì X
Simone Corelli
Silvia Pasini

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Testo n. 2

Carbon dioxide two-phase cooling is being selected with increased frequency as solution for the thermal management of high energy physics tracking detectors. Evaporative cooling presents several advantages with respect to liquid cooling: the higher heat transfer coefficient allows for smaller pipes, thus reducing the total material budget, and the isothermal evaporation helps maintaining a very uniform and constant temperature inside the detector. CO_2presents additional features with respect to the perfluorocarbons now in use on tracking detectors: its high latent heat of evaporation and the low viscosity further contribute to the reduction of the pipe sizes, the environmental impact of CO_2 is much lower and the fluid refilling is substantially cheaper.

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Testo n. 3

The major use of ethylene glycol is as a medium for convective heat transfer in, for example, automobiles and liquid-cooled computers. Ethylene glycol is also commonly used as a coolant for chilled-water air-conditioning systems that either place the chiller or air handlers outside or must cool below the freezing temperature of water. In geothermal heating/cooling systems, ethylene glycol is the fluid that transports heat through the use of a geothermal heat pump. The ethylene glycol either gains energy from the source (lake, ocean, water well) or dissipates heat to the sink, depending on whether the system is being used for heating or cooling. Pure ethylene glycol has a specific heat capacity about one half that of water.

Testo n. 4

Selective Laser Melting (SLM) and Direct Metal Laser Sintering (DMLS) are two metal additive manufacturing processes that belong to the powder bed fusion 3D printing family. The two technologies have a lot of similarities: both use a laser to scan and selectively fuse, or melt, the metal powder particles, bonding them together and building a part layer-by-layer. Also, the materials used in both processes are metals that come in a granular form. The differences between SLM and DMLS come down to the fundamentals of the particle bonding process: SLM uses metal powders with a single melting temperature and fully melts the particles, while in DMLS the powder is composed of materials with variable melting points that fuse on a molecular level at elevated temperatures. SLM produces parts from a **single metal**, while DMLS produces parts from **metal alloys.**

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Testo n. 5

The machine shall be placed on robust flat surface, rigid enough to hold the machine. The machine shall be positioned in such as manner, that at any time there will be enough free moving space around the machine for demonstrations or service trainings and carrying out maintenance, cleaning and inspections. All supplied parts shall be connected onto the machine by the user as described in this manual. Once the machine assembly is completed, it can be wired and switched on by an authorized person by connecting the main power and switching on the main power. Bigger objects with less details can easily be printed with a bigger nozzle. Just changing the nozzle size will decrease printing time by a factor two if you double the size. Follow these instructions to change the nozzle size.

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Testo n. 6

The most costly and time-consuming activity of designing schools is project documentation. Projects are not going to be built without it and over the years the amount of that documentation and the speed with which it has to be produced has constantly increased. It is incumbent upon us as architects, engineers and designers to make this process as efficient as possible while still producing quality documents. Having standards improves the organization of the documentation and lends an agency-wide consistency to the deliverables we produce; flattens the learning curve for new staff members as they come on board and for current staff members moving from project to project; helps make project organization more predictable; finally, it mitigates the tendency to "reinvent the wheel".