

# ITALIAN MACHINE TOOLS, ROBOTICS & AUTOMATION INDUSTRY ~ NEWS

Mar 2024

PIATTAFORMA INDIA PROJECT

NEWSLETTER NO. 87



UCIMU-SISTEMI PER PRODURRE



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## **A NEW ORDER FOR A DOUBLE ELECTRO-UPSETTING MACHINE FROM AN INDIAN LEADER IN THE PRODUCTION OF REAR AXLES SHAFTS**

CEMSA INTERNATIONAL srl, is pleased to announce that one of the most important Indian groups, leader in the production of rear axles shafts for trucks, tractors, earthmoving machines, etc., has once again rewarded CEMSA technology with a new order for a double Electro-Upsetting machine belonging to the "RIO 300x2 DC AUT" series.

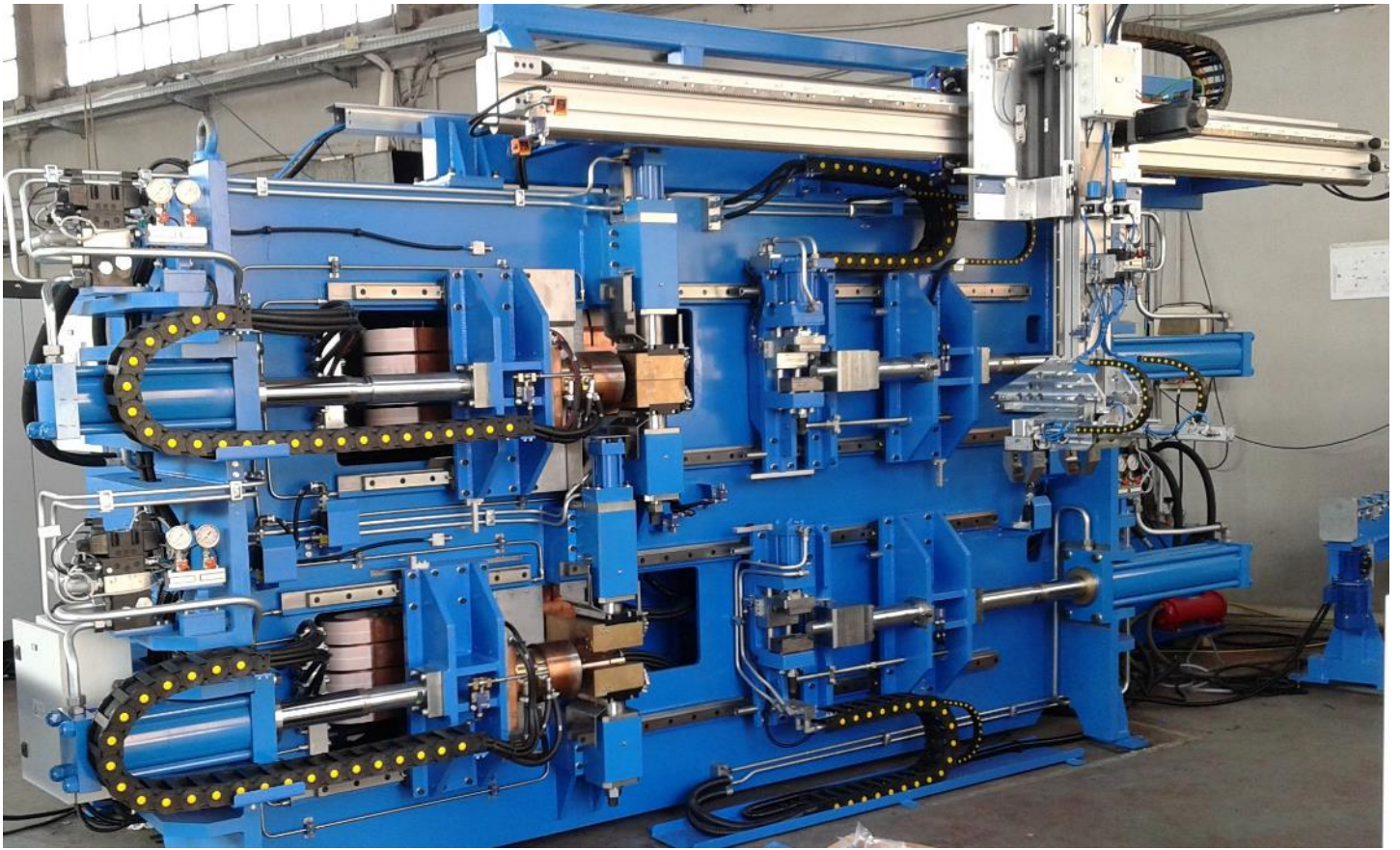
It is a "double deck" machine, the best solution for increasing productivity by making the two stations working in parallel. The feeding of the bars (from  $\varnothing$  22mm up to  $\varnothing$  65mm), alternatively to both stations, is completely automatic via a motorized roller conveyor and a 3-axis overhead manipulator. A fully automatic work cell, composed of No. 2 "RIOO 300X2 DC AUT Left & Right", No. 2 ROBOTS and No. 1 Direct Drive Press, guarantees an average production of a piece in less than 20 seconds, up to a maximum of 25 seconds, depending upon the dimensions of the raw bars and those of the flanges to forge.

Programming of the recipes and their implementation are carried out via the latest generation of Siemens PLC and HMI. Profinet, or similar interconnections protocols, can exchange in real time information between the plant and the "Master" stations at site, matching the "industry 4.0" requirements.

### TECHNICAL MAIN FEATURES (each unit)

- Feeding voltage V 400 (or in accordance with the site network)
- Feeding frequency Hz 50/60
- Nominal power kVA 300x2 (3-phase)
- Upsetting max. force daN 20.000
- Hammer stroke mm 700
- Anvil stroke mm 300
- Bar max. length mm 1650
- Bar max. diameter mm 65
- Bar min. diameter mm 22
- Cooling water flow l/1' 460
- Versions: left or right

<https://cemsait/en/>



[RIO 300X2 DC AUT in production](#)

***CEMSA International srl***

Angelo Alpago

Managing Director



# CEMSA

Saldatura a Resistenza & Elettro-Ricalcatura  
*Resistance Welding & Electrical-Upsetting*

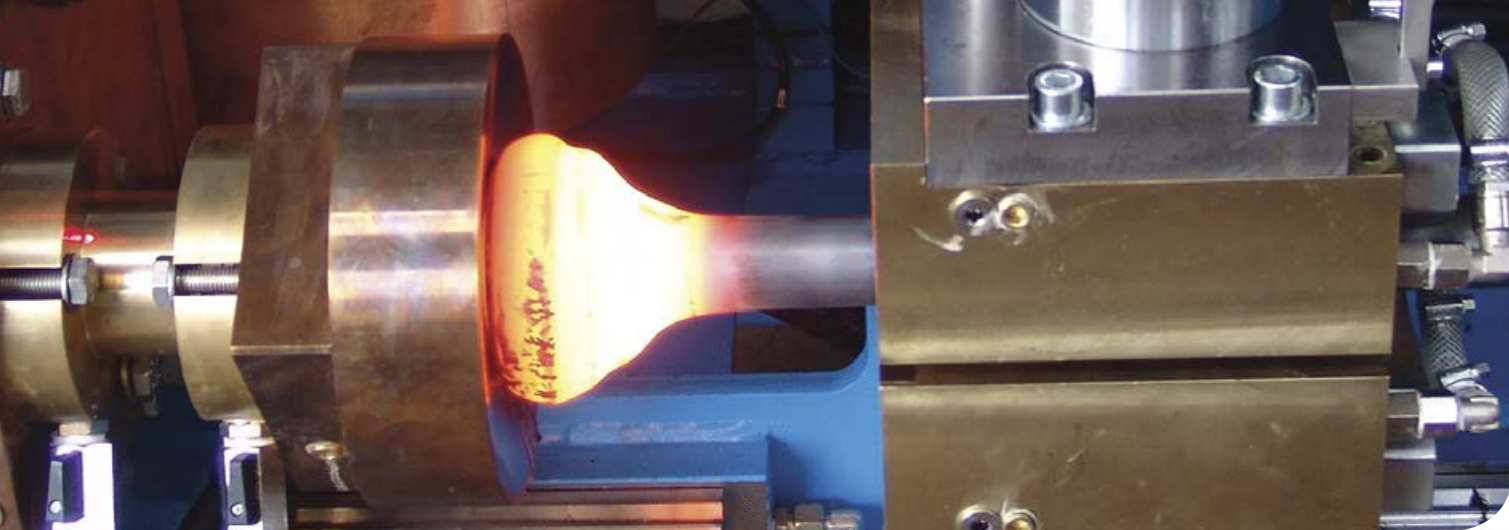
## MACCHINE ELETTRORICALCATRICI ELECTRICAL UPSETTING MACHINES



W W W . C E M S A . I T

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# ELETTRO RICALCATRICI ELECTRICAL UPSETTING

■ E' una tecnologia alternativa rispetto ad altre lavorazioni, forse fino ad ora più conosciute, nella produzione di particolari in acciaio forgiato a caldo.

Tra queste, la più diffusa è quella che prevede l'utilizzo di un forno ad induzione per il riscaldamento del materiale da forgiare successivamente mediante pressa, nella maggior parte dei casi una pressa a vite.

Se il pezzo ha uno sviluppo prevalentemente assiale con una porzione maggiore della parte non interessata dal deformazione di forma cilindrica e la parte destinata alla deformazione, che viene poi riscaldata, ha una lunghezza non superiore a tre volte il diametro della barra, è possibile usare:

- Forno più pressa
- Forno più ribaltatore meccanico
- Elettro-ricalcitrice più una pressa

L'Elettro-ricalcatura, tra le suddette 3 alternative, garantisce il più rapido tempo di cambio formato nonché il minor costo di attrezzaggio.

Quando, con sviluppo assiale predominante, con una porzione maggiore della parte non interessata dal deformazione di forma cilindrica, parte riscaldata, ha una lunghezza uguale o superiore a tre volte il diametro della barra (esempi tipici sono le valvole motore e la parte posteriore flangiata semiassi) la soluzione che spicca come la più conveniente è sicuramente l'"Elettro-ricalcatura".

■ Is an alternative technology in the production of steel hot forged parts, sometimes compared with other processes, perhaps better known up to now.

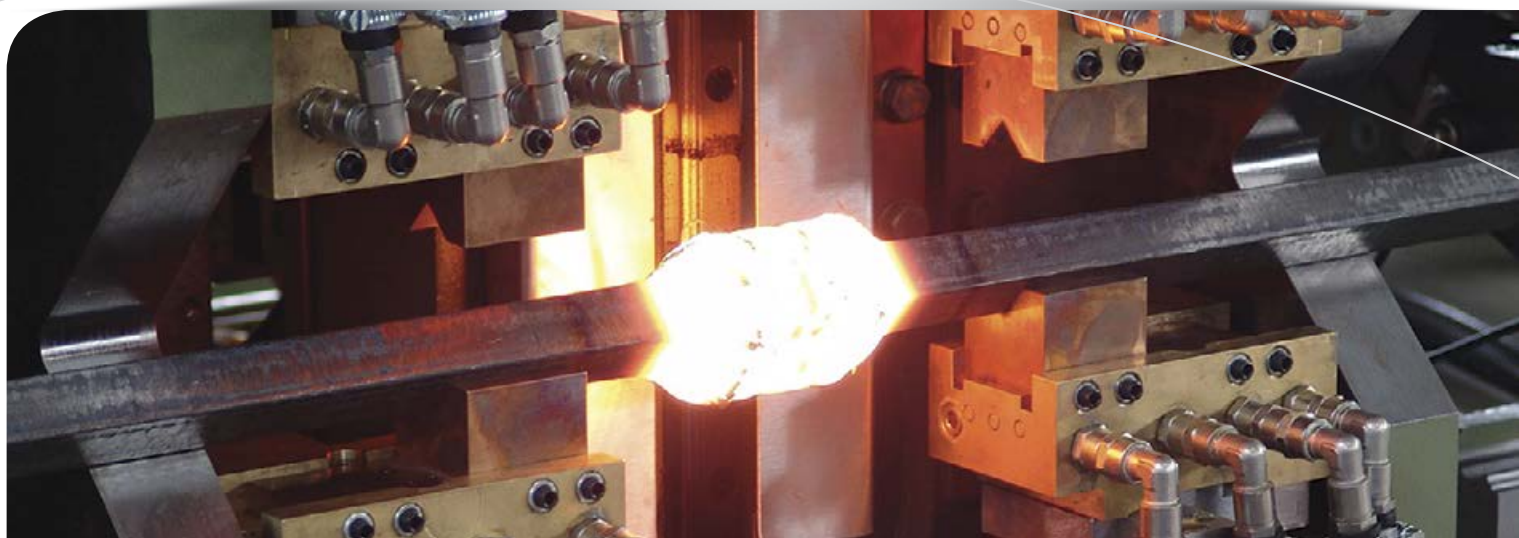
Among these, the most common is the one that involves the use of an induction furnace for pre-heating the material to be subsequently forged by means of a press, in most cases a screw-drive press.

If the piece has a predominantly axial development with a major portion of the non-deformed part having a cylindrical shape and the part intended to deformation, which is then heated, has a length not exceeding three times the diameter of the bar, it is possible to use:

- Furnace plus press
- Furnace plus mechanical upsetter
- Electrical Upsetting plus a press

The Electrical Upsetting Machines, among the previously mentioned 3 alternatives, guarantees the fastest changeover time switching from one type to another piece as well as the cheapest cost of tooling.

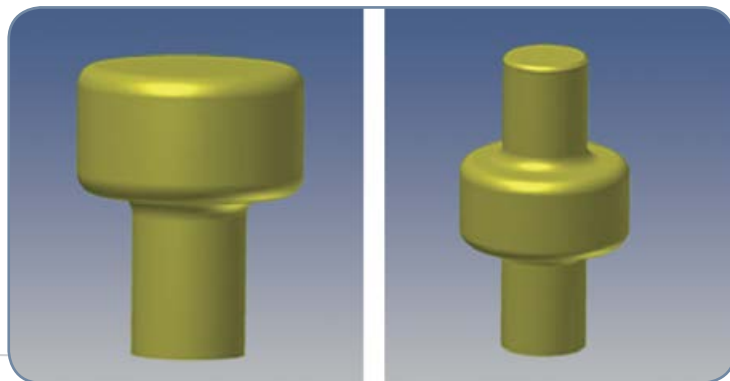
When, with a predominant axial development, with a major portion of the non-deformed part having a cylindrical shape, heated part, has a length equal or exceeding three times the diameter of the bar (typical examples are the engine valves and the rear flanged axle shafts) the solution that stands out as the most convenient is definitely the Electrical Upsetting.



# STAMPO CONTENUTO IN-DIE EL-UP

■ Quando è possibile ottenere una forma molto vicina alla definitiva e non è richiesto lo stampaggio a caldo, le elettrocalcatrici CEMSA a stampo contenuto sono la soluzione ideale. Le macchine sono in grado di ottenere risultati ottimali, sia sull'estremità che nella parte centrale di barre, ma anche di ricalcare tubi ingrossando lo spessore delle testate, mantenendo costante il diametro interno. Questo permette al cliente di poter lavorare la zona ricalcata, potendo partire da un tubo grezzo di spessore contenuto, con un notevole risparmio di materiale. Il tutto con una tolleranza finale di circa 1 mm.

■ Whenever the task is that of reaching a deformation close to the final required shape, the hot forging by press is not necessary, so making the "in-die" EL-UP the ideal solution. This is possible on each, or both tubes/bars ends, as well as in the middle and, if it will be the case, also keeping the inside diameter constant along the hot forming process by means of an additional special tool. This technology enables the end user to carry on machining works just in the area where the deformation occurs, starting from a bar/tube of lower thickness and diameter, saving a great amount of material



# LIBERA FREE EL-UP

■ L'elettrocalcatrice è una deformazione a caldo che solitamente precede lo stampaggio. CEMSA dal 2000 progetta e costruisce macchine elettrocalcatrici con diversi livelli di automazione e produttività.

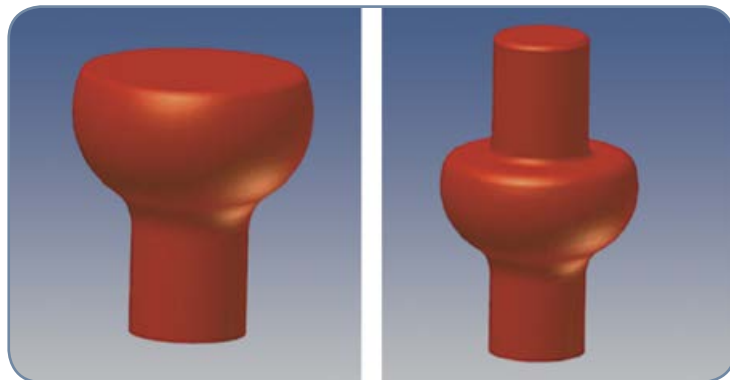
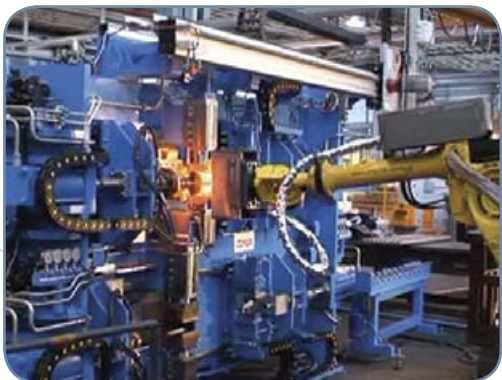
Macchine singole o doppie, con carico automatico da linea e scarico mediante antropomorfi. Macchine monofase o trifase a seconda degli utilizzi e dei ritmi di lavoro, CEMSA è in grado di offrire elettrocalcatrici per barre fino a 120 mm di diametro.

Le applicazioni più comuni sono nel campo dell'automotive, come ad esempio i semiasi flangiati, le valvole per motori termici, ma anche applicazioni speciali come ganci di sollevamento.

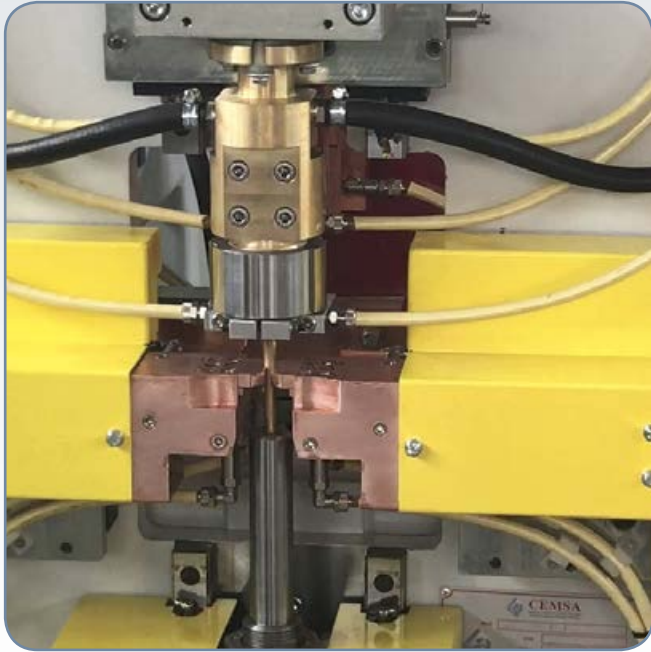
Dall'esame dei pezzi che devono essere prodotti, il nostro ufficio tecnico-commerciale è in grado, oltre che di formulare l'offerta per la macchina adatta, anche di valutare i tempi ciclo e stimare la produzione realizzabile.

■ Electrical Upsetting is a kind of concentrated hot deformation usually followed by a forging press. Since the 2000's CEMSA design and manufacture these series of machines at different levels of automation to accomplish specific requests of productivity. Therefore, single or double in-built machines, working cells with automatic loading/unloading by manipulator or robot and presses. These El-Up machines can be supplied AC or DC depending upon, cycle times, productivity, power availability. The EL-Up supplied by CEMSA can work bars up diameters of 120 mm<sup>2</sup> and with no lengths limitation. Main applications are in the automotive field like production of axles shafts, engine valves of any kind up to those for shipyards, as well as other special applications like tubes end deformations and high degrees of lifting hooks.

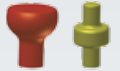
Throughout a specific examination of the pieces to manufacture and relevant drawings, CEMSA technologists can provide the most suitable solution along with details of the technical features and the productivity achievable.







## EC 15/ER 25 VALVES



Feeding voltage	V	400/440
Frequency	Hz	50/60
Heating current	kA	7÷10
Workable bars diameters	mm	5÷22
Hammer stroke	mm	200÷350
Anvil stroke	mm	100÷150
Upsetting force	daN	900÷2000
Clamping force	daN	450÷500
Motion		Hydraulic or Electric

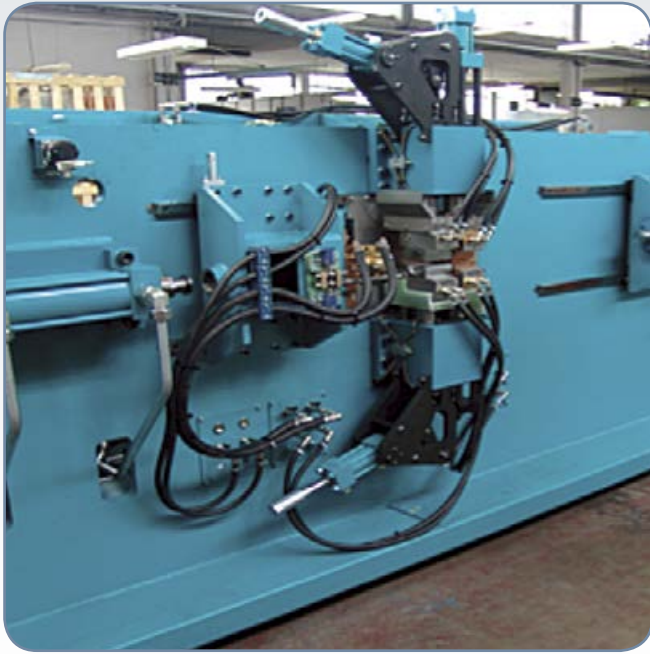


## ER 125 DC SP "IN-DIE" FORGING



Feeding voltage	V	400÷440
Feeding Frequency	Hz	50/60
Nominal power	kVA	125
Hammer stroke	mm	500
Anvil stroke	mm	300
Max upsetting force	daN	3000
Bar diameter	mm	10÷40
Cooling water flow	l/min	150
Loading manipulator		Option

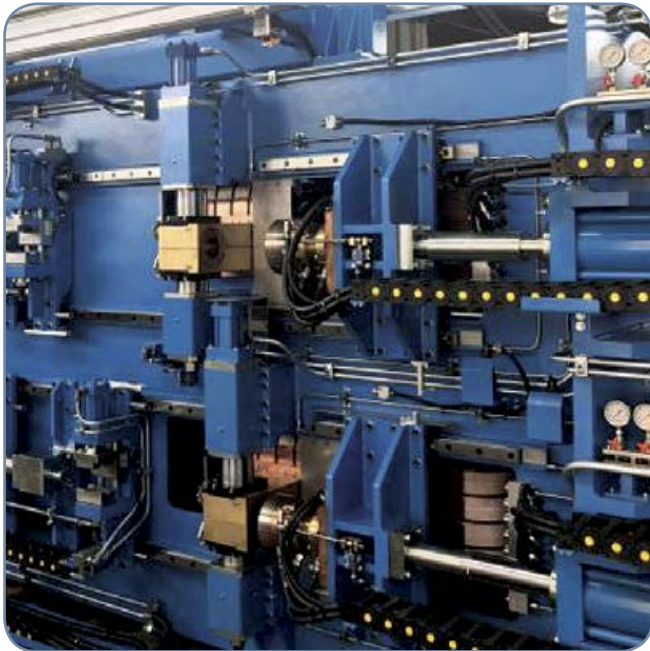




## RIO 300 NS



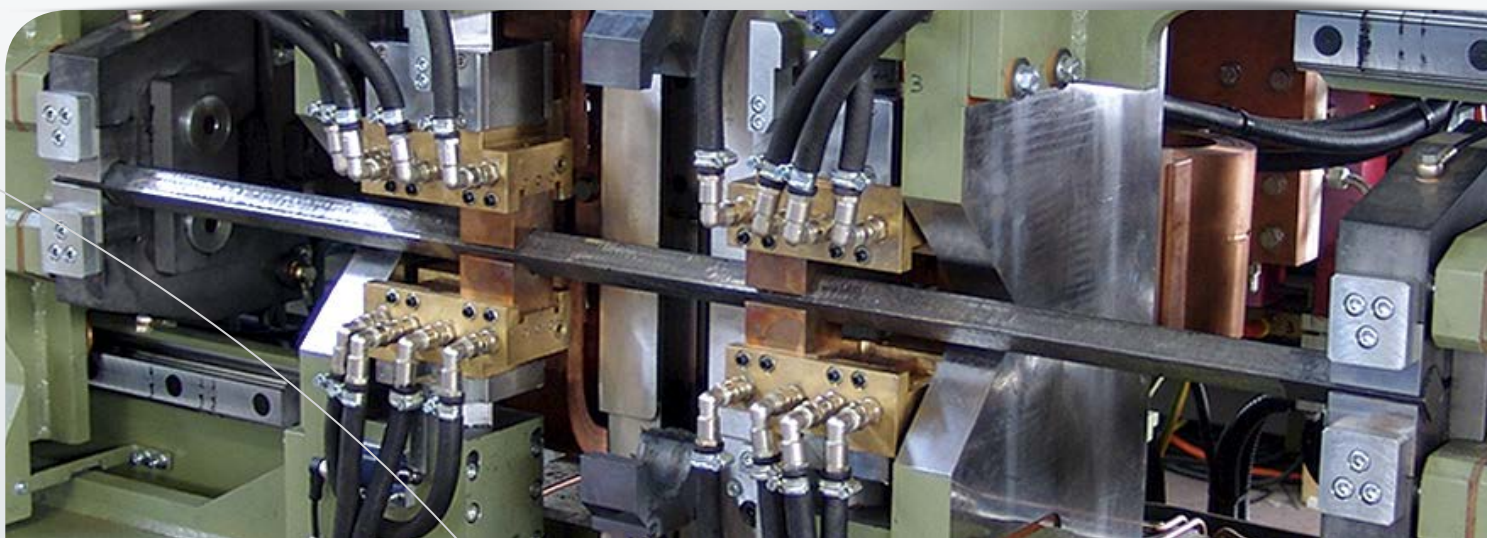
Feeding voltage	V	400 (to specify)
Feeding Frequency	Hz	50/60
Nominal power	kVA	300 (3-phase)
Hammer stroke	mm	700
Anvil stroke	mm	300
Max upsetting force	daN	20.000
Max bar length	mm	1650
Bar diameter	mm	22÷65
Cooling water flow	l/min	230
Loading manipulator		OPTION
IN-DIE version (spline)		OPTION



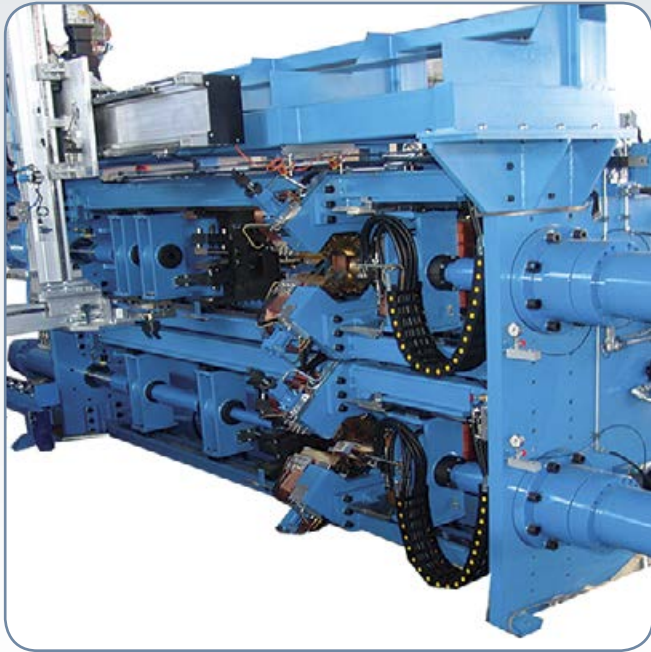
## RIO 300X2 DC AUT (double-deck units)



Feeding voltage	V	400 (to specify)
Feeding Frequency	Hz	50/60
Nominal power	kVA	300x2 (3-phase)
Hammer stroke	mm	700
Anvil stroke	mm	300
Max upsetting force	daN	20.000
Max bar length	mm	1650
Bar diameter	mm	22÷65
Cooling water flow	l/min	460
Versions		left or right







## RIO 500X2 DC AUT (double-deck units)

Feeding voltage	V	400 (to specify)
Feeding Frequency	Hz	50/60
Nominal power	kVA	500x2 (3-phase)
Hammer stroke	mm	700
Anvil stroke	mm	300
Max upsetting force	daN	50.000
Max bar length	mm	1250
Max bar diameter	mm	100
Min bar diameter	mm	40
Cooling water flow	l/min	600
No loading devices		OPTION

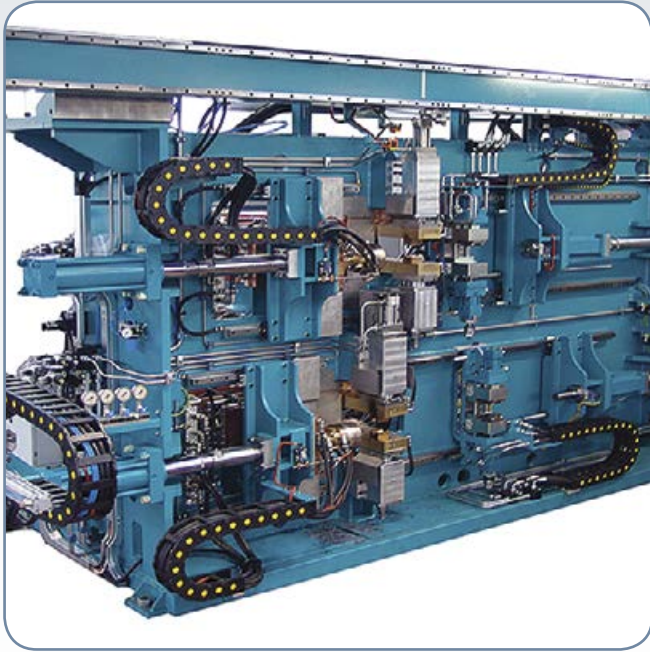


## RIO 800 DC

Feeding voltage	V	400 (to specify)
Feeding Frequency	Hz	50
Nominal power	kVA	800 (3-phase)
Hammer stroke	mm	700
Anvil stroke	mm	300
Max upsetting force	daN	120.000
Max heating current	KA	130
Max bar length	mm	1850
Max bar diameter	mm	130
Min bar diameter	mm	40
Cooling water flow	l/min	600







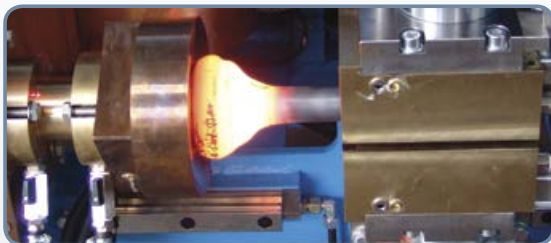
## RIO 160X2 SF AUT (double-deck units)

Feeding voltage	V	400 (to specify)
Feeding Frequency	Hz	50/60
Nominal power	kVA	160x2 (single ph.)
Hammer stroke	mm	700
Anvil stroke	mm	300
Max upsetting force	daN	12.000
Max bar length	mm	1600
Max bar diameter	mm	42
Min bar diameter	mm	13
Cooling water flow	l/min	110
3-phase	OPTION	
Loading devices	OPTION	



## RIO 100 SC SP (in-die) pipes

Feeding voltage	V	400 (to specify)
Feeding Frequency	Hz	50/60
Nominal power	kVA	100
Max heating current	kA	20
Max upsetting force	kN	100
Max upsetting stroke	mm	400
Max anvil stroke	mm	300
Max diameter	mm	3" 1/2
Min bar diameter	mm	22
Cooling water flow	l/min	40
KVA 300	OPTION	



**MATERIALS**  
BRASS - TITANIUM - TI AL ALLOYS -  
NYMONIC - ETC.

**APPLICATIONS**  
ENGINE VALVES - AXEL SHAFTS  
- SHAFTS - BEVEL PINIONS - TOR-  
SION BARS - TIE RODS - KEY PINS  
- TRUCK TYRES VALVE - EYE STEMS  
- AUTOMOTIVE COMPONENTS





# CEMSA

Saldatura a Resistenza & Elettro-Ricalcatura  
*Resistance Welding & Electrical-Upsetting*

## CEMSA, SYNONYMOUS OF "APPLIED TECHNOLOGY"

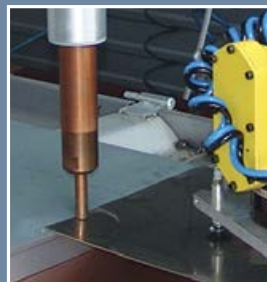
Spot and projection welders

Seam, and flash/butt welders

Special CN Robot, like Roborooft, Robobench, Roboside, Robocomb,  
Roboseam as well as combined systems with multiple axis

Flexible production cells for Welding/Assembly and Factory Automation.

Electrical-Upsetting



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The project Piattaforma India has been promoted by UCIMU – Association of Italian Machine Tools Manufacturers and AMAPLAST – Italian Plastics and Rubber Processing Machinery and Moulds Manufacturers Association. The two associations agreed on the idea that promoting a network of associations and entrepreneurs who have developed knowledge and experience on the Indian market, can be useful in favoring of new paths of development for business. The Indian companies who are interested to form JV, cooperation, technical tie up, purchase machinery etc from/with Italian companies can contact below mentioned address for any assistance:

Contact information of Piattaforma India desk:

**Mr. Nilesh Joshi**  
**Manager - Italian Machinery Desk in India**



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