Heat Exchanger Machinery
Tube Mill lines in manufacture
Emerson & Renwick is an independent company founded in 1918 in Lancashire England, now a global organisation with factories in the UK and USA and a service centre in China.

Over the years Emerson & Renwick have played a leading role in the design and development of all types of Heat Exchange equipment throughout the world.

The company demonstrates an in depth knowledge of client’s needs in an ever changing market. Continuing research and development is a key element of the company’s ethos, always striving to keep Emerson and Renwick at the forefront of state of the art engineering solutions.

A comprehensive range of heat exchanger production machines

- **Fin & Tube Tooling**
  - Complete service in both design & manufacture
  - State of the art manufacturing equipment
  - Reduced lead times
  - Total validation & testing
  - Sample components & small batch production available

- **Tube Mills**
  - High production speeds
  - Thin Stock
  - Multi-Port capability
  - High Speed cut off 300 cuts per minute
  - Quick Change tooling
  - Dimple & Free
  - Outstanding accuracy levels

- **Fin Mills**
  - High speed production rates
  - Ultra accurate, high speed Tip or Root cut-off
  - Digital back tension control
  - Accurate pitch control
  - Quick changeover
  - Capable of handling your existing tooling

- **Tube Banding**
  - Reliable tube banding
  - High speed to match tube mill outputs
  - Automatic stacking and handling
  - Short or long tubes from a single system

- **Core Assembly**
  - Incorporating the latest patented twin screw technology
  - Simple uncomplicated design
  - Quick changeover
  - Rad’s, CAC, Heaters, Condensers 1 or 2 row Matrix
  - Minimum Labour content
  - Simple and reliable operation at high output rates

- **HVAC - “Long Coil”**
  - Cores up to 3m long
  - Quick changeover
  - Excellent Product quality
  - Complete control of both Fin and Tube
  - Accurate and reliable operation

Company Code

Our 5C’s

**CARE** for the Company and our colleagues.

**CREATE** a quality product, right first time and on time.

**CONSIDER** customer service and to give total customer satisfaction.

**COMPLETELY** understand our products. Only with full understanding can improvements take place.

**CREATE** wealth, a clean, safe and pleasant working environment for our Company and our Customers.
**Tube & Fin**

**Rolled oil cooler fin**
Typical Range would be 20mm to 125mm wide, 1.2mm to 6mm Fin height, 0.19mm to 0.4mm thick
Blade widths of 0.7mm to 5mm

**Fin Range**
Typically 10mm to 250mm wide
4.5mm to 20mm Fin height
Fin Stock thickness 0.05mm to 0.20mm
Blade width 0.5mm to 3mm

*Actual Fin shown is a Flat Top Fin, formed on a twin track machine*

**Folded Tubes**
Conventional B-Type and Multi-port condenser tubes upto 16 ports
Stock thickness down to 0.14mm
Close tolerance manufacture

*We will offer advice and consultation if required on design and material specification*
*Prototype or pre-production samples produced in-house.*
Matching your needs

Our objective is to provide you with the ultimate solution that completely matches your needs, so our engineers will work with you from the concept stage to ensure you have the best possible design.

We are able to design and manufacture a range of rolls to suit your machinery irrespective of the origin or type. We will regrind or remake your existing rolls either in HSS or Carbide, the choice is yours.

Our service includes accurate testing and reporting using modern measurement techniques which include CMM and Jodon test equipment.

Our ability to provide production samples is well established thus eliminating unnecessary factory down time for proving the design.

Our Facility

Emerson & Renwick have invested heavily in purpose built and selected plant for form and tube roll manufacture thereby ensuring on time delivery and accurate components.

We have a comprehensive range of in-house machinery at your disposal, including:

**Precision Dual Face Flat Lapping Machine**

The Lapmaster is a 4-way, planetary, dual face lapping machine with a sophisticated control system. It can execute complex lapping and polishing routines while producing precise and repeatable results to achieve very accurate blade thickness.

**Profile Grinding**

Based on proven design principles this machine with a fully fledged CNC control can handle the most demanding grinding applications, such as profile grinding etc.

**AGIE Wire EDM**

Our Agie Evolution 2 SFF Wire EDM machine provides the ultimate in precision and total automation, utilizing every known feature that modern technology has to offer.

**State of the Art Grinding**

The Heltronic is synonymous with the highest quality in tool grinding worldwide. It is the first choice when it comes to highly flexible production and re-sharpening of rotationally symmetrical tools and parts.
Emerson & Renwick are the World leaders in supply of Tube mills. This state of the art machine is capable of production speeds in excess of 150 metres per minute, on both Multi-port and conventional B-Type tubes.

Handling thin tube stock as low as 0.14mm is second nature to this extremely robust machine. Multi-Port is built in to the machine as standard with up to 16 ports being handled.

All equipment and tooling is capable to the latest SPC standard.

The unique cut off unit is capable of 300 cuts per minute and can in certain cases be retro fitted to other manufacturers machinery.

Quick change over is a key element of the design, change from one design to another is easily achieved within 30 minutes.

Roll design is a key element of the process and our engineers will work closely with customers to ensure that the end product meets specification.

The Tube mill can incorporate a constant rate fluxing system which will leave no overspill on the product and a second to none flux film. Optional flux detection system is available.

The machine is easy to adjust and set because of the individual cassette design, ensuring the best results at all times.

Carbide rolls or inserts are also available where high volume production is required.

Built in Quality with over 200 machines sold this is the best machine on the market.
The Emerson & Renwick Fin Machine is capable in every sense of the word running at speeds up to and including 250 metres per minute. The unique high speed fin slicer guarantees root or peak cut off with zero error in convolution count and without fin damage. Built to exacting standards the machine can incorporate both single and twin track production.

The mill is also capable of handling existing tooling irrespective of the manufacturer's origin.

Excellent digital back tension and pitch control is a key element of the design which ensures accurate height and pitch of the product.

Flat top fin is second nature to this machine with the introduction of the controlled calibration / sizing station.

Our In-house software engineers ensure that the digital controls through our own HMI are easy and simple to operate.

The machine can be adapted for low volume manufacture if required.

The combination of machine and tooling makes this fin mill the best in class and an essential element for the successful integration of a fully automatic production cell.

Emerson & Renwick are able to meet any of your production needs.
Emerson & Renwick’s latest innovation is the unique Twin Screw core assembly machine.

The independently driven twin screws are capable of synchronised or independent rotation, offering the ability to faultlessly insert tubes at a rate of up to 5 tubes/s and then transfer a complete batch of tubes for seamless, multi-fin insertion.

The picture shows a two row condenser core being processed, in this case two pairs of screws are used. Located above each other, the assembly module copes with both tubes of different sizes and simultaneously presents the tubes at the correct pitch and location for fin insertion.

Tubes are fed by conveyor and hopper onto flighted belts which positively locate the tubes for insertion into the primary screws. The twin screws then rotate automatically and open the tube pitch to the correct dimension ready to receive fin. Whilst this operation is taking place the next batch of tubes is dispensed into the primary screws, thus reducing cycle time to a minimum.

With a direct link to a fin mill fins are automatically fed into an indexing tray and a full complement of fins are transferred into the waiting tubes already spaced for a smooth transition. The fin mill can be one or two lane to suit your production needs. The matrix is then transferred either manually or automatically into the core compression section where headers are fitted and compressed ready for brazing.
Tube Banding

Replacing the original plastic tube storage system, the tube bander offers an elegant, cost effective method of tube collation.

Tubes are oriented and stacked into easily handled packs which are secured using the desired number of disposable paper strips or bands. This ensures generation of a robust package of tubes which can be easily fed into a core assembly system.

Tubes are automatically handled at high speeds (up to 300 parts per minute) and at various lengths from 130mm to 1.2m.

The tube banding system supports most tube profiles – widths of 16mm to 42mm and thickness of 1.3 to 2mm. All products are handled with minimal change parts.

Careful system design and advanced controls allow for soft handling, traversing and transporting of tubes.

This means that the thinnest material gauges can be safely handled at high machine rates without damage to these demanding products.
The unique and patented solution for the assembly of HVAC cores was a development undertaken by Emerson & Renwick with funding from the UK Government. It solves the challenges affecting reliable construction and assembly of large HVAC “Long Coils”.

Emerson & Renwick’s universal core assembly system has been developed to meet the demanding industry needs.

The HVAC product requirements are varied and a family of machines has been developed to cover a complete range of product parameters.

It is impossible for one system to reliably cover all the dimensional requirements.

Shown is the largest of the family of equipment capable of manufacturing HVAC system units between 1 metre and 3.5 metres between manifolds with similar dimensions over core. Smaller sized units are manufactured on a different format machine not shown on this brochure.

Products could be with microchannel extruded tube or a multi-port folded tube construction.

Accurate fin pitch and height are fundamentals in the successful assembly of this demanding product.

Cores of various lengths and widths exiting the core assembly machine.
Quality comes first

Quality in Focus

Verification:
In addition to high accuracy product verification performed on our LK co-ordinate measuring machine (CMM) with 2D scanning capability. Emerson & Renwick also apply the latest technology in digital image capture. Using a Leica Stereo Microscope, interfaced with a high definition camera, high magnification digital images can be produced. This enables us to check the output component quality from our machine builds, in order to ensure that our customers obtain the performance levels they expect. We were among the first organisations to satisfy & gain registration to the new Quality Standard BS EN ISO 9001:2000 and we are now accredited to ISO9001:2008.

A dual approach to quality control, tooling quality plus airway quality.

Jodon Measuring System MODEL CPS-2000
A non-contact, electro-optical, multi-axis, precision gauging system used for off-line measurement to precisely gauge dimensional characteristics against published fin specifications e.g. phasing, louvre angles, fin height, form roll concentricity. All results are displayed graphically.

The Company Quality Statement:
Emerson & Renwick’s business processes focus on achieving performance levels which continually satisfy our customer’s requirements. Through continual business process monitoring and analysis we maintain, develop and improve our quality management systems, in order to maximise product performance and reliability. All employees play a critical role in our processes, therefore employee training and development is embedded into our business strategy. Our Quality Management Systems fully satisfy the requirements of ISO 9001:2008, with the flexibility to evolve and prosper in the ever changing business environment.

Industry standards are often surpassed in our endeavours to continually improve the quality of machine principles involved. A strong team of design engineers well versed in the disciplines of FMEA is fundamental to reliable machine construction.