

MAXFOAM SLABSTOCK



cannon
DEDICATED INDUSTRIAL SOLUTIONS



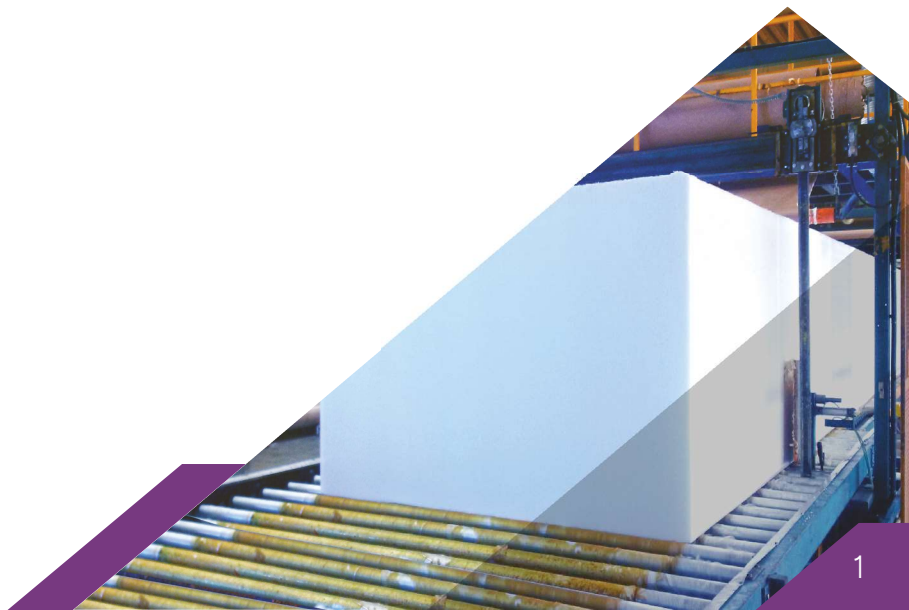
The
SLABSTOCK
FOAM
SPECIALISTS

Welcome to CANNON VIKING!

Cannon Viking is the world leader in the manufacture and supply of machinery and technology for the production of polyurethane foam blocks, with more than **850** machines operating in over **130** countries worldwide.

Cannon Viking offer a large variety of solutions to suit all foam block and furniture producers, from single block machinery through to the range of continuous foam block production plants with the latest generation of computer controls, high pressuring chemical metering and foam liquid laydown technologies.

We can supply a complete turn key solution with the foaming plant, chemical tank farm and foam cutting





FLEXIBLE

FOAMS

Technology

CANNON VIKING HISTORY

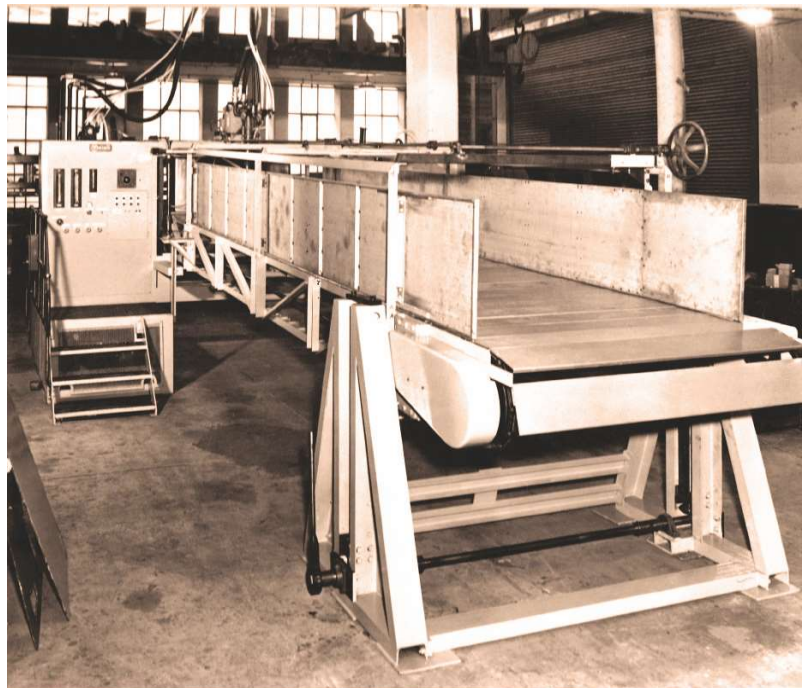


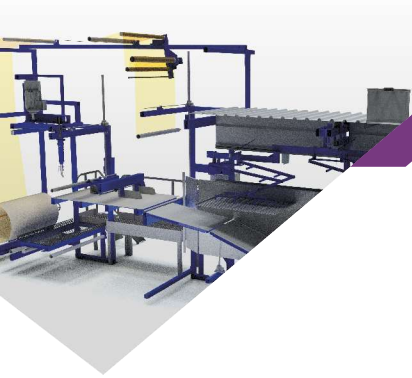
Cannon Viking was initially formed as **Viking Engineering** in **1956**. Since this date the company has been an integral part of the development and the evolution of the polyurethane foam industry worldwide. Our name is synonymous with high quality, efficient, and modern machinery and we continue to produce machinery of the highest standard today at our factory in Manchester, UK.

In 1989 Viking became part of the **Cannon Group**, the world leaders in polyurethane processing technologies.

As pioneers in the industry we have overseen the development of the latest generation of **Omega 4.0** computerised controls, bespoke chemical metering and measurement technology, **CarDio™** Carbon Dioxide Technology for low density foams and optional high pressure foam production technology for the **Eco-Slab** and **Maxfoam** machine range, all of which have been developed and supported in house.

Cannon Viking continue to evolve and develop to stay ahead in the support of all our customers. We have been at the forefront of all major industry developments over the past 50 years and we are determined to offer our many customers around the world the best product range currently available.





Maxfoam Range

Cannon Viking prides itself by offering customers industry leading flexibility for their Maxfoam machine design. To satisfy this requirement, each new project begins with a dedicated assessment to determine the most suitable machine specification.

Cannon Viking offer two models of **Maxfoam Slabstock Foam Equipment**: the **Maxfoam** and the **Maxfoam Elite**. Every machine is custom built and comes with a complete range of optional upgrades to satisfy every customer need and requirement.

The Maxfoam

The Cannon Viking Maxfoam equipment is in operation in more than **500** companies worldwide for the production of continuous flexible foam blocks and it is accepted as the most efficient and economical way to produce continuous rectangular foam blocks.

The Maxfoam is particularly popular for customers looking to produce furniture and covered foam. It uses bespoke and specially designed metering units to individually and precisely meter each polyurethane chemical. These chemicals are then mixed in a variable speed mechanical mixing head before being fed directly into the trough.

Maxfoam Trough Production

Foam production using a **Trough** has long been synonymous with Maxfoam technology. In this system, the chemical reaction takes place within the trough before rising from the top of the trough onto an **adjustable fallplate** which then leads the expanding foam block along a metal slat horizontal conveyor for the completion of the foam rise and initial cure.

This design allows for the production of flat top foam block with an even density distribution throughout.



The Maxfoam Elite

The **Maxfoam Elite** is particularly popular for customers looking to produce high end technical foams. It combines all of the advantages from Maxfoam process with added benefit of incorporating Liquid Laydown production with either partial high pressure or full high pressure metering units giving the customer the ultimate slabstock foam production machine.

Maxfoam Elite

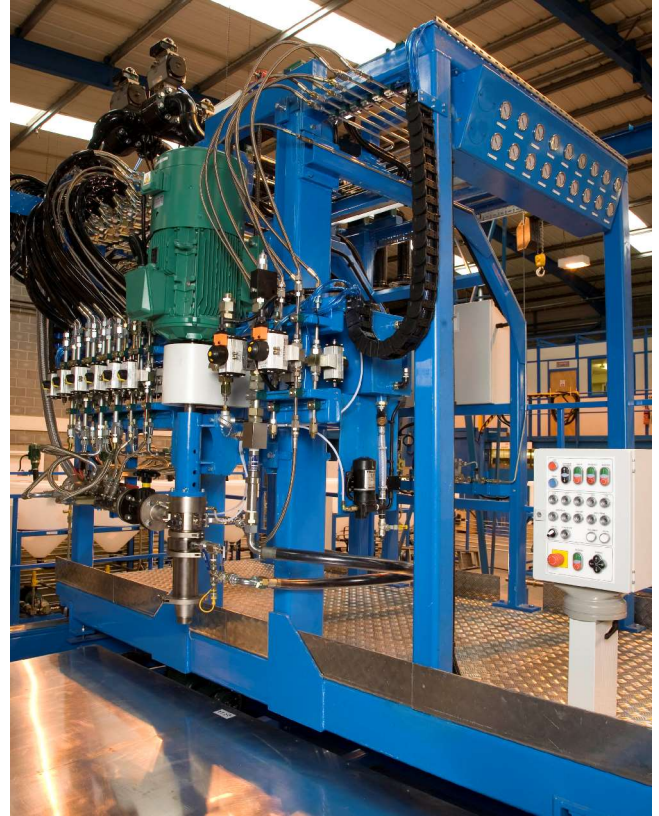
Liquid Laydown Production

Liquid Laydown production is a process which gives an even higher quality foam block by reducing the number of pinholes by introducing the chemical mix through direct foam laydown onto the pour plate. The laydown nozzle is connected to the pour plate and positioned in line with the first section of the fallplate. The chemical mix is poured onto the bottom paper which then leads the expanding foam block along a metal slat horizontal conveyor for the completion of the foam rise and initial cure. This design allows the air bubbles to escape from the reacting foam chemicals at the point of the foam laydown which can be an advantage to customers looking to produce foam for higher quality applications.

Partial High or Full HP Production

Cannon Viking are industry leaders in the supply high pressure metering units for polurethane slabstock production. There are two options available to customers in the Maxfoam Elite range. The first and most popular option is the partial high pressure system which is the supply of TDI, Water and Tin with high pressure metering pumps and injectors. The second option is the full high pressure system which is the supply of all chemical streams with high pressure metering pumps.

The Cannon Viking partial high pressure and full high pressure system improves chemical mixing which in turn improves the quality of the foam produced with finer and more regular cell structure.



Cannon Viking use a specially design patented Cannon injector to optimise the mixing of the TDI, Water and Tin into mixing head.

The **Eco-Slab** has been introduced to meet the growing demand by the market for a short compact continuous foam machine producing a wide range of high quality flexible slabstock foam blocks.

The machine has been developed using the latest generation of metering processes, computer controls and mixing systems which is packaged together in a modular machine design allowing for practical future upgrades.





OMEGA 4.0 Computer Controls

The **Omega** computer controls for foam plants has now become an integral feature for many foam producers around the world. Cannon Viking first introduced the Omega control and monitoring system in the early 1990's and we have since developed and innovated the system to become market leading computer control system for the production of continuous slabstock foam.

The latest generation of **Omega 4.0 Controls** is modern, comprehensive and has been inspired by Industry 4.0.

The latest generation of the **Omega 4.0 Control System** is in successful operation with customers worldwide and provides the operator with:

- Full formulation management
- Automatic control of chemical metering
- Closed-Loop Control with user friendly interface
- System developed and supported in-house
- Flow Meters included as standard for TDI, Methylene Chloride and Water
- Historical plant information

Omega 4.0 Pro

As a world leader in the development of Maxfoam Omega Computer Controls, Cannon Viking have now introduced the **Omega 4.0 Pro** for customers looking to enhance control and feedback on their Omega Maxfoam Plant.

This system has been designed for customers looking to have ultimate level of automotity and control than that offered by the standard Maxfoam Omega Controls.

The **Omega 4.0 Pro** consists on of an additional **touch screen** interface along with additional software and hardware features such as foam marmorisation (marble foams), block height indication, pressure tracking on chemical lines, low level tank warnings, VCO block length Cut-off machine integration and many more features.



Machine Specification

Machine	Machine Output	Production Speed	Foam Block Dimensions	Foam Density Range	Operating Pressure	Flat Top System	Machine Length
Maxfoam 400	240 Kg/min	2-6 M/min	Max 14 M High 13-22 M Wide	13-50 Kg/m ³	Low	RS System	25.3 M
Maxfoam 600	350 Kg/min	3-8 M/min	Max 14 M High 13-22 M Wide	13-80 Kg/m ³	Low	RS System/ Planiblock	32.9 M
Maxfoam 600 Elite	350 Kg/min	3-8 M/min	Max 14 M High 13-22 M Wide*	13-100 Kg/m ³	Partial High/High	RS System/ Planiblock	34.7 M
Maxfoam 800	430 Kg/min	3-8 M/min	Max 14 M High 13-22 M Wide	13-80 Kg/m ³	Low	RS System/ Planiblock	35.9 M
Maxfoam 800 Elite	430 Kg/min	3-8 M/min	Max 14 M High 13-22 M Wide*	13-100 Kg/m ³	Partial High/High	RS System/ Planiblock	37.7 M

*Please Note that with the Maxfoam Elite range Cannon Viking also offer the option of a Machine foaming widths of 1.5 – 2.5 M wide on customer request.

Foam Production Types

The Maxfoam machine range can be used to manufacture of all types of polyurethane foams for comfort including:

- Standard polyether foams – Comfort foams
- HR high resilience foams
- Visco / Memory foams
- Super Soft foams
- Gel foams
- Filled foams
- Fire Retardant foams
- CME / CMHR foams
- Semi Rigid / Rigid foams–On Maxfoam Elite machinery

Cannon Viking have experience designing and manufacturing equipment for many different types of foams and we are constantly developing equipment to process new foam types.

Cannon Viking Maxfoam Benefits

The Cannon Viking Maxfoam machine has been designed to offer the following:-

- Custom manufacture to industry leading standards according to customer needs and requirements
- Optimal chemical conversion into foam – Saving on expensive raw material
- Bespoke metering unit and mixing technology
- Flat top, rectangular shaped foam blocks
- Less skin formation with less waste
- Modular design allowing for future expansion of new foam types and upgrades
- Industry leading Omega 4.0 Computer Control system
- High quality foam production
- Process all fillers such as Calcium Carbonate, Melamine, Graphite, Gel and etc
- Carbon Dioxide CarDio™ technology can be installed for low density foams with liquid CO₂
- Technical support and knowhow provided for all foam producers
- Spare parts readily available for all types of foam machinery



Maxfoam Efficiency

Options & Upgrades

The efficiency of foam plant has become a vital requirement in a time when the cost of chemicals are ever increasing. The overall financial saving which can be obtained by producing flexible foam block on a Cannon Viking Maxfoam plant can easily exceed **10%** when compared to a conventional slabstock machines due to:

- Industry leading design and build quality
- Omega 4.0 computer controls and plant monitoring system
- Bespoke chemical metering system with high precision Mass Flow Meters included as standard on TDI, Methylene Chloride and Water
- Chemical laydown design using either Trough/Liquid Laydown technology

For years Cannon Viking have been offering **Mass Flow** meters as standard on lines for TDI, Methylene Chloride and Water. To date, Mass Flow meters are considered to be the most accurate system to measure the chemical flow rate on the market. This combined with the market leading **Omega 4.0 Computer Controls** offer the end user the ultimate continuous foam machine in terms of control, efficiency and quality of foam block production.

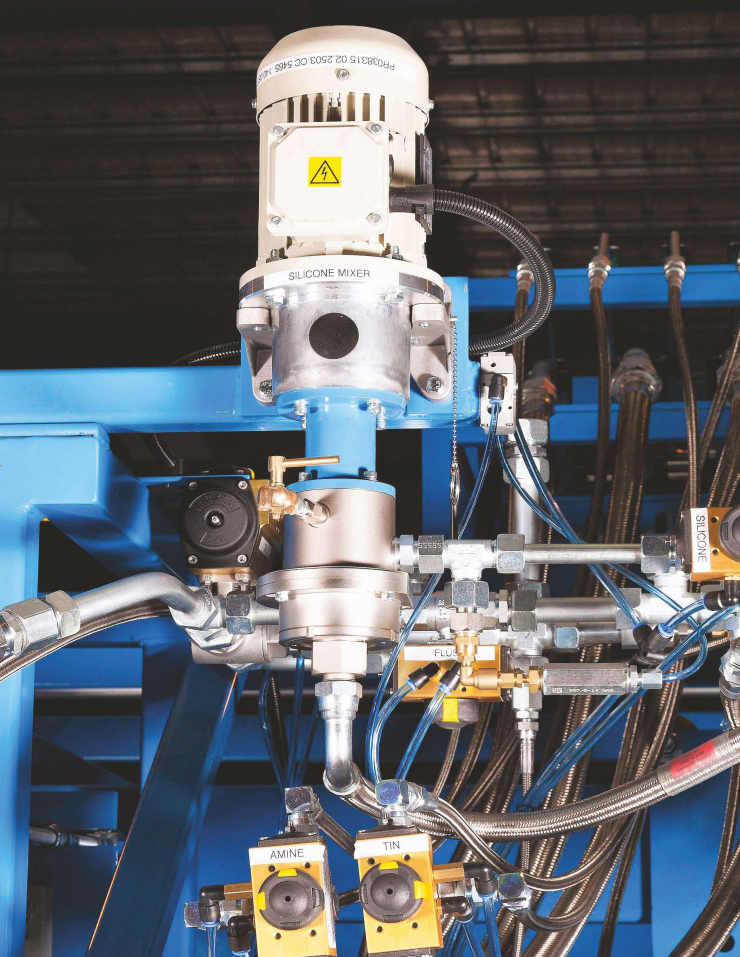
RS System

The **RS System** is supplied to further improve the foam block rectangular shape and maximise block yield with reduced waste. Two side films are pulled in height during the foam expansion phase to lift the block sides during foam formation–this makes the block flatter and squarer. The equipment consists of two pairs of RS pulling rollers, each driven by a variable speed drive motor. These rollers are motorised in adjustment. The pulling rolls can be tilted forward and backward by means of a drive motor, which is controlled automatically by a set of air sensors. The principle of the improved block shape is based on a further reduction of the friction between the rising foam and the horizontally moving side–paper/film.

Planiblock and Top Paper Systems

Cannon Viking has been supplying the **Planiblock** to further improve foam block profiles on the Maxfoam plant and we can offer varying solutions for further improving the flatness and Square shape of the foam blocks. This equipment can be supplied as part of a new Maxfoam machine installation or as a later addition as part of a machine upgrade.





Silicone Air Mixer

Cannon Viking introduced this development to further improve flexible foam cell structure and reduce pin holes on the Maxfoam plants. This equipment is already in successful operation with many existing clients in **Asia**, **Europe**, the **Middle East** and **South America** utilises a special, **Cannon Pre-Mixer** for better mixing of nucleation air and silicone prior to feeding into the Maxfoam mixing head of the continuous foaming plant

Additional Metering Units for Other Foam Types

Additional metering units can be supplied to enable a wide range of foam types and colours to be made on the same Maxfoam Plant.

These include specific metering units with specialised pumps for Colours, Filled Foams, HR Foams, Visco / Memory Foams, Fire Retardant Foams, Antistatic Foams, Anti UV Foams, CMHR / Melamine Filled Foams, Gel Foams and etc.

High Pressure Metering Units and Mixing Head

Cannon Viking has vast experience in the supply of foaming plants with high pressure metering units. The standard option is to supply TDI, Water and Tin with high pressure metering pumps and injectors. However, Cannon Viking also have the option for full high pressure metering units supplied as part of the Maxfoam Elite range..

LLM – Liquid Laydown Unit

This equipment is supplied to enable production of higher quality foam blocks with less pinholes and air bubbles. The equipment can be supplied as an option with new Maxfoam and Maxfoam Elite plants. These foam plants are normally supplied with partial or full high pressure metering units to deliver optimum foam quality.

Conveyorised Sidewalls

To further improve the foam block shape and reduce skin waste, the Maxfoam plant can be supplied with conveyorised driven sidewalls.

This equipment is particularly suited to high density and soft foams like HR and Visco Elastic/Memory foam. All Cannon Viking Maxfoam sidewalls can be supplied with a tilt option with angle adjustment for optimal foam block shape especially on high density and HR foams

Varimax Width Adjustment

The Maxfoam plant can be supplied with the Varimax option to enable the capability to vary the foam production width during the foaming without the need to stop the plant.

This feature saves on expensive start ups and shut downs of the foaming line which each time require a costly start and stop block.

VCO Block Cut off Machine

Cannon Viking manufacture the VCO Block length cutting machine for installation at the end of the Maxfoam conveyor. The VCO is used to cut the continuous foam into convenient lengths before being transported into the foam curing area. There are two models of VCO machines available, one for standard foams and another version specifically for soft and wet foams like Visco elastic / Memory and Supersoft foams.

Both machines use a long life/minimum maintenance saw cutting unit suited to all types of flexible foam.





CarDio™ System

The Cannon Viking CarDio™ System

CarDio™ is the patented process of the Cannon Group for producing low density polyurethane foam foams on either Conventional, Eco-Slab, Maxfoam / Maxfoam Elite or Varimax continuous slabstock plants, using liquid Carbon Dioxide (CO₂) as the blowing agent.

The Cannon Group was the first company to develop and install this technology on a full production machine, based on existing Maxfoam technology, over 25 years ago.

To date over eighty individual CarDio™ installations have been supplied worldwide.

Why use Carbon Dioxide?

The reason for choosing Liquid CO₂ are well known and the concept has been widely accepted since its introduction over 25 years ago.

The produce is abundantly available and continuous and significantly less expensive when compared to alternative blowing agents on the market. Furthermore, Carbon Dioxide expands three times more than alternative and more traditional blowing agent such as Methylene Chloride.

As a result, much less Carbon Dioxide is required and there are no harmful effects on the health of machine operators or to the safety of the factory. In addition, Carbon Dioxide gives the foam a softer feel which are properties that are highly sought after in many markets.

Using Carbon Dioxide, which is of course a by-product of other industrial processes, no additional gas is released into the atmosphere, which makes CarDio™ the only environmentally friendly way of producing flexible polyurethane foams complying fully with the strictest

CarDio™ Equipment

CarDio™ equipment can be supplied complete as part of a new Cannon Viking Maxfoam continuous slabstock plant or installed as an addition to an existing foaming plant irrespective of the manufacturer.

Cannon Viking has extensive experience of retro-fitting the CarDio™ system to competitor's equipment.

Two standard equipment versions are available.

The preferred option is the "Direct" System where all the chemical metering streams, including the Carbon Dioxide are fed at high pressure directly to the CarDio™ high pressure mixing head.

The second available option is the "Indirect" System where the Polyol and additive streams are supplied from the existing low pressure metering units and the pressure raised using a boost pump prior to its introduction into the new CarDio™ high pressure mixing head.

The CarDio™ equipment is available in three standard sizes to suit the customer's existing foam production design.

Service and Support

Cannon Viking has a team of fully trained Technical Service Engineers with a combined technical experience of more than 200 years in the polyurethane machine operation and foam manufacture.

Cannon Viking can be reached through email, mobile phone, WhatsApp and Skype from all countries, meaning that we may be informed immediately of any Service or Spares requirement.

These services are available around the clock and spare parts requests which the Company receives are treated with great urgency and effectiveness.

We stock all key spare parts for all our foam block machinery and offer competitive prices with fast delivery. All the Cannon Viking Machines carry a full guarantee of satisfactory operation.

Testing at Cannon Viking is thorough and the customer, or their representatives, are always welcome to inspect the final machine whilst testing is being carried out in Manchester.

Customers are welcome to undergo pre-delivery training at that time which will greatly facilitate the installation and operation of their machine when running in their factory.

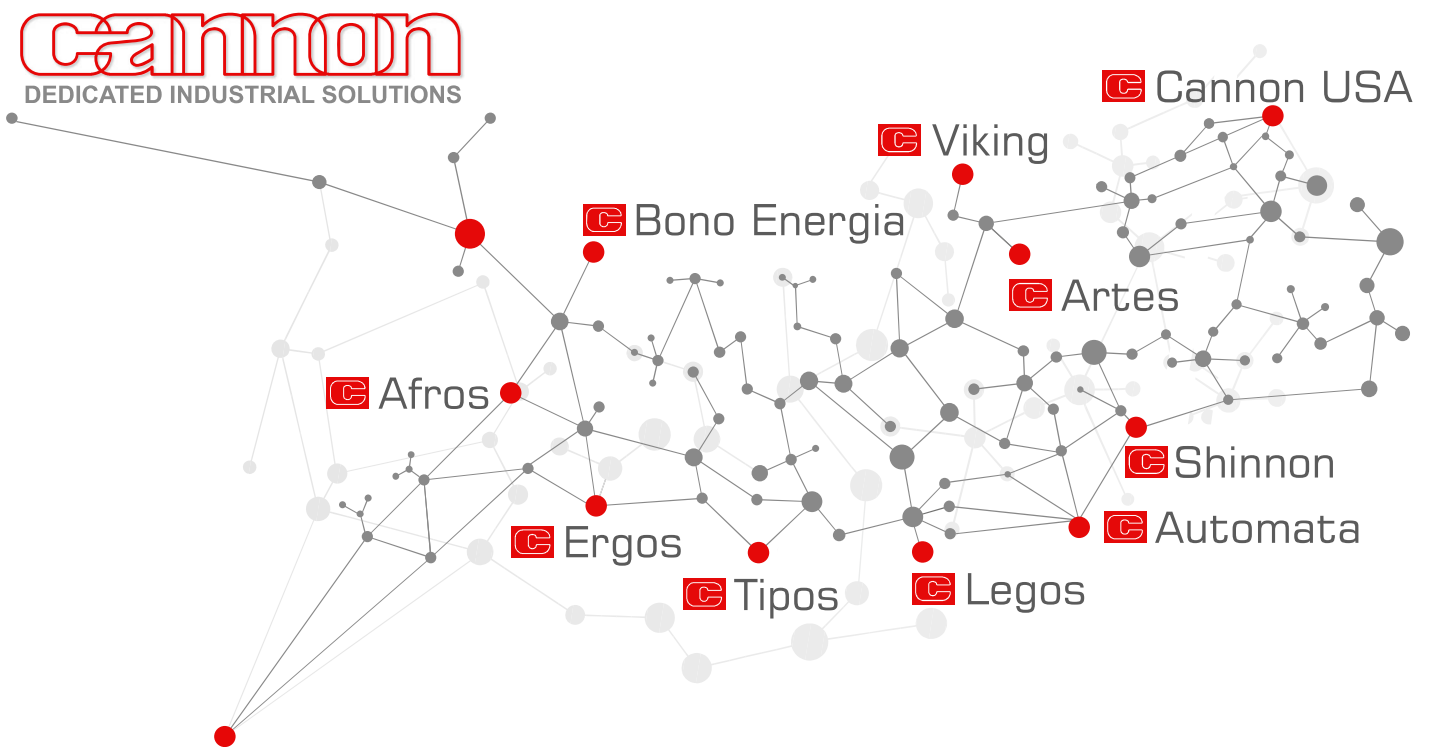
Cannon also provides full support and technical design to help customers plan their factory and machine layout with special emphasis to raw materials storage and temperature conditioning, foam block handling, foam block conversion and related fire safety.



The CANNON GROUP

Cannon is an international group supplying a wide range of worldwide industries with dedicated solutions; a complete range of plants and machines for continuous and discontinuous processing of polyurethanes and other polymers obtained by chemical reaction (manufactured in the UK, Europe, USA, China and Japan), equipment for thermoforming, composite materials, aluminium die-casting, industrial electronic controls, industrial boilers, thermal fluid heaters, co-generation plants, water treatment plants, environmental protection solutions and bulk chemical storage, metering systems.

The Group invests 5% of its turnover in dedicated R&D: this effort ensures constant innovation and efficient industrial solutions.



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Cannon Istanbul
Cannon Eurasia

Cannon Nippon
Cannon France
Cannon Korea
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www.cannonviking.com
www.cannonplastec.com

Parkway Trading Estate, Barton Dock Road M32
OTL Stretford - Manchester - United Kingdom
Phone +44 161 8669909 Fax +44 161 8668808

