

RASSEGNA STAMPA

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ONGOING COMPANY PRODUCTION



LUTIONS

RESPONDING TO CHALLENGING COMMERCIAL AND TECHNICAL TIMES In a period when trade events have been put on hold, companies of all industrial sectors are working to find ways to continue their activities. In this article R.C.N. Solutions shows us how it is doing this, responding to demands for customisation and complete production solutions.

e are approaching the end of the year and it is a real challenge to accept that glasstec 2020 will not take place in its usual format, leaving a business gap that we hope will be filled by next year's edition. In fact, the ongoing health emergency does not allow the regular operations of exhibitions and trade shows, and we are all responsible for virus containment measures, practising social distancing too.

R.C.N. Solutions is facing these global events in a world that seems to be moving in slow motion, and is responding to this dramatic time carrying out its job as usual, with customers and market as its priorities.

INVESTMENTS AND PROJECTS

The Covid pandemic has led to worries and perplexities regarding the future, and most investments and projects have been cancelled or postponed. In spite of this situation, R.C.N. has continued to receive enquiries for machines, especially concerning customisation and complete production solutions, which the company never neglects or underestimates because they are an important part of development.

But what has R.C.N. done this year, forced to work in closed premises?

First of all, it has enforced Internet technology to keep in contact with the global business world, especially to support the company's technical service, penalised by the travel ban. R.C.N.'s way of fighting these restrictions has been to provide remote assistance to customers.

Company staff has worked hard to implement the new communication programme started in 2019; the new company logo was launched this year; while the new catalogue and website will be presented in a few weeks.

Furthermore, company growth also combines with the changed image of the advertising campaigns, focused more on concrete complete production proposals rather than around single products, and increasing the company's presence in the major in-

DATA SHEET

CT950 Chemical Tempering Line

Active size	3200xH2200x1000mm
Glass thickness	
to be processed	From 0.7mm to 19mm
Installed Power	Kw 40 - dome
	Kw 100 - base

ECO SPECIAL 5000 Bending kiln

_	
Active size	2500x5000mm
Chamber	1 chamber, heaters
	divided in independent
	heating sections
Thermocouples	6
Base-Trolley	Electrical movement.
	Equipped with speed
	regulator
Opening	Hydraulic top lifting
Installed Power	Kw 190

LAMMY SYSTEM 4 Laminating kiln

Active size	2500x5000mm
Chamber and Shelves	2 independent
	chambers, 4 shelves
Aspiration pumps	4
Volcanized bags	4
Lifting platform	Capacity Kg. 2000
Installed Power	125 Kw

ONGOING COMPANY PRODUCTION



ternational trade magazines with articles and online news.

RESPONDING TO THE DEMAND FOR SAFETY GLASS PROCESSING MACHINES

One of the most important parts of R.C.N.'s business is the demand for safety glass, pushing the market for new products and equipment, increasingly responding to high quality standards.

Flexibility, is, in fact, the ability to be open to new, different requirements, that makes R.C.N. one of the most appreciated manufacturers of machines for the glass industry. The compa-

ny started putting this policy into practice some years ago, after understanding that it was significant and highly important to have other choices in addition to the different standard sizes, offering more possibility for customisation in order to cover needs and demand and satisfy clients.

NEW SYSTEM FOR SAFETY GLASS

R.C.N. has always followed developments regarding the new use of glass, responding with a production layout made up of three essential plants: bending, chemical tempering and lamination. This trio responds to the production of safety glass, and curved glass in particular. The brand name of this system is ISF 'Integrated Sequencing Framework'.

This production setting is very important because each line, which can be installed independently from the others, has several options: from the different independent heating zones of the bending kiln, controlled by PLC, for complex curves; to chemical tempering serving the optical, aeronautics automotive industries, etc.; right up to lamination, concluding the cycle for the production of safety glass.

The present trend is to use thin glass - almost like paper - for further lightweighting and transparency in buildings. Chemically tempered thin glass can be bent cold and at environmental temperature. It is then used for façades, after being laminated, as it is flexible and safe. This technique has created a lot of curiosity and interest especially because it revealed to be low energy and costs saving process.

LAMINATED GLASS WITH FINISHED EDGES

R.C.N.'s most recent revolutionary development is the new system to produce laminated glass with finished edges, during which the laminated glass comes



out of the heating chamber without excess EVA on the edges, which is very difficult to remove and thus requires additional time and work.

The system is not based on complicated modifications of laminating recipes or the interruption of the intake at a certain stage, forcing clients to a daily revision of the production to adapt each type of glass thickness to the system, thus compromising the visual results with bubbles and quality adhesion result in the long terms.

R.C.N.'s system is, in fact, based on structured and integrated technology installed in the laminating kilns. This allows clients to have a real important option for both final products and costs, also saving time.

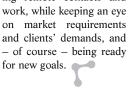
PRODUCTION STRONG POINTS RESPONDING TO CLIENT AND MARKET NEEDS

These results are a further example of R.C.N.'s skill in adapting its production to the needs and demands of its clients, and, of course, its constant efforts. The sequence of all these elements create the company's special DNA, which will continue to be an important part of the company in its future growth.

R.C.N.'s production has a

number of strong points that create added value, together with the possibility to check processes remotely, using the new R.C.N. 'Easy Connect' App. Quality control is an important, delicate job, and machine monitoring is part of this procedure. R.C.N.'s App allows remote control from PLC, tablet and/or mobile phone, also giving the chance to modify production parameters during processing. The same App can be used to start a late run or to check remotely together with the R.C.N. staff.

R.C.N. has, as we can see, used this difficult time as the motivation to consider new perspectives cultivating remote contacts and





Via Marcatutto, 7 20080 Albairate (MI) - Italy Tel.: 02-94602434 Fax: 02-94602244 E-mail: info@rcnsolutions.it www.rcnsolutions.it



extreme glass application

04/2020



RCN

Pro-active business partners; laminating layers for extreme glass applications

The international crisis has caused a lot of

uncertainty and we all have experienced disadvantages, suffering the limitations in travelling, in business visits and in lacking face to face communication, making maintaining visibility difficult to maintain.

In short, we are having to reinvent our way of working; reorganising our business strategy to confirm our steady presence in the glass industry.

In this situation, the **RCN** team has compacted and is continuously showing its true value. In fact, the company's highly professional, international team, have consistently worked to serve the market, and have been very sensitive but not intimidated by the dramatic global events.

RCN has – and is – continuing to provide all its support, resulting in increased sales of REVA BF, RCN's laminating interlayer, which differs both in quality and performance: the unique product the laminating market is demanding.

Requests for *REVA* BF have undergone a sharp increase since March 2020, obliging the company to double production shifts and plan future investments, especially aimed at the manufacture of wider sizes.

RCN stock is always up-to-date, based on a warehouse first-in/first-out mode, thus always granting fresh lots available to be delivered to customers.

The choice of the raw materials is very important in production and the supply from a number of international chemical companies, together with accurate production and controls, are the characteristics behind one of the great peculiarities of REVA BF: quality constancy.

Quality, reliability, transparency are no more only abstract words, but can be experienced with REVA BF, the last generation of laminating interlayers, suitable

for all the extreme glass applications.



WWW.RCNSOLUTIONS.IT



technology and human contact for Gruppo Vetrario Paci 02/2020









ne of the most important strong points of R.C.N. is its availability and ability to listen to its clients, creating unique machines that are built in response to each glassworks' particular needs.

We recently went to one

of R.C.N. Solutions' historical clients – Paci Glassworks, northern Italy – to speak to the first and second generation of the Paci family about their ongoing and historical relationship with R.C.N., and how the company is continuing to provide complete service. Roberta Cometti, International Business Relationships and Simone Vecchi, Sales & Technical Manager

at R.C.N., told us how Paci had decided to re-invest in R.C.N. and its machines, trusting once again in the constant and continuous reliability of the technology and people in their production of specific and specialized glass.

PACI: "NEVER SAY WE CAN'T DO IT!"

With the second (but some say third) generation of the family in the company, Gruppo Vetrario Paci was founded in 1959 – 60 years of activities (but almost 100 years of experience!), and is located to the north of Milan, in Brianza. The first activities of the company concerned artistic and artisan production,

where the presence of a master glassmaker was an essential part of everyday work.

Over the years, thanks to continuous investments and inventions, Paci has always been one step ahead of competition. Of course expansion also includes company area and, after working in a small rented warehouse, the company moved on to purchase its own premises, which were expanded as per production requirements.

The 1970s saw the founding of Italvetrine, for the manufacture of display cases, promotional sales units and shop fittings, which then led to the building of new premises,





expanding to the present 16,500 square metres of the company.

Paci is now an important player in manufacturing both industrial and art glass, also through its subsidiary Italvetrine.

Another important aspect of the daily work at Paci is that of processing large glass sheets, made possible thanks to a partnership with Isotempra, which also involves PCB colour lamination and much more.

From left: Roberta Cometti, From left: Koberta Cometti, International Business Relationships at R.C.N., Maurilio Paci of Paci Glassworks, Simone Vecchi, Sales & Technical Manager, both from R.C.N., Roberto Paci,





CASE HISTORY



1 level storage area with 3 positions

6 laminating levels – (2 for each chamber + 2 external)

6 Silikosoft - vulcanized lamination bags, with special closure

4 extraction pumps + 1 external pump with 2 connections

2 automatic side hatches for chamber cooling

1 electric platform, capacity: 2000 kg.

1 PLC touch screen

Installed power: 130 Kw

ONGOING RELA-TIONSHIP BETWEEN R.C.N. AND PACI

During our visit to Paci Glassworks, we discovered that this new R.C.N. machine is not the first for Paci. The company has, in fact, decided to invest once again in R.C.N. machines and technology. One of the important reasons behind this choice is that Paci's production is made up of 'special' products – not in series – requiring, therefore, special machines. Maurilio Paci, the second generation of the Paci

family, along with his son Edoardo spoke to us about the company's production, and why their choice was for R.C.N. once again: "When we had to decide to create 'alternative' or niche production, our choice was for R.C.N."

"In any case, a great deal of our production is also based on industrial glass processing with PVB, as we are also co-founders and partners of Isotempra, while, thanks to the use of this EVA furnace from R.C.N., we can diversify our production, focusing more on these niche products using metal, textiles and other products to be laminated between the



glass, as well as for urgent from the day after installarequests."

"Our first laminating furproduction ongoing right ogy!"

tion."

"An important characteristic nace from R.C.N., purchased of our company - and of our in 2013, was smaller, with family - is that of keeping up two levels, for glass sizes with technology. My father of 2,200mm x 3,800mm. first, and then my brother This new furnace has 4+2 and I, have always been in (6) levels, for glass sizes of the forefront when it comes 2,600mm x 5,100mm, with to new machines and technol-

Roberta Cometti, Simone Vecchi, R.C.N.: "So this could mean that your next machine may be one of our chemical tempering furnaces....."

Maurilio Paci: "Why not. We all know that traditional tempering distorts the glass a little while chemical tempering does not. It's true that this technology is still in its early stages but we need to consider the advantages that we can have with this technology."

"The only type of glass that we have never produced is that for buildings and construction - IG glass. This is probably due to the fact that the industry in the area





where we are – Brianza – is mainly focused on furniture and interior design, and there was no need for us to branch out into another sector."

Roberta Cometti, R.C.N.: Af-

ter all these years, and after seeing and experiencing the many changes of glass processing, what is your opinion on today's market? Maurilio Paci: My personal idea right now is that perfection is not enough. We always need to be one step ahead of the demands of our clients, improving on their demands and on the standards that glassmakers have

Glass-Technology International (GTI): How has your production changed in terms of domestic and international markets and exports?

Maurilio Paci: We work



very little for international markets at present due to the changes in the markets and demands regarding not just quality, but even more focused on speed and quantity. In the past,

our percentage for exports was a lot higher. But we still work internationally but indirectly — as a 'component' of finished products.

GTI: This is your second

A CUSTOMISED MACHINE FOR PACI GLASSWORKS

One of the most important strong points of R.C.N. is its availability and ability to listen to its clients, creating unique machines that are built in response to each glassworks' particular needs.

production needs and R.C.N. accepted this challenge, supply a nonstandard sized machine with particular features. The furnace was, in fact made entirely following indications from Paci, with structure and sizes

> machine from R.C.N., but our question is why did you choose an R.C.N. machine the first time?

> Maurilio Paci: A very important part of our choosing R.C.N. is the commercial relationship that we found with them, their continuous presence, always ready to respond to our needs and demands, with valid advice in processing and the right machinery to use.

→ R.C.N. Solutions Srl

Via Marcatutto 7 20080 Albairate (Milano) Italy Tel: +39 02 94602434 Fax: +39 02 94602244 www.rcnsolutions.it

manufacterer 2019

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HA ПРАВАХ РЕКЛАМЫ

Проверенный и надежный итальянский производитель

В октябре выставка Vitrum откроет свои двери, а компания RCN станет частью этого важного события, со свойственной ей активностью и страстью к работе.





Компания решила совершенствоватьсной образи улучшить коммуникации в отношении производства и контроля качества с новым брендом Reva BF. Результат этого долгострочного взаимодействия впервые предстанет перед посетителями Vitrum, где стенд RCN и представенные решения будут нести основную мысль RCN Solution — верный и надежный итальянский производитель Reva ВГ. Единственный производитель, клиенты которого могут положиться как на серьезного, ответственного, винмательного и мотивированного парнера.

Рынок EVA-пленок в настоящее время създачен различными новостями, дезораентирующими выбор и конмание стеклалирков. Именно по этой причине RCN кочет довести информацию максимально поизтию, чтобы каждый смог признать и понять Reva BF — это кочество, стойкость и прозрачность.

На дисплое стенда будет представлено видео с производства и с участка контрили качества, совмество с исчерпывающей информацией о продужции, чтобы посетители смогли понять

Real and trustworthy Italian manufacturer

Vitrum show is at the doors and RCN Solutions will be part of this important event with its usual proactive attitude and passion. The company has decided to enhance its image and improve the comunication regarding the production and quality control of the RCN brand new Reva BF.

The result of this long-term comunication program will have it is first impact at Vitrum, where the setting of the RCN stand and the use of the images will play an uppermost role to convey the information RCN Solutions is the only, real and trustworthy Italian manufacturer of Reva. BF, The only manufacturer the customers can refy on as a serious, committed, attentive and motivated partner.

The market of the EVA interlayer is currently puzzied by different news disorienting the glaziers' choices and considerations. For that reason, RCN wants to make the things clear by giving information on the way to recognize and validate Reva BF for quality, consistency and trasparency. Videos of the production and of the quality control will be on display together with the information about the nature of the product in order to understand the peculiarities and the advantages of Reva BF, as a high value interlayer, can offer to the user.

RCN is a dynamic, young company with an omnidirectional professional view, thus its proposals cannot be limited to a single one but go ahead opening to a range of possibilities. As a matter of fact, all the products and machines RCN manufactures are an integrant part of a complex production giving the customer the opportunity to purchase one full sequence production — bending, chemical temper and lamination, or just a single equipment. Laminating kilns with different sizes, up to the jumbo size, and several options to increase output; bending kilns designed for special and complicated curves; and very important, the chemical tempering plants, combined with the flexibility in customization: that's the RCN "cocktail" and much more!

The chemical tempering of the glass should receive special attention mainly because it can bring very interesting perspectives responding to the latest glass market requirements and not just limited to the glass thickness to process or to the final application.

We are proud to say, we had the opportunity to serve important international companies such as AGC and Schott and we hope we can draw the attention of all those companies looking for a steady referent point for their purchases and projects.

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особенность и преимущства Reva BF, как самой высокачественной пленки, которая может быть представлена потребителю.

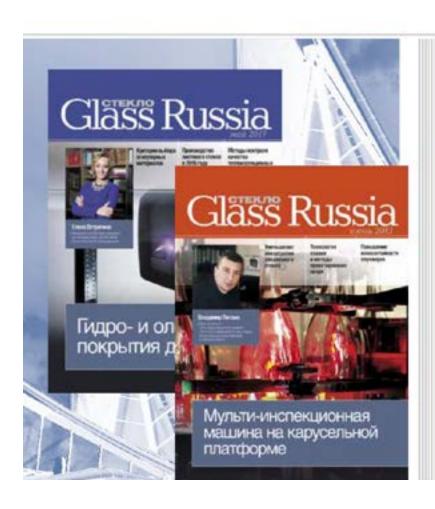
RCN — это динамичная и молодая компания со исесторонним профессиональным взглядом, благодаря чему наш персонал не огразен одной сферой, а способен мыслить глобально. Фактически вся продукция и оборудование компании RCN являются неотъемлемой частью комплексного производства, працаставляющего заказчику полный спектр оборудования — моллирование, химпечексое закаливание и ламинация, или просто один тип оборудовании.



Печи ламиногрования разменых разверов, вплоть до развера Jumbo, с запасом производственного потенциала для увеличения выпуска годной продукции; печи моллирования предназначенные для особых и сложных изпебен: и самое важное, оборудование для химического закаливания. Все это совместно с гибкостью ностройки представляют собой оптимальный набор решений откомпания RCN.

Стоит уделить особое визмание оборудованию для химической закалки стекла, благодаря использованию которого открываются интересные перспективы. Наши решения соответствуют последним тепденциим рынка. Это касается не только параметроя толщины стекла, но и всех аспектов его финального применения.

Можем сообщить, что у нас есть возможность сотрудничать со многими крупными глобальными компановями токими как: АСС и SCHOTT. Мыискрение надеежся, что сможем привыечь виниание всех компаний, которые находятся в плисках надежного партиера для мкупок и проектов.



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следующим образом:

выслав запрос в произвольной форме на e-mail:

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STAŁA **PRZEJRZYSTOŚĆ**



Wysoka przyczepność: 12 kg / cm2 na szkle



Bez przegrzewania



Doskonała przejrzystość



Kontrola jakości



Różne rozmiary



Zatwierdzono w hrabstwie Miami-Dade i na liście SGGCC



R.C.N. Solutions Srl Via Marcatutto, 7 20080 Albairate (Milano) Italy Tel: +39 0294602434

Fax: +39 0294602244

rcnsolutions.it

WYDARZENIA



Crymny udział R.C.N. Solutions srl w Targach VITRUM

Firms F.CN: Solutions sill postanciella poprawić swój vizerunek i poprawić komunikację w zaksesie produkcji i kontroli jakości nowej folis do branowania REVA bt. Hozultat tego diugatominovego programu komunikacyjnego będze miał pierwszy etap działania na targach VTRUM, gdze zostaną przedstawione na storku RCN. Wykorzystanie elementów wizuałnych na odepoć najnażniejszę rolę w przekazie informacji, ze RICN. Solutions to jedyny, prawdziwy: I godny zaufania włoski producent folii REVI. bł.



Rynek folii do tarninowania EVA jest obecnie zarzucany rocnymi informacjami, które dezorientują szklarzy wykonujących laminowanie szkia co dowyboru takiego, czy innego produktu. Z tego powodu FON chce w możliwie wyczerpujący sporób wyjaśnić wszystkie nieścialości, podając informacje o sposobie rozpoznavania i oceny foli. REVA bil pod vaględem jakolici, spojności i prosjrzystości.



Na stoisku targovym będą wytwietlane filmy z produkći i kortick jekości, wraz z informacją a natuce produto, sty umożliwić ziszumienie saczególnych cech i zaet foli FEVA bil jako międzywantwy w cikle laminowanym o wysokiej wartości.

RDN jest dynamiczną, młodą firmą o wielokierunkowym, profesjonalnym sporzenku dlatego jej propobycje nie ograniczują się do jednej możliwości, ale cowienają cały ich wachlarz. Wszyskie produkty i maszyny, które produkcje firma RCN, stanovių integrainų capić streckiej produkcji, dalycej identowi możliwość zakupu kompletnej lini produkcyjnej do rôznych procesów w zakresie obróżki sakte gięcia, hartowania chemicznego i laminowania lub urządzenia tylko. do jednego procesu.

Pece do laminosonia o różnych szemiarach oraz kilka. oprál zwiększania ich wydajności, piece do gięcia szkla, zaprojektowane do wykonywania specialnych i skomplikowanych krzywizh i bordzo ważne, hartownie chemiczne

No chemicane hustowanie sakla należy zwrocić saczegó ing uwagę, głównie ofatego, że może ono przynieść bardzo interesujące perspektywy produkcji, odpowiadające nięnowszym wymaganiom rynku sakta nie ogszniczone posta minimaliną grubosć izkla. Froces chemiczny daje wyroby



TC Riva - urzadzenie do hartowania chemicznego

szkiane do daisze; obióbki lub ostatecznego zastosowania.

Z dung możemy powiedzieć, że mielismy okażę cioduglinic watre międzynarodone firmy take jak AGC I SCHOFF i mamy nadzieję, że będziemy w stanie zwócić. uwage wszystkich film, które szukają stalego punktu odniesienia dla swoich zakupów i projektów.

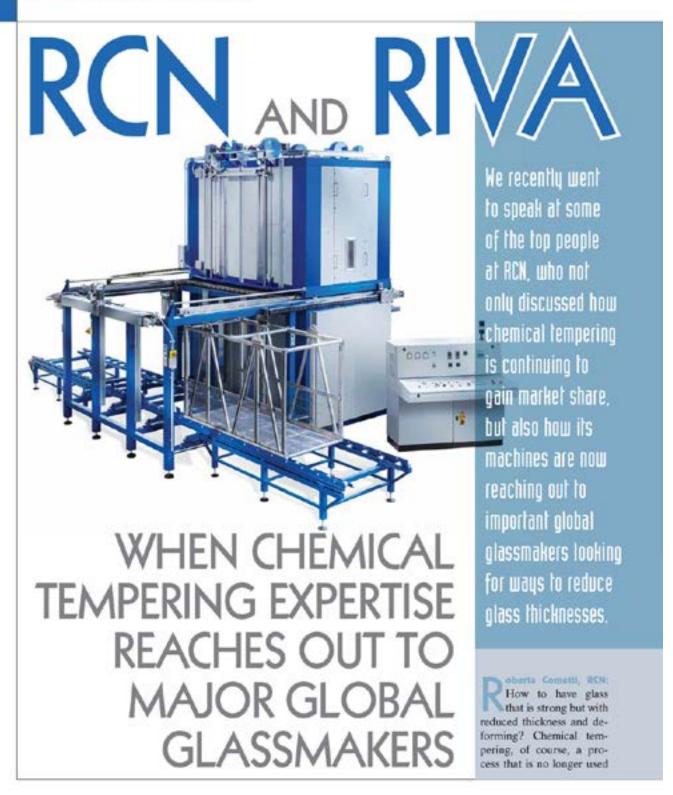
Przyjdź i zobacz, co jest modne w przestrzeni RCN. Czekamy na Twoją wizytę. Naszpersonel chętnie wysłucha twoich wymagań i znajdzie rozwiązania. Dolącz do nas na stoisku U28 w hali S.



R.C.N. Solutions srl na VITRUM 2019: hala 5. stoisko U28

Świat Szkła 9/2019







Gianforco Rwaroli



Roberts Cornett



Alexandro Rvarol

only for special glass types or standard sizes, but now also customized.

Gianfranco Rivaroli, RIVA:

Thanks to the collaboration between RCN and RIVA, we are moving forward in the development of chemical tempering, to have furnaces of 'important' sizes, used for architectural, automotive and naval glass – so large glass sizes. And the fact that chemically tempered large glass sizes have now been approved by RiNA – a body that controls the standards for glass used in nautical applications – is an important step forward.

This means that we are continuing to propose our plants in diverse sectors and companies – from important global groups to small companies, because our plants can temper both small sizes and large glass sheets.

Roberta Cometti, RCN: Let's say that we are working on creating and increasing the 'idea' of chemical tempering in sectors in which up to now it has not been taken into consideration for diverse reasons.

As we all know, chemical tempering is not a new process, but its use has never been, until now, so widespread. This was due to the fact that the benefits of chemical tempering were not so well-known compared to thermal tem-

THE EVOLUTION OF TEMPERED GLASS

Onemical tempering is moving forward, gaining more and more appreciation and demand, thus extending its application to several industries: seronautic, serospace, navel, military, automotive, electronic, optical and in all those projects demanding special curves and reduced glass thicknesses.

Chemical temperine, especially important for the curved glass, is the par excellence and delimitive answer to the compromise between thicknesses and shapes, achieving perfect flatness, mainly for glass thicknesses lower than 2mm, allowing chemical tempered glass to be perfectly coupled and laminated accordingly.

The process

Chemically tempered glass is a glass which has been strengthened by on ion exchange process, occurring at a temperature of about 450°C.

After pre-heating, the glass is immersed in a fused potassium salt bath than starting the chemical process. During this time, the glass is exposed to an ion exchange between sodium (Na+), contained into the molecular structure of the glass, and potassium (K+), the chemical element the salt is made of.

This process takes place thanks to the difference of the electro-chemical potentials of the ions themselves.

How does it work?

The process provides a space reduction between the glass particles that are compressed by the bigger size of the potassium ions. It results in a complex system of stress and tension on the glass surface, increasing the mechanical stress resistance three times more than thermally tempered glass, thus granting an excellent quality standard.

What are the advantages?

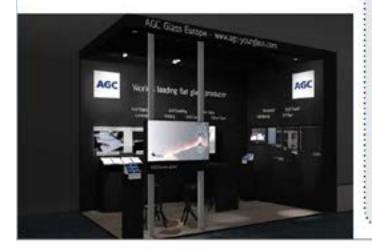
Chemically tempered glass has no visual surface imperfections in comparison to thormally tempered glass. Thus, curved glass can also be chemically tempered.

This glass can be tempered without the risk of breakage or distortion. In addition, the results of chemical tempering create perfect coupling in the case of later fermination with EVA or PVB, with results free from visual defects, with a great difference from the most recurrent defects of thermal tempering.

Scope

- . Tempering of glass thickness lower than 2.5mm;
- . Complex glass curves and big sizes that cannot be themselfy tempered;
- For all applications demanding senistance to high stress and impact (boots) acronautic military, acrospace industry, etc.)

 In all applications where, in addition to the mechanical proporties of the process, high quality glass is also sequired: transparency and flat surface (no distortion caused by the contact of the glass with the rolls).



CHEMICAL TEMPERING



pering in sectors such as construction, for example.

Glanfranco Rivaroli, RIVA: Another aspect that we need to make clear regards costs. Chemical tempering is not, as is often considered, more expensive, on the contrary. It all depends on how many glass sheets you are tempering with the plant. A chemical tempering plant usually consumes about 15 per cent of the energy installed. The limits of a chemical plant are those regarding time and, therefore, production yield.

Glass-Technology International (GTI): What about large-sized glass sheets do they take a longer time to be tempered? And what about glass thickness? Gianfranco Rivaroli, RIVA: Tempering time depends only on the size of the plant installed, and it is the same for the glass case of a watch to a large, 3-metre glass pene for a luxury yacht.

Alessandro Rivaroli REVA: It all depends on the chemical reaction time ... We are speaking about the time needed for the ions to penetrate the glass. There are, however, special glass types, such as those used for smartphones and touch devices, that can be tempered chemically in about 3 · 4 hours, compared to the 16 hours for chemical tempering of float glass. Over the past ten years or even a lot more, we have gone from glass processors not even knowing what chemical tempering was to now receiving continuous requests and contacts for information about our plants.

Glanfranco Rivaroli: Just think of the glass sector and the many different types of glass that we now have, all with their own specifics and safety regulations, and so on. The changes in the approach and requests for information regarding chemical tempering come about more or less with the introduction of laminated glass, where chemical tempering can actually help reduce the thickness of the glass used while ensuring the same mechanical resistance as glass thermally tempered.

Glass tempered thermally is usually not so flat, with consequent optical distortions over large surfaces. On the other hand, chemically tempered glass is a lot flatter as tempering is carried out at a lower temperature during which glass does not deform. This means that today's architects are requesting chemically tempered glass more and more.

COLLABORATION WITH AGC, BELGIUM

Roberta Cometti: This is why, other than our standard machines, we are now more flexible - offering customization as far as sizes are concerned. Of course, our goal is to be able to cater for large glass sizes, but right now we are offering 'tailor-made' construction - which is what we have done for AGC in Belgium.

GTI: What were the main requests of AGC?

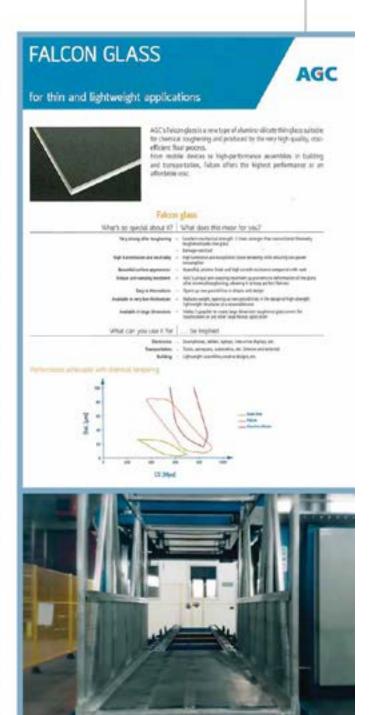
Glanfranco Rivaroli: Their main request was that of a 2 x 1.2-metre furnace, which they are using in the development of their special Fulcon glass, similar to the special glass types on the market for use in devices such as phones and tablets. These glass types can be tempered in four hours.

GTI: Tell us about the timing regarding the supply of this

Gianfranco Rivaroli: The first contact was in May 2018, and we delivered the furnace in November 2018, followed by installation and commissioning. And the plant was put into operation at the beginning of this year.

Giantranco Rivaroli: We have also supplied a smallersized plant for Schott Germany.

Roberta Cometti: These two important steps - a smaller company like ours working alongside the biggest international top brands - have been made possible thanks to Rivaroli, of course, but also due to our way of working and contacting these top players. Here at RCN, we are able to supply



CHEMICAL TEMPERING







a 'complete package', already presented at glasstec last year, starting from the bending furnace, chemical tempering and lamination. These same machines can also be purchased individually, but for those who want to have complete in-house production, we are there to supply the complete line. And we are now receiving a great number of request for these 'complete packages'.

Alesandro Rivaroli: A lot of our clients who 'worked' mainly with normal glass types, are now starting to

process glass for smartphones and devices where the use of chemical tempering gives the best results.

Glanfranco Rivaroll: This type of glass is now not only used for smartphones and tablets, but also in other applications where having a touchscreen is possible, such as in kitchen appliances, and even coffee machines in offices and work environments, just to name a few.

Roberta Cometti: Another sector that we are seeing growth from is that of safety glass and its increased requests for safety levels. This means that alternative solutions need to be found for glass used in balustrades and balconies for example.

Gianfranco Rivaroli: This is possible when using chemi-





IMPORTANT DEVELOPMENT AND CONFIRMATION

After an important period of company restructuring and colleboration in 2017, leading to the new "RIVA BY RON" chemical tempering line, designed and built thanks to the collaboration with Senior Expert Gienhanco Riveroli, R.C.N. Solutions' position on the market is now stronger, more innovative, highly professional and with greater violodity.

Adjusting and adapting machine to the needs for Industry 4.0; RCN provides Italian and European clients with improved technologies aimed not only at responding to the needs for investments, but also to provide improved handling and organization of more suitable production.

The offer of a complete range of machines for production cycles, such as bending furnaces, chemical tempering furnaces, larvineting hunaces, all with sizes of up to 6 metres, allowing to work in sequence or independently. enabling RCN to stand out from the crowd in the glass industry market compared to other solutions. The development and production of REVA BF that RON has been producing for some years now, is no less important. In fact, this laminating interlayer was subject of considerable investments cluring 2018, aircred at increase production rates in response to the demands of today's market, looking for product quality and precision. Last but not least, and a key characteristic of the company's philosophy, is the commitment to customizatio which means attention to the design of mechinery built according to customer needs, always respecting the technological and quality choices of RON. Therefore total 'Made in RCN' that is allowing the company to move up to the top of the glass industry.

cal tempering as it gives the glass twice more mechanical resistance compared to thermally tempered glass.

GTt: Does this mean that chemical tempering will take the place of thermal tempering?

Gianfranco Rivaroli: Not for all sectors because of the time required to temper the glass - about 16 hours for window glass, for example. So for normal residential home windows there will be no real need for chemical tempering. On the other hand, chemical tempering is, and will be, used more and more for architects in large curtain wall glazed areas, thanks to its guarantee of high aesthetic quality glass - especially with regards to flatness.

Roberta Cometti: I think what will happen is that chemical tempering will run side by side with thermal tempering according to the use that the glass will have once tempered. Another important advantage of chemical tempering is that the glass can be processed after tempering: cut, drilled, edged without problems, unlike thermal tempered glass.

Glanfranco Rivaroli: This is made possible because thermally tempered glass has internal stress tension

POWERLAM and LAMMY SYSTEM laminating furnaces

POWERLAM is RON's luminating machine without bugs, developed and built in 2008. POWERLAM is the production and logistic solution for significant lamination quantities. POWERLAM has been studied to meet the most important production needs in very short working times, where volumes need: last handling, precise performance. Little operator intervention, promptness of finished products.

This range of special machines works alongside the more traditional tempering furnaces with bags in different sizes for each and every production need. RCN has also given this product line a series of special features, such as the easy closure of the bags, an important characteristics to reduce times, and to ensure vacuum sealing.

ECO SPECIAL bending furnaces

The important correback in the request for bending furnaces has enabled RCN to start-up and up-goode its production of bending funaces, now with the possibility of customization and an increase in the number of independent heating zones, a fundamental leature to enable to carry out more complex bending, thanks to independent controls and temperature zones

'RIVA by RCN' chemical tempering furnaces

The winning choice in this period in which the market is requesting tempered glass with perfect flatness, without optical distortion, with the possibility of processing after tempering, highly resistant to impacts. Doubly winning if we also add the possibility of customizing the machines and the technical expertise of an expert with many years of experience in the construction of chemical tempering furnaces - Gianfranco Rivaroli - who has, in lact, more than 40 years of top level professional activity.

REVA BF lamination interlayer

This project started up more than xix years ago with the (limited) introduction of an EVA interlayer combining adhesion quality, transparency, ease of use, characteristics that are no so guaranteed in today's range of EVA products.

Indeed, this balance of very sensitive and difficult to calibrate quality has been reached only after years of experience and collaboration with important chemical companies.

REVA BF, which has been wildsted by international certification institutions, has undergone condevelopment, along with the commitment to maintain high quality based on the targeted choice of row in supplied by one of the most prestigious international chemical companies and capillary and professional production controls

Production has also increased thanks to an extension of the extenders range carried out in 2018.

CHEMICAL TEMPERING



and breaks up into very small pieces when cut or drilled. On the other hand, chemically tempered glass, which only has surface stress tension, can withstand these types of impacts and is flexible, which means that it can also be curved.

In the architectural glass sector, the advantage with chemical tempering is that when the glass panes are assembled together they match perfectly, while with thermal tempering, and the consequent 'waviness' of the glass sheets, this matching is not so perfect. And this means that lamination of these types of glass sheets becomes more complicated.

Roberta Cometti: It also become more expensive because you need to increase the interlayer thickness, as well as using more pressure and more power.

GII: The architectural glass market is now starting to look into the using of vacu-

um for IG units; is chemical tempering possible for these thinner but largedimensioned glass sheets? Glanfranco Rivaroli: Yes. of course. And, considering other types of glass, we have already supplied a couple of plants for the production of armoured glass for the automotive industry, which is now requesting to reduce the mass of the glass used in these special vehicles.

Alessandro Rivaroll: Chemical tempering used for armoured vehicles has now reached the level of thermal tempering, because the industry is combining these two types of tempered glass.

Roberta Cometti: There are in fact, requests for alternative solutions concerning higher resistance and smaller thicknesses.

Gianfranco Rivaroli: The use of these two different kinds



of tempered glass seems to be the trend at present for a number of sectors, where chemical tempered glass is used for the external sheet due to its higher resistance to impact, and thermal tempering for the internal sheet, where during impact the glass breaks up into small pieces.

TECHNICAL ASPECTS OF THE PLANT

GTI: How often do the salts used for chemical tempering need to be replaced?

Gianfranco Rivaroli: In chemical tempering, the exchange takes place between ions of potassium nitrate and sodium contained in the glass. The bigger ions of potassium enter the glass, which releases sodium and compresses the glass surface. When the salts reach a concentration of sodium higher than 2 per cent, they can either be replaced or regenerated by removing 'old' salts and adding new salts. The levels of the salts obviously need to be constantly monitored.

One of the first companies in Italy to use a plant of this kind, replaced completely after 10 years of work.

The need to regenerate the salts or replace them can be seen in the quality of the glass produced - by placing some small samples of glass inside the furnace and keeping a regular record of the parameters of the tempered glass. The

other possibility is that of carrying out tests on the tempered glass.

GTI: Is there the possibility of tempering only one part or side of the glass sheet?

Gianfranco Rivaroll: Since the glass sheet is inserted into the salt solution vertically, it's quite difficult to do this, but it is possible. In fact, a few years ago, I developed a smaller special furnace for a university in the area of Tuscany, where they needed to temper only one of the surfaces of the glass to transmit electronic waves. More recently, a company in Modena developed their own furnaces and bought the salts from us to be used to temper the new types of vitreoussurface tiles.

So you can see that there are endless applications for the use of chemical tempering.



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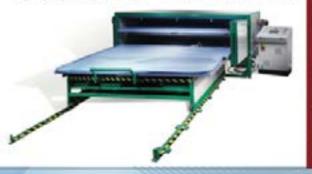


CN was set up by Elena Calvi and Stefano Ricchi and produced furnaces and kilns for the flat glass industry. The company was innovative and formed international partnerships to learn new techniques; they followed up research into new products. They developed and launched their top product Powerlam for laminating glass using EVA or PVB. Their products were exported to Europe and they had successfully broken into the American and Russian markets.

Halfway through 2016 RCN faced a severe test of its maturity: the departure of one of the founding partners – Stefano Ricchi. Very often, new directions taken by a company – in terms of styles of approach to the market, to clients and to its own commercial network – are not accepted equally by everyone. This

was the case with RCN.

The transition from founder-owner to second generation manager is never easy for a company. Firms are set up by special people who at a particular moment have the drive, the determination, the inspiration and the charisma to



The company has had a successful year with orders up by 16% and is confident that it is even more competive in its new format.

Canice Murray

COMPANY UPDATE

found and lead them. There is no formula for certain success and there is no guarantee that the particular conditions that favour the setting up of a company will endure; in fact the reverse is true – most new set-ups don't last.

THE PRESENT CHALLENGE

Running a company is a dynamic hands-on business. Decisions need to be taken constantly in ever changing circumstances. The global crisis has led to a drastic natural selection of companies. The firms that have survived are different from those that haven't. The present is a new country; they do things differently here. Clients are not what they used to be. The old ways of dealing with them are no longer valid. New ways will have to be found, by trial or by error. Whoever is unable to change course when the market changes will be lost.

THE SOLUTION

At RCN it was clear that a new approach was necessary. Feedback from Fairs and agents and competition on price indicated that more economical products would have to be offered without sacrificing quality. Flexible production would allow greater choice of service options to be offered with each machine. Clients would have to be informed of the possibilities offered by new developments. The client would have to be able to get accurate comprehensive information from the Agents, since they were usually the first contacts. A new form of technical commercial agent would be needed. The company would have to select its agents very carefully. Clients would have to be given a fully customized product, not simply standard models. This played to one of the companies strengths, which was the design and supply of custom-built equipment.

CRISIS POINT

Whoever could not adjust to the new circumstances would be hindering the company's development and losing clients. It became obvious that a clash between the formerly successful traditional approach and the new approach could not be avoided.

The remainder of the company strongly supported Elena Calvi in realigning the firm's business into RCN Engineering, which is responsible for technical development and production, and RCN Solutions, which is the commercial and marketing side.

AFTERMATH

RCN Solutions was present in force at the Dusseldorf Fair showing its best machines and meeting as many people as possible. The result was a number of orders, some from countries where the company had not previously been represented. There was also interest shown from Iran, following Glasstee.

At present, the main focus is on building up a network of agents with the necessary technical know-how to analyse the client's real needs and how these could be met by a more flexible range of products. Alongside the agent network there is a requirement for a distribution network.

An agreement was reached with Tecno-glass to distribute RCN EVA products in central and southern Italy. This agreement is working out well to the satisfaction of all concerned. The network is well organized and the people are very committed.

EUROPE

Around Europe the situation is mixed. The agent network is being set up. France is looking promising as a lot of glassworks have broken away from their previous holding companies and become independent. In Germany they have one major client: but the German market is difficult for lamination furnaces that use EVA: in Germany mostly largesized glass laminates are used, which require another technology.

Local certification is more understandable in USA where the conditions are more severe with hurri-



canes and firearms being more frequent. The U.K. remains sluggish, with uncertainty over the future a factor.

Russia was a very profitable and productive market until it was almost completely closed by international sanctions. This applied across the board to all players and ultimately facilitated the entry of Chinese products into the Russian market. This situation also extended to central Asian countries such as Kazakhstan and Uzbekistan The USA is going well for certified EVA but less well for other machines. There are many competitors. some of them genuine and serious -- but many are not able to provide highperformance products and in particular are not able to guarantee the high quality production process that RCN can deliver. The quality of their machinery and service is not as good as RCN's but their salesmanship is very aggressive



and, in the final analysis, getting the sale is the most important thing for them.

ROOM FOR IMPROVEMENT

One area of discontent is logistics: unreliability of courier delivery times and lack of commitment is a serious problem. Client dissatisfaction is inevitably transferred immediately to the supplier.

FUTURE PROJECTS

Growth can be expected in touch screens and chemifeeder systems and servicing of furnaces. RCN is in the process of responding to the demand for "Jumbo size" 6m units.

TOMORROW

As the new year begins RCN Solutions can look back with satisfaction on their improved trading position, on successfully passing the milestone of the departing founder, and on their good showing at Glasstec in Dusseldorf. They can look forward with confidence to the future in the knowledge that their choices proved correct and that they have the personnel with the skills, tivation to meet the challenges which lie ahead.

Finally, a piece of news that is fundamental to the company. The management of RCN is proud and happy to announce a new entry in which the entire firm reposes great hopes: from 1st January 2017, young Davide Ricchi succeeds to the position his father once held, with great enthusiasm, business acumen, and dynamism.







RCN Solutions

COLLABORATION WITH A 'PIONEER'



Chemical tempering is not unknown to our readers, but the applications that we are seeing in today's glass industry are. This article not only takes us through the process and the plants, but also 'introduces' us to a new partnership and collaboration that will surely lead to even more complex needs and demands for this 'niche' technology.

CN Solutions, wellknown to the global glass sector for its laminating and bending furnaces, and customized solutions, recently announced that it has set up a division dedicated to the chemical tempering of glass, thanks to the collaboration and consultancy of Gianfranco Rivaroli, by some described not only as the pioneer of glass tempering, but also as its inventor.

A PIONEER AND PROMOTER

We can say that Gianfranco Rivaroli is both a promoter and pioneer of chemical tempering in the global glass sector. In fact, he describes himself as a 'promoter' of chemical temper-

ing, and, in his opinion, chemical tempering is considerably underestimated at industrial level, adding that it can have an important potential and more diverse applications.

He has more than 45 years of experience in the construction of chemical tempering plants, a process that can be used for thin glass sheets starting from 0.3 millimetres, providing considerable resistance to bending, breaking and thermal shocks. The technology, which comes from the aerospace sector, and was first introduced in the industrial field by Rivaroli, and is today used in an increasing number of applications. These applications were first of all the treatment of optical glass lenses, leading

What is chemical tempering?

tempering is a process that gives glass higher resistance to bending, breaking and thermal shocks, by means of creating a surface compression layer. But unlike thermal tempering. chemical tempering does not involve heating the glass up to it 'solf' stage (more than 600°C) and then to cool it quickly, but by means of a chemical 'bath'

The glass, in fact, is placed in a tank of molten potessium salts at 400-480°C. The gradients of their respective electrochemical potential causes an ion exchange between the surface sodium ions in the glass and the potassium ions in the salts The introduction of potensium ions, much larger than those of sodium, causes a residual stress system characterized by compression stresses on the surface, compensated by tensile stresses inside the glass and all this results in a considerable increase in mechanical properties.

Glass treated in this way is, in fact, three times more resistant to bending compared to glass of the same thickness treated thermally.

... less energy use, and do not involve any alteration of the optical properties of the glass ...

Advantages

But this technology has many more advantages. First and foremost, it enables to treat very thin glass of less than 2.5 millimetres and even those of 0.3 millimetres, as well as different shapes, complex curvatures and different thicknesses.

"We are speaking about situations where thermal temperi cannot be used," explains Gianhanco Rivaroli

"In fact, with traditional tempering, glass that is heated to softening point must have a uniform thickness of at least 3 millimetres. These aspects are absolutely irrelevant in chemical tempering, where a superficial exchange of ions is carried out at about 20-50 microns depth, but also at 100 microns, so as to give the material even higher resistance."

The law temperatures required by the process ensure less energy use, and do not involve any alteration of the optical properties of the glass. Glass that has been chemical tempered can also undergo subsequent processing such as grinding, cutting and drilling, without compromising its mechanical properties.

"Chemical tempering is an extremely flexible process that can easily be part of work cycles. The process, in fact, takes about 16 hours for normal sods lime glass, and even less - 4 hours - if the glass to be tempered has been specially developed for this treatment, such as aluminosilicate glass. Above all, the fact that the process can be carried out on different thicknesses means that different plasses can be processed at the same time in a single tank. This means that glassmakers and processors can start up the workcycle during the night, processing all the glass that they need the next day."







to the design and construction of large-sized furnaces.

A 'NICHE' **TECHNOLOGY IN** RESPONSE TO MORE COMPLEX DEMANDS

The applications of glass are requesting more and more complex bending and optical properties, above all with extremely high resistance. And chemical tempering - still considered a niche technology - is becoming the response to this demand, gaining an everincreasing impact in the glass industry.

THE PLANTS

Chemical tempering takes place in plants in which Rivaroli and his know how, combined with the production facilities of RCN Solutions, construct plants with globally unique characteristics. The range of plants produced covers all sectors using chemical tempering, with sales all over the world.

The different models differ as per the sizes and dimensions of the glass sheets to be processed, and vary from medium-sized furnaces up to plants for large-sized glass sheets able to process glass sheets of up to 3200 2500mm. Customized plants for clients can also be made of course.

The plants are made up of a pre-heating chamber, positioned above a fusion tank, where the glass is pre-heated for a period of from 30 minutes to 3

... the only limit is that of the imagination of transformers ...

hours, according to the thickness, which can range from 0.3 to 15mm. After this phase, the glass is placed in the fusion tank with the molten salts, pure potassium nitrate for product analysis according to specifications provided by RCN Solutions, where it remains immersed for the duration of the cycle. At this point, the glass goes back into the chamber for the cooling phase, lowering the temperature before exiting the furnace, so as to avoid thermal shocks.

The tank is also equipped with a motorized partition that closes when the glass is lifted to ensure the highest safety. The removed glass has a thin layer of salt on the surface that is easily eliminated by immersing the glass sheet in water.

The entire process is automatic and human intervention is required only for loading and unloading of the glass sheets from and to the racks.

These chemical tempering furnaces have robust construction thanks to the use of high quality materials, such as painted iron sheets for the external structure, stainless steel for internal parts, and special steel for the fusion tank.

The heating power is distributed so as to ensure the uniformity of the bath temperature, and each plant is managed by a control panel with intuitive user interface, on which all parameters regarding the process are input. Moreover, the plants are equipped with an alarm system which makes them extremely safe.

INFINITE APPLICATIONS

"Thanks to its special characteristics, chemical tempering is a technology that can be used in diverse applications other than the uses of the first furnaces in optical lenses and those for sunglasses," says Rivaroli. "In fact, from then onwards, the glass sector has continued to increase and diversify its requests, such as for glass for watches and lighting, leading to the production of furnaces for the industrial sector."

At present, chemical tem-



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