



Mappi International: expanding and moving with the times

Mappi International was established in 1993 and is currently a leading manufacturer of flat glass tempering furnaces, active in both national and international markets thanks to its long-standing knowledge and experience in this specific sector, using some of the most sophisticated technological innovations and maintaining high standards of quality.

In the early 2000s the need to meet increasingly more demanding requests and goals in both national and international markets led the company to increase its production capacity and expand its technical and sales organizations. The compa-

Since its founding in the 1990s, Mappi International's main aim was to become a leader in its sector – tempering. And, thanks to the experience of its founder and personnel, this is exactly what it has done. Not only operating with a worldwide sales network, the company has also opened a series of branches in North America, where it can be even closer to its clients there. In this article, we are presented with the products the company is most proud of, as well as those on show at this edition of GlassBuild America – 12-14 September in Atlanta, Georgia.

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ny therefore decided to build new premises of 4,000 square metres where all systems are now designed and manufactured, resulting in more rationalized production activities and excellent functionality.

The company operates through a widespread sales network covering the whole national territory, the major European countries and North and South America. Results in Europe have been very satisfying, as have those in the North American market where in response to the success encountered to date and the development potential offered by the area, Mappi North America Corp. was established in 2007 and two branches were opened, one in Chicago and the other in Montreal, in Canada, to expand the company's sales presence in the area and offer a complete and efficient customer assistance service.

ENVIRONMENTAL CHALLENGES

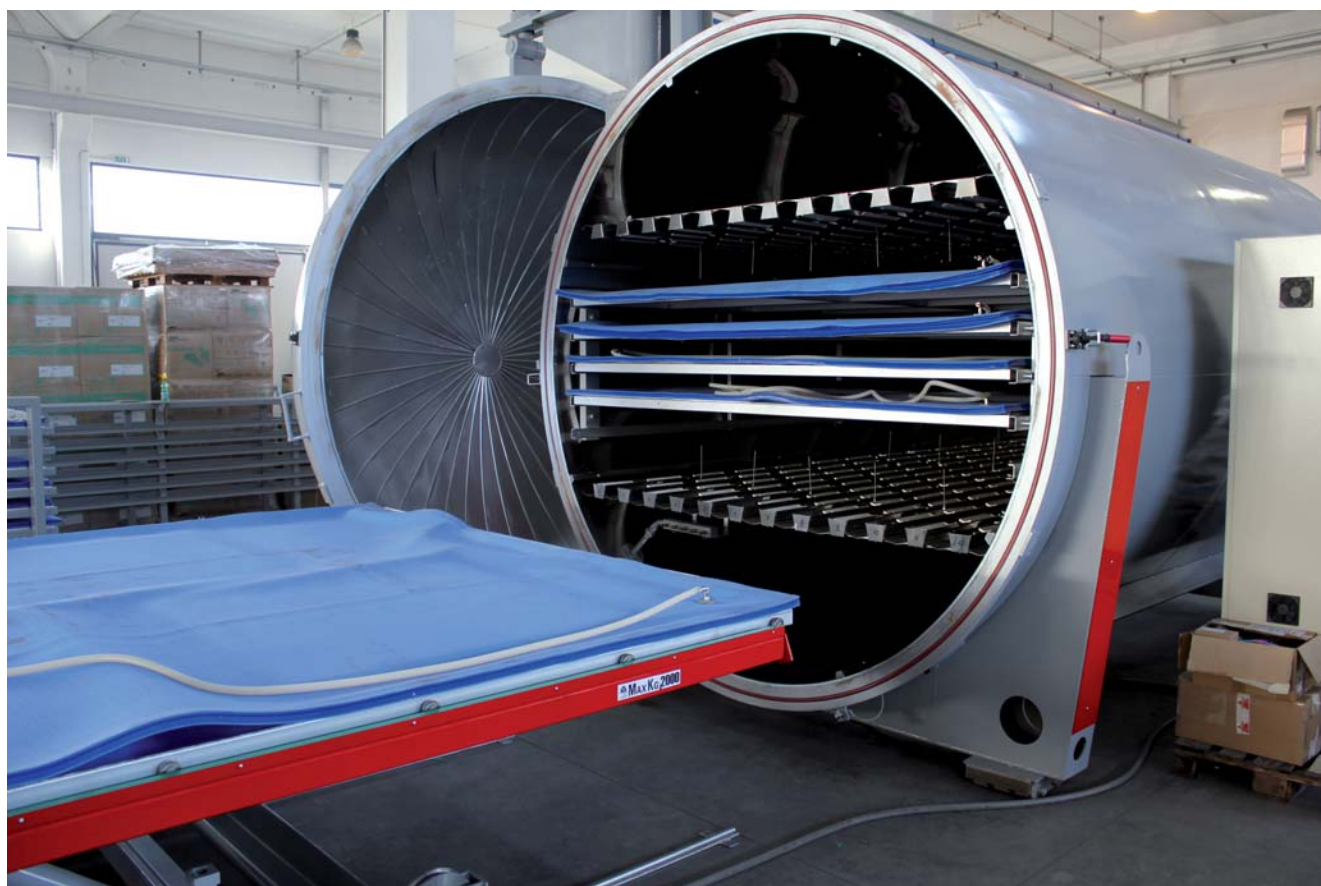
The company has always been committed to meeting the most difficult challenges and an



increasingly high number of these are related to the environment.

“Transparent like air, solid like earth and passionate like fire” – Mappi International's inspirations come directly from nature. The company is constantly researching and developing ways to improve production while maintaining its environmental commitment.

One of Mappi International's objectives is to analyze energy consumption during production





and, based on this analysis, develop projects which reduce consumption while creating a great product. The importance of reducing energy consumption has led Mappi International to use motor driven fans with a direct current to manage the air used for tempering, optimizing efficiency without reducing available capacity. Mappi International furnaces, with new computerized controls and small heating elements, consume less energy. These furnaces are equipped with a high-speed heating system, enabling to reach production temperature in a short time while cutting down on time during shift changes.

RELIABILITY AND QUALITY

Mappi International systems have become a synonym for reliability and production quality thanks to the commitment and choices made by the company's management, orientated towards constant research and technological product development.

The in-house technical department is responsible for research and development, with the help of a team of experts working on systems of the latest generation, carefully following new designs and updating operating programmes for furnace models already in use.

With more than 200 furnaces already installed all over the world, Mappi International systems guarantee high production capacities and high

standards of quality, thanks also to the Air Convection System designed to temper low-E products of the latest generation including the magnetronic soft coating with an index of 0.02, whilst remaining extremely easy to use and having a minimum impact on the environment.

MAIN PRODUCTION

TOUCH

TOUCH™ is a new integrated system for the automatic control of production and processes in order to meet ANSI and CE standards of finished products, with automatic archiving of each and every process cycle. The exclusive TOUCH™ system enables the immediate control of all process parameters and real-time printing of Certification Reports. It consists of a special Touch Screen Monitor of the last generation, and a series of instrumental equipment for the control of tempering processing stages.

GHBS

Following a detailed and complete engineering study, Mappi International and *Glaverbel* realized a convection system for glass tempering which amplifies the potential of Mappi International's technology. This new and exclusive Total Convection System allows to temper all coated glass on the market, selective, solar control, including low-E soft coating with an emissivity

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index of 0.02 and to increase the quality of the tempered glass, and plant productivity.

The pre-heated air that moves around the upper and lower surfaces of the glass allows an increase in the absorption of heat and gives a homogeneous temperature in all thicknesses and sizes of glass. The automatic management of this system allows only the glass to be treated by the air flow. The GHBS software controls the air flow only when and where the glass is present, providing different configurations for each and every possible need.

IHS

Intelligent Heating System for the self-organization of heating, allowing heating only in zones where the glass is present, thus eliminating overheating of rollers not covered by glass. The specific software automatically manages all heating zones with a control precision of $\pm 1^\circ\text{C}$.

MHS

Multizone Heating System provides homogeneous glass heating and is particularly suited for soft-coated low-E glass. The heating chamber has several heating zones, each one controlled by computer through thermocouples. These detailed zones enable high precision heating and great flexibility to adapt to different shapes of glass.

ESS

Energy Saving System, obtained through optimizing management of electronic controls and setting of the ventilator and all heating zones.

The machine is fully managed by a Siemens PLC that allows an optimized management of electronic control and setting of ventilator and all the heating zones. The ventilator is powered by DC motors, with electronic speed control, which provides considerable energy savings.

TAS

A modem is included with the furnace providing Tele Assistance, which enables Mappi International to quickly check the conditions of the furnace, download recipes and provide trouble-shooting. Mappi International furnaces are completely managed by PLC and processing variables are set from the keyboard, while global processing is controlled by means of a monitor.

ATS - TECHNICAL DATA

Loading area	1,500 3,800	1,800
mm	1,500x3,800	1,800
inches	60x150	70x12
Productivity		
3mm – m ² /h	196	185
4mm – m ² /h	146	139
5mm – m ² /h	117	111
6mm – m ² /h	97	92
8mm – m ² /h	68	64
10mm – m ² /h	54	51
12mm – m ² /h	45	43
15mm – m ² /h	36	34
19mm – m ² /h	29	27
Maximum consumption		
kWh	237	245
Plant dimensions	m ft	m ft
Length	20 65	17 5
Width	4.7 15	5 1
Height	3 10	3 1



3,000	1,800 3,800	1,800 4,200	2,200 3,800	2,200 4,200	2,450 4,200	2,450 4,800	2,700 5,500	2,900 5,500	3,200 5,500
3,000	1,800x3,800	1,800x4,200	2,200x3,800	2,200x4,200	2,450x4,200	2,450x4,800	2,700x5,500	2,900x5,500	3,200x5,500
0	70x150	70x165	86x150	86x165	96x165	96x189	106x216	114x216	126x216
	235	259	287	317	353	403			
	176	194	215	237	264	302	343	368	407
	141	156	172	190	212	242	282	303	334
	117	129	143	158	176	201	238	255	282
	81	90	99	110	122	140	169	182	201
	65	72	79	88	98	112	134	144	158
	54	60	66	73	81	93	104	112	123
	43	48	53	58	65	74	89	96	106
	34	38	42	46	51	59	74	80	88
	294	329	353	391	415	469	690	810	840
	m ft	m ft	m ft	m ft	m ft	m ft	m ft	m ft	m ft
5	20 65	22-72	20 65	22 72	22 72	25 82	28 91	28 91	28 91
6	5 16	5 16	6 20	6 20	6 20	6 20	6.5 21	6.5 21	7 23
0	3 10	3 10	3 10	3 10	4 13	4 13	4 13	4 13	4 13



EC

In order to facilitate access inside the heating chamber or cleaning and maintenance, as well as the replacement of ceramic rollers, the plant can be equipped with a type of system designed by Mappi International: the lower chamber is on wheels and rails embedded in the ground, thus enabling side extraction.

ATS

ATS is Mappi International's new horizontal tempering furnace, which includes all the advanced Mappi International technology, plus a wide range of innovative solutions which enables it to obtain higher production output and quality results. All this to satisfy the current market demands: higher production, higher quality and lower energy consumption.

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SALE OF LARGE-SIZED LAMIFLEX TO PROTEMP - TORONTO



ProTemp Glass is a division of the Toro Group of Companies, founded in 2003, and is a high-performance insulated glass producer and glass fabricator in Ontario, Canada. Quality and Service are the number one priority for all 100 plus ProTemp employees as they strive to become Canada's number 1 in its field. Over an area of 110,000 square feet ProTemp has established a modern production facility, unsurpassed in its modern technology and equipment. Tempering is not an issue for ProTemp: it boasts three Mappi International convection tempering furnaces. The largest furnace is capable of tempering lites of glass up to 102" x 216" in size. Smaller sizes are possible as well, minimum dimensions are 4" x 4". Custom laminated glass products using PVB or EVA film can be produced using a Mappi International Lamiflex line, sizes up to 94" x 177".

Why Mappi International – ProTemp's opinion

"The first Mappi International furnace was purchased in 2001, it is the smaller of the four furnace which were purchased from Mappi International since then.

In 2003 ProTemp Glass was formed and



at this time the Tutan Tempering furnace was purchased, which is a convection furnace capable of tempering sizes up to 102" x 216".

As our volumes increased, in 2005 we purchased a smaller convection furnace 72" x 120" from Mappi International, and in autumn 2010 we purchased our fourth tempering furnace from Mappi International 86" x 168".

Why so many tempering furnaces you may ask!



"The most important factor in any business is service. We find ourselves in a fierce competitive environment consequently we have reacted to the Southern Ontario market by purchasing equipment that will give us that edge in providing quick and efficient lead times. Mappi International has been very supportive, we love the design of the furnaces, the insulated qualities of the heating chamber, the ease of operation and the fact that you do not require SO to temper glass. Company technicians trained our furnace operators within a matter of a few days to operate the furnaces.

The installation of this equipment is carried out quickly and efficiently. Obviously the bigger the furnace the longer time is needed to assemble all the components.

The Largest Tutan Furnace took approximately six weeks, and the latest furnace installed, which was also a fair size, took approximately four weeks. Delivery for the tempering furnaces from

Mappi International obviously varies on the size and complexity of the furnaces. We found delivery times very reasonable, from four months for the smaller furnace to six to seven months for the largest."

Other machinery at ProTemp

A Bottero Dual-Jumbo Cutting Line dominates in the cutting area at ProTemp, complimented by a Bottero Crane Gantry system. Approximately 20,000 square feet of glass are cut on this line per shift. There is also a smaller free-fall cutting line for Hand Cutting as well as a Laminated Cutting line. Nearly 50 per cent of the glass processed is converted into Insulated Glass units on two For.El. IG lines. Maximum unit sizes are 98" x 144". ProTemp's insulated glass finds predominantly commercial use, in high-rise buildings within Canada and the United States.

About a third of the glass is processed in the Fabricating Centre. Three Bottero Glass Edgers and a Beveller provide polishing to glass edges as required. ProTemp's CNC machines, Two Forvets and a Bimatech provide drilling, notching and custom edgework. A large portion of this glass is used to support the All-Glass Storefront department. Opaci-Coat® Spandrel products are produced by means of a Roller Coater and Drying furnace. Custom colours are not an issue for the in-house colour matching laboratory. Sand blasted and silk screened glass products are also processed at ProTemp.



THE FOUR VERSIONS OF LAMIFLEX HAVE THE FOLLOWING CHARACTERISTICS:

LAMIFLEX 1500

Layout of the plant (mm)	8,000 x 3,000 x 2,500h
Dimensions of the furnace (mm)	3,500 x 2,300 x 2,500h
Maximum glass dimensions (mm)	1,500 x 2,500
Number of internal floors	5 on extractible trolley, with silicon bag
Production capacity per cycle	18 sq.m. (1,000kg) with PVB, ±4 hours
Installed power	Kw 48, 400V/3F+N+T (different voltage must be requested)

Energy consumption per average cycle Kw 28

LAMIFLEX 2000

Layout of the plant (mm)	11,500 x 3,500 x 2,800h
Dimensions of the furnace (mm)	5,200 x 2,800 x 2,800h
Maximum glass dimensions (mm)	2,000 x 4,000
Number of internal floors	5 on extractible trolley, with silicon bag
Production capacity per cycle	40 sq.m. (2,000kg) with PVB, ±4 hours
Installed power	Kw 85, 400V/3F+N+T (different voltage must be requested)

Energy consumption per average cycle Kw 52

LAMIFLEX 2200

Layout of the plant (mm)	12,000 x 3,800 x 3,000h
Dimensions of the furnace (mm)	5,800 x 3,000 x 3,000h
Maximum glass dimensions (mm)	2,200 x 4,500
Number of internal floors	5 on extractible trolley, with silicon bag
Production capacity per cycle	49 sq.m. (2,475kg) with PVB, ±4 hours
Installed power	Kw 100, 400V/3F+N+T (different voltage must be requested)

Energy consumption per average cycle Kw 60

LAMIFLEX 2400

Layout of the plant (mm)	12,000 x 4,000 x 3,000h
Dimensions of the furnace (mm)	5,800 x 3,200 x 3,000h
Maximum glass dimensions (mm)	2,400 x 4,500
Number of internal floors	5 on extractible trolley, with silicon bag
Production capacity per cycle	54 sq.m. (2,700kg) with PVB, ±4 hours
Installed power	Kw 110, 400V/3F+N+T (different voltage must be requested)

Energy consumption per average cycle Kw 64

FOX

The Fox series is designed to satisfy the demands of the small to medium sized glass-

works that are interested in integrating a compact tempering plant but are limited by available space. The Fox series maintains high quality standards while remaining economical.

FOX - TECHNICAL DATA

Loading area	1050 2300	1250 3200	1500 3200
mm	1,050x2,300	1,250x3,200	1,500x3,200
inches	41x90	49x126	60x126

Productivity

3mm - m2/h	72	120	144
4mm - m2/h	53	88	106
5mm - m2/h	43	72	86
6mm - m2/h	36	60	72
8mm - m2/h	27	44	53
10mm - m2/h	22	36	43
12mm - m2/h	17	28	34
15mm - m2/h	14	24	29
19mm - m2/h	12	20	24

Maximum consumption

kWh	117	171	215
Plant dimensions	m	ft	m ft m ft
Length	12	39	16 52 16 52
Width	2.3	7.5	2.3 7.5 2.3 7.5

LAMIFLEX

Lamiflex is Mappi International's new furnace for glass laminating. Thanks to an innovative system enabling laminating with PVB film without an autoclave, it allows for excellent results in: quality, production output and cost effectiveness. ■



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