RiaceWax®

...ideas produce money,
money don't have ideas...

Wax Injector Systems

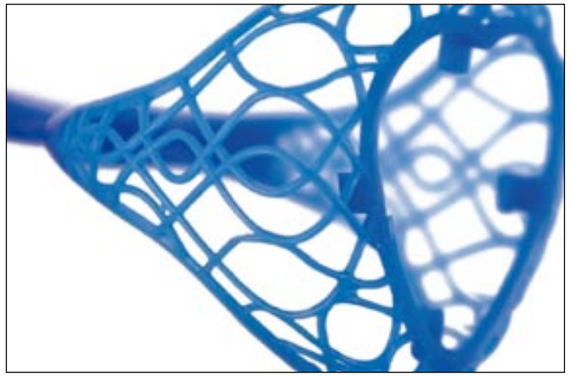
Pure Italian Technology

WWW.RIACEWAX.COM

The process of wax melting casting was born during IV millennium B.C. when the metallurgic science started.

The jewellery modern casting technique which originates from dental technician applications started at the beginning of 1900 but the most important development started after the Second World War thanks to the introduction of the mold masterpiece.

“Casting” has got an exclusive in jewellery world: the reproduction of small objects allows to obtain hundreds of melted pieces at the same time.



Casting technique was used and performed by the Ancient Greeks. Therefore the developed technology and the materials have changed. Casting technique Is still the same and it is used today, and the process status is better than before. Pieces of work such as, **Riace** bronzes are the demonstration of technological skillfulness of all people who set the investment casting process. **Riacetech** has transferred the know-how of the nowadays technologies, it has patented a new system which makes an easier process, **Riacetech** has dedicated also its own brand to the realized ability in these works.

Giovanni Lejkowski

In the up-to-date casting there are very easy machines or very tricky manual or automatic machinery. There are **some imperfections** which are in all wax injector systems in today's market:

- there is **only one** working station injector where there is waste of cost;
- **tricky usage**: only some expert people can work in it;
- they are **permeable to air and dampness**: some micro bubbles and impurity can be inside the wax;
- **they do not respect** some standard and suitable safety systems.
- they request the usage of some **powder**.

RIACEWAX® has changed completely this system, realizing the first modular injector with **multiple working stations** technologically 100% **Made in Italy**.

It can make "a simultaneous" injecting process in **more than one work stations**. Each working station is completely independent from the others, each of them is fully controlled and it can create **different products**.

RIACEWAX® is an **easy system**, it does **not require** any specialized technician.
RIACEWAX® has created the first melting tank which is always under vacuum during all working cycles: it is the **only one in the world** which guarantees **no micro bubbles**, **no dampness**.
RIACEWAX® is the **only one** which can create the **thinnest thicknesses** and it guarantees the **constant weight** and an **absolute repeatability**, thanks to its advanced and patented technology.
All parameters are **completely planned and they are saved inside the microchip**.

RIACEWAX® allows all operators **to organize their work safely**.

1 **TRANSPARENT TANK**
always under vacuum
(it removes micro bubbles
and dampness)

2 Possibility of dividing the tank for
DIFFERENT WAXES

3 Possibility of having
4 WORKING POSITIONS
in the same machine

4 **VACUUM METER**
it is used to measure the vacuum level into the mold (the injector starts when the vacuum reaches 100%)

5 **SYRINGE**
for regulating the pressure and the injection temperature (it easy and accurate on minimum quantity of wax)

6 **AUTO CENTERING CLAMP**
for molds which have different thicknesses
(no support has required)

7 **RFID READER**
of the mold
(it reads the parameters saved on the mold)

8 A 3,8" **TOUCH-SCREEN**

MONO 1 Position

MONO-MAXI 1 Position

BI 2 Positions

BI-MAXI 2 Positions

MICROCHIP

All versions are equipped with RFID READER which allows you to save all useful parameters for the injection directly into the mold. The usage of a micro-chip allows you to make the production easier and faster. Once you have scheduled all parameters, you will have some constant results even if you have not a skilled operators.

NOTE: You can use microchips with the most developed standard ISO14443A and ISO15693 which are available all around the world and in any electronic specialized shop.

DOUBLE TANK

In the machines with two working positions, it is possible to divide the tank in two separated ones. Therefore, each postion can work accurately using different wax.

MOLD COOLER

It is a cooling plate where you can put some molds after the injection. The wax becomes solid and the mold maintains the cooling down. You can reduce the number of the useful molds and you can increase the number of waxes.

MONO-STS

- Compact and small
- Small-medium waxes
- Production of 2.000 pcs/day
- Only one operator

EPIGONOS MONO STATION STS

Inextensible Mono station injector. Equipped of one melting tank, one vacuum meter for checking the vacuum inside the mold, RFID microchip reader is included. Micro syringe of 8 cmc with final setting up of the temperature and auto centring clamp for molds with dimensions from 50x30x8 mm to 120x90x45* mm.

Machine: 34 kg - 60x36xh53 cm / Wooden box: 65 kg - 72x47xh68 cm.

(*) for special request from 50x30x23 mm to 120x120x60 mm, 16 cmc.

BI-STS

- The most inexpensive for working position
- Smaller and more medium waxes
- Prod. 4.000 pcs/day
- One/two operators
- Optional: double tank

EPIGONOS BI STATION STS

Injector with two independent inextensible working stations. Equipped of one melting tank, one vacuum meter for checking the vacuum inside the mold, RFID microchip reader is included. Micro syringe of 8 cmc with final setting up of the temperature and auto centring clamp for molds with dimensions from 50x30x8 mm to 120x90x45* mm.

Machine: 48 kg - 90x36xh53 cm / Wooden box: 75 kg - 100x47xh68 cm.

(*) for special request from 50x30x23 mm to 120x120x60 mm, 16 cmc.

MONO-MAXI

- The strongest of the serial
- Bigger waxes
- Only one operator

EPIGONOS MONO STATION MAXI

Inextensible Mono station injector. Equipped of one melting tank, one vacuum meter for checking the vacuum inside the mold, RFID microchip reader is included. Syringe of 120 cmc with final setting up of the temperature and auto centring clamp for molds with dimensions from 120x90x45 mm to 250x150x75* mm.

Machine: 39 kg - 75x36xh53 cm / Wooden box: 70 kg - 100x47xh68 cm.

(*) for special request 185x150x65 or 330x180x90 mm, 120 cmc.

BI-STS-MAXI

- Smaller and bigger waxes
- Only one operator in two working positions in order to avoid any “dead” time
- Optional: double tank

EPIGONOS BI STATION STS MAXI

Independent, inextensible Bi injector station. Equipped of one melting tank, one vacuum meter for checking the vacuum inside the mold, RFID microchip reader is included. Syringe of 8 and 120 cmc with final setting up of the temperature and auto centring clamp for molds with dimensions from 50x30x8 mm to 250x150x75* mm.

Machine: 52 kg - 105x36xh53 cm / Wooden box: 85 kg 117x57xh68 cm.

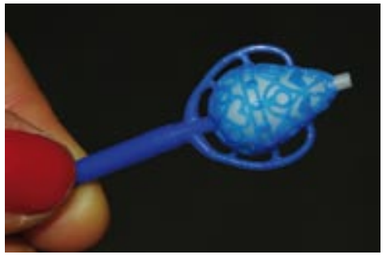
(*) for special request from 180x150x60 to 330x180x90, 120 cmc.

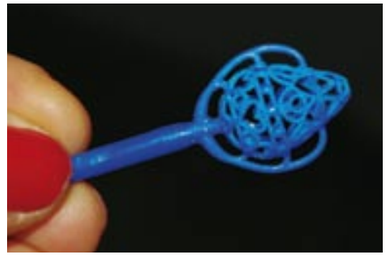


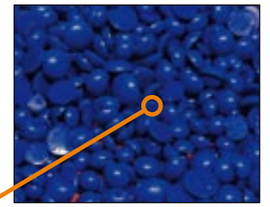
Sensitive to all market requests, Riacetech has developed a wax injection process based on hydro soluble support. It will be possible to realize **3D filigreed** and hollow objects using normal and standard wax and over going the removal boundary of the interior part of the mold.

Main advantages compared to the Prototype technique:

- Inexpensive for bigger productions (the cost of the Hydroresin if 5 times lower).
- Final wax piece avoiding melting problems of resins.
- Number of pieces per day which can be made over any prototype.
- Dissolving Hydroresin into water (no acids) and without any draining problems.
- Completely non-toxicity.
- Using one of our standard injectors (no adding cost for special machinery).






BI-HYDRO

- 3D hollow objects
- Pieces made with standard wax
- Prod. 480 pcs / day
- 2 Tanks

EPIGONOS BI HYDRO

Injector with two independent inextensible working stations. Equipped of two melting tank for the simultaneous use of two types of waxes, vacuum meters for checking the vacuum inside the mold, RFID microchip reader is included. Micro syringe of 8 cmc with final setting up of the temperature and auto centring clamp for molds with dimensions from 50x30x8 mm to 120x90x45* mm.

Machine: 48 kg - 90x36xh53 cm / Wooden box: 75 kg - 100x47xh68 cm.

(*) for special request from 50x30x23 mm to 120x120x60 mm, 16 cmc.

TC and TF VERSIONS

- Static system without any gas and liquid substances
- Quick and quiet
- Low waste
- Molds in line to make the process easier
- Less quantity of the molds for the turn-over

TF-350

TC-350

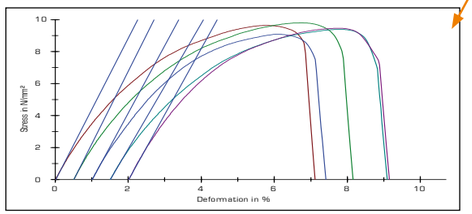
TF-600

TC-600

These static plates allow all the molds to decrease the cooling time between the two injections.
They increase the production and they decrease the number of the necessary molds for the turn-over.

TF-350	Cooler for molds with a plate from	**35** cm, without showing the temperature, **60** W.
TC-350	Cooler for molds with a plate from	**35** cm, with checking and displaying the temperature, **60** W.
TF-600	Cooler for molds with a plate from	**60** cm, without showing the temperature, **120** W.
TC-600	Cooler for molds with a plate from	**60** cm, with checking and displaying the temperature, **120** W.

High peformance Wax



FLUID WAX

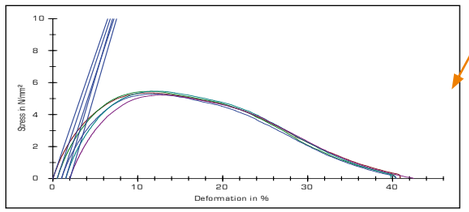
Application

Fluid Wax specifically designed to use in combination with Hydroresin. The high fluidity enables the creation of thin and filigree objects, with Hydroresin core.

Features

Stress-strain curve obtained by subjecting the wax with flexion tests (test temperature 22°C).

Operating temperature 68°-70°C / **Stiffness of material or elastic modulus*** 425 N/mm² / **Maximum sustainable effort by the material*** 9,5 N/mm² **Withdrawal** (injection temperature 65°C)* 10% / **Residue after combustion**** 0,03% / **Fluidity M.F.I.** (65°C - 2,16 kg) 500 g/10' / **Humidity** <1%



FLEXIBLE WAX

Application

Wax injection suitable for all types of objects. This wax is characterized by good fluidity, thanks to which ensures a perfect filling also for the molds that reproduce very thin objects and filigree. Thanks to reduced shrinkage, this wax can also be used with massive objects. In addition, the high flexibility allows the extraction of the object from the mold without breaking.

Features

Stress-strain curve obtained by testing the wax with flexion tests (test temperature 22°C).

Operating temperature massive objects and thin 65°C, filigreed objects 70°C **Stiffness of material or elastic modulus*** 160 N/mm² / **Maximum sustainable effort by the material*** 5,5 N/mm² / **Withdrawal** (injection temperature 65°C)* 9,5% / **Residue after combustion**** 0,03% / **Fluidity M.F.I.** (65°C- 0,325 kg) 1130 g/10' / **Humidity** <1%

* Results obtained with standardized size and shape and controlled process conditions in the laboratory.
** Results obtained by applying a standard heating cycle of the coating.

TOPIC	RIACEWAX characteristics	COMPETITORS characteristics
MELTING TANK	Thanks to the vacuum status of the melting tank, the latter guarantees **the whole absence of dampness and micro bubbles**.	Being always under pressure, the melting tank blocks out the degassing process of the wax enriching it of dampness.
TEMPERATURE SETTING	Using a sensitive setting up of the injection temperature into the small pre-injection trough, a very accurate, repeatable and real setting up is obtained.	The transit time of the wax inside the nozzle is too much short to modify its temperature.
INJECTION SYSTEM	The injection is made by a **syringe**. Due to the small quantity of moving wax, **we can regulate and obtain a very precise and repeatable flow** and thanks to the piston, **the pressure air does not switch on with the wax**.	During the injection process the quantity of the pushing air gets higher and the quantity of the wax decreases. It occurs when there is air pressure into the tank and so it makes unstable the pressure regulation. **Due to moving a lot of wax it is hard to obtain thin wax pieces**.
INJECTION CONTROL	An analogical and proportional valve checks the injection syringe and allows the injection pressure **to have a soft, continue and immediate constantly variation**.	With an ON-OFF valve, **it is not possible to have continue pressure variation.**
VACUUM SYSTEM	Using a high performance pump, the vacuum status is measured with a precise instrument into the mold. **The machine checks if the rubber mold is empty before the injection process starts**.	The vacuum value into the rubber mold **is not measured but it Is on for some seconds**. Due to the impossibility to calculate the time for each mold, **we have to slow down the cycle**. Without the absolute knowledge of the vacuum value, **the final result misses repeatability and quality**.

TOPIC	RIACEWAX characteristics	COMPETITORS characteristics
FLEXIBLE AND MODULAR	**The machine configuration can be personalized**, adding or leaving out some stations, switching theirs positions, dimensions and the clamp typology. **The machine can satisfy all productive needs and all different market requests**.	It has rigid configuration, **the machine does not suit** all new needs.
WAX RECOVERING	For each injection cycle, the excess wax goes **automatically** into the same melting tank which was taking from.	**Two tanks are requested**: one is for the wax to be injected, the other one for the wax to be recuperated. **At the end of the day, a pouring off is requested**.
MELTING TANK	Completely trasparent and external. **The wax status is available to look at**, its level and its melting point. **It can be removed for an immediate cleaning**.	Two concentric tanks, the cover is visible. The tanks cannot be removed, so the cleaning management becomes harder.
TANK CLOSING	**The tank is closed by its vacuum status**. It has a rapid opening without using any hand tool.	Before opening the cover, it is necessary to unload the vacuum pressure. **If there is a wrong opening, it can be very dangerous** (the covering power is about 300 kg).
AUTO CLAMP	The constructive particularity of the auto-centering clamp allows **the alternative molds with different dimension** without using any timing device or lock plate.	Clamps with only one superior closing piston **do not allow any alternative molds with different dimensions**. You can do if some singular timing devices are used.
NOZZLE POSITION	The nozzle in a transversal position can **show always its inclusion** into the mold checking always the outfit.	The head-on nozzle and its hide position from **the mold does not convey its control**. It can be done only If some mirrors are used.

TOPIC	RIACEWAX characteristics	COMPETITORS characteristics
PURCHASING	**The purchasing cost can be considerably broken down** for each working station due to the cost of the melting fusion and electronic system for all the linked stations.	Each working station needs a melting tank and some correlated electronic checking system **with inevitable waste of money** if someone wants to buy some new machines.
MODULAR EXPANSION	If someone wants to add one more working station, **it is useful to purchase only the clamp** which is not expansive.	When someone wants to add a new operator, **it is useful to buy another completed machine**.
PRODUCTIVITY	Operating and collaborating with a single person, switching from one station to another one, **it delays all cooling down "dead" time**, avoiding the operator waits for the machine.	**The operator has to wait for** ending the cycle.
CYCLING TIME	Measuring the vacuum level inside the mold and using an auto centering clamp on changing thickness, **from 3 to 4 seconds are saved up for each piece**.	The vacuum level is measured by the time which is not fixed and provably but hypothetic. All molds need support to adapt their thickness.
MICROCHIP	The introduction of microchips allow to save all parameters directly inside the mold. **The non-professional operator has to load up and empty without touching the parameters**.	The operator has to know how the mold has been created and he has to change the parameters. **The use of the machine is not for anyone and only the expert operator can use it because he knows all processes**.

Productivity rates of one company are created by technological level, production efficiency and its competitiveness. RIACEWAX® technology wants to approach and increase all productivity capacity rates, cutting down all waste working production time, all costs and mistakes, raising all comfort standards for all workers: the main targets are **welfare and profit**. The following tables show with precise data, all advantages RIACEWAX® systems can bring shortly.

TOPIC	COMPETITORS	RIACEWAX	SAVING	REASON
Mold loading	2 seconds	1 second	**1**	No clay
Clamp closing	1 second	1 second		
Progression	1 second	1 second		
Vacuum	5 seconds	3 seconds	**2**	Vacuum level measured
Injection pressure regulation	1 seconds	0 seconds	**1**	Regul. through syringe
Injection	2 seconds	2 seconds		
Coming back and opening	2 seconds	2 seconds		
Unloading	2 seconds	2 seconds		
Operator break	3 seconds	3 seconds		
Total time per piece	19 seconds	15 seconds	**4**	
Pieces per minute	3,16 pieces	4,00 pieces	**0,84**	
Pieces per hour	189 pieces	240 pieces	**59**	
Pieces in 8 hours	1.515 pieces	1.920 pieces	**405**	
Percentage of good pieces	97%	99%	**(+2%)**	
Good pieces per day	1.470 pieces	1.900 pieces	**430**	

	PER DAY	PER MONTH	PER YEAR
Increasing of produced pieces	430	11.373	**125.104**
	Piece Value on the market € 0,07		
Increasing the profit in €	30,10	662,20	**7.284**

Technical Assistance

Quality of our injectors and careful diligence are two important aspects we care to pay attention on. We take care of each customer. We are confident all post-sales service assistances represent one of the main processes and we are very willingly to grow up all our technicians in every service center with update and training courses.

Stop and Go

The reduction of waste of time of the machine has been achieved thanks to the **modular plug & play process** which make an easy replacing of all parts of the machine.

The latter will be replaced and they will be checked in our service assistance center.

A Riacetech technician will be always at your disposal: **service@riacetech.com**.

Central unit basket

Easy and quick to remove, you take out 4 screws and you change the total block.

Complete injection tower

You remove the carter and you put the complete injection tower.

Italy: Arezzo, Vicenza, Valenza, Napoli, Palermo

Brazil: Belo Horizonte, Sao Paulo, Rio Grande do Sul, Minas Gerais, Rio de Janeiro

Arab Emirates: Dubai

Germany: Idar Oberstein

Greece: Athens, Thessaloniki

China: Hong Kong

India: Mumbay, Chennai

Indonesia: Jakarta, Bali, Surabaia

Libia: Tripoli

Norway: Oslo

Perù: Lima

Poland: Krakovia

Russia: Mosca, Saint Petersburg

Singapore: Singapore

Spain: Salamanca

Thailand: Bangkok

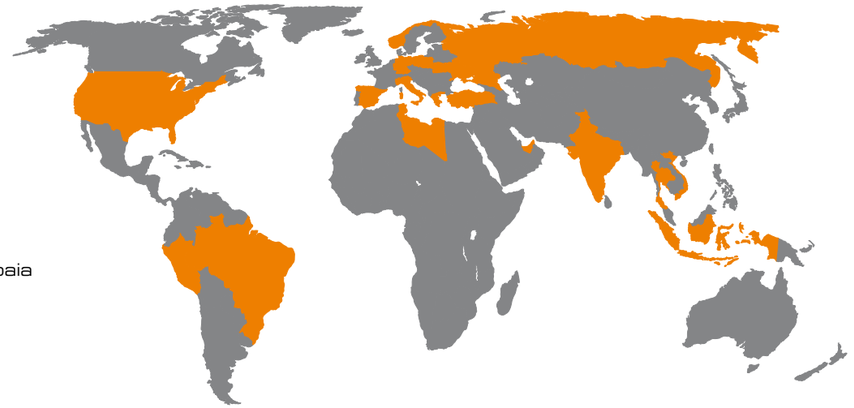
Tunisia: Sfax

Turckey: Istanbul

Ukraina: Kiev, Kharkov

Usa: New York, Albuquerque (New Mexico)

Vietnam: Ho Chí Minh



RIACETECH and its trading partners all around the world, they will be always at your disposal in order to make some tests using your models and they will give you any technical assistance taking care of all of you. For any query and demonstration please send an e-mail to: **sales@riacetech.com**

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