

# CONFORM™ CONKLAD™ *update*

BWE Launch New Conform™ 'S' Range from China

SPRING 2008



## Conform Machines in Production at BWE Shanghai Ltd, China

BWE Shanghai Ltd was established in 1995 and has been very successful in manufacturing cold pressure welders. In 2002, the Company opened its new modern factory in Pu Dong (new development area of Shanghai) and has since supplied a number of Conform machines to the Chinese domestic market.

BWE are now pleased to offer Conform machines built by BWE Shanghai Ltd to world markets at much reduced prices. Initially, BWE will begin to offer and supply their popular Conform S315 machine, for small copper and aluminium applications. Other machines in the BWE range will follow in the future.

The new 'S' range of Conform machines is manufactured and assembled in China by BWE Shanghai Ltd under the supervision of BWE's UK specialists. To maintain high performance standards, some equipment such as heat exchangers and hydraulic pumps will be of European origin. All machines will be subject to final inspection and CE certification at BWE's UK premises.

BWE's new and unique developments such as the very successful 'Induction Heated Tooling System' will be available as options.

The scope of supply for each line is very flexible. The end user can select the Conform Basic Machine Package or a complete line by selecting from an options menu. Alternatively, the end user can supply some or all of the ancillary equipment.

The Conform S315 is the ideal machine for small copper and aluminium solid sections and small aluminium tubes. Typical applications are: Copper or Aluminium Rectangular Wire (Magnet Wire); Solid Aluminium Conductors (SAC); Round Refrigeration Tube, Heat Exchanger / Air Conditioner (Multivoid) Tubes.

## United Copper Co. Ltd, Thailand - Secures First Order

Prior to the official launch of the Conform S315 machine at the Wire 2008 exhibition in Dusseldorf, the level of interest has been so high, that in January 2008 BWE secured their first order. United Copper Co. Ltd from Thailand has purchased a complete Conform S315i line, including the Induction Heated Tooling System. The machine will be manufactured and assembled in China, shipped to BWE's UK premises for assembly of European Gearbox, Main Motor, Heat Exchangers and Hydraulic Pumps, prior to final inspection, CE certification and delivery to the customer in August 2008.

**Cold Welding · Continuous Extrusion · Continuous Cladding · Continuous Sheathing**

**BWE Ltd**

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Two **SheathEx** installations have now been commissioned in China.

The first line, at **Chongqing Taishan Wire & Cable Co. Ltd.**, was a joint development with the cable factory and saw many months of English and Chinese engineers working together to develop the technology.

BWE started the project with experience of CATV and Fibre Optic Sheathing, extruding aluminium with very long flow lengths and applying BWE's patented Induction System to the Conform process. Nevertheless, nothing of this scale in Continuous Extrusion had ever been built before so it was, to some extent, a leap into the unknown.

### The Second SheathEx at Zhejiang Chenguang Cable Co. Ltd

As with conventional extruders, the biggest challenge is distributing the aluminium evenly around the tube so that the extrusion is concentric.

With the SheathEx process, aluminium is injected in two streams from below the Crosshead. Heat generated at the bottom by the metal flow and from the Extrusion Wheel is balanced by the Induction Heater at the top of the Crosshead. Keeping the temperature at the top and bottom of the Die as close as possible proved to be a critical point in controlling metal flow.

Early results were encouraging and within a few months 86.0 x 2.0mm and 165.0 x 4.0mm tube were being extruded within tolerances. However, with the very long flow length and flow restrictions designed to ensure concentric tube, the extrusion pressure was very high which resulted in high flash (aluminium leakage).



### Zhejiang Machine showing Cable and Feedstock Entry

From an economic standpoint high flash was not a problem since it was just re-melted but from a practical standpoint it was not acceptable due to handling the amount of flash generated in very long sheathing runs.

BWE developed a new tooling system (now patented), which does not impose the same flow restrictions, thus reducing extrusion pressure with much lower flash. Most of this work was carried out at the second SheathEx line at **Zhejiang Chenguang Cable Co. Ltd** because of its close location to Shanghai – BWE Shanghai Ltd played a major role in the development providing tooling manufacture/modification and technical services.



**165 x 4mm Tube Extruded at Chongqing**

Attention now turned to the downstream process whereby the tube is corrugated in-line so that the sheathed cable is flexible and can be wound onto a drum.

The tube emerging from the SheathEx machine is very soft so it is vital to control the tension while ensuring that the Corrugator follows the extrusion speed. Early attempts using a Caterpillar were not successful because it was not possible to control the tension accurately enough. Finally, BWE developed a new method, also now patented, which uses the Corrugator itself to provide a small forward tension.

The Corrugator head is mounted on a moving Carriage. A precision Speed Transducer at the exit of the Cooling Trough, together with a Carriage Position Transducer is used to control corrugation speed so that the Carriage remains central.



### 86 x 2mm Tube Corrugated In-Line



Sheathing of 86mm Cable

The final step was to insert a cable core after first starting the extrusion and Corrugator.

A Powered Drum Pay-Off was used to feed the core into the SheathEx machine where a water-cooled entry tube protected it from thermal damage.

A Caterpillar was used initially to drive the core in at the same speed as the extrusion. Empty tube was cut after corrugation until the core arrived. The completed cable was then attached to a Drum Take-Up.

After completing a wrap on the Take-Up Drum the Core Caterpillar was opened.

Pay-Off and Take-Up speeds were controlled by the Extrusion Speed Transducer in combination with two Ultrasonic Sensors that measured the height of the cable catenary.

The SheathEx process has now been fully proven in the field and is a serious competitor to conventional extrusion and welding technologies.

The SheathEx process offers low capital cost, low maintenance cost, a true seamless sheath, no stop marks and high output.

## New Autoweld™ 2335



- Special features include a rod-straightening device, for preparing the rod prior to welding.

BWE is pleased to announce the launch of the latest edition to its range of Cold Pressure Welders. The first machine has been supplied to a European company for welding 20mm diameter copper rod.

- The **Autoweld™ 2335** is an electrically operated machine, designed for the cold butt-welding of non-ferrous wire and rod.
- Copper: 12mm – 23mm diameter
- Aluminium: 12mm – 35mm diameter
- Non-ferrous metals such as: Nickel, Copper Nickel, Gold, Silver, Platinum, Lead, Tin and Lead-Tin alloys may also be welded.
- The Dies are designed for quick and easy removal.



Rod Straightener



A Copper Weld

## BWE Personnel Update



Kevin

### Kevin Bennett – Sales Director

BWE was pleased to appoint Kevin to the board in April 2007. Now in his 10<sup>th</sup> year with the Company, Kevin is responsible for all sales.

### Xin Fang – Senior Design / Commissioning Engineer

Xin joined BWE Ltd in January 2007. He has a PhD in Materials Engineering with many years experience in development and mechanical design. In his first year he has been heavily involved with our new Sheathex™ development.



Xin

### Leslie Stratfull – Commissioning Engineer

Les joined the Company in June 2006 with an electrical and mechanical background. Since joining BWE, he's had non-stop worldwide travel, commissioning machines at new customer sites and providing service to existing customers.

### Mark Beeching – Contracts Engineer

Mark has worked in our engineering department for 35 years. In his new additional role as Contracts Engineer, Mark is now in contact with BWE customers worldwide.



Les



Mark

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