

HEAT SHRINK TUBING

For Automotive Applications

TE CONNECTIVITY (TE) IS ONE OF THE WORLD'S LEADING COMPANIES IN DEVELOPING, SUPPLYING AND MANUFACTURING HIGH QUALITY, TECHNOLOGICALLY ADVANCED, HEAT SHRINK PROTECTION PRODUCTS. OUR PRODUCT PROVIDES A PERFECT SOLUTION FOR TOUGH ENGINEERING PROBLEMS.

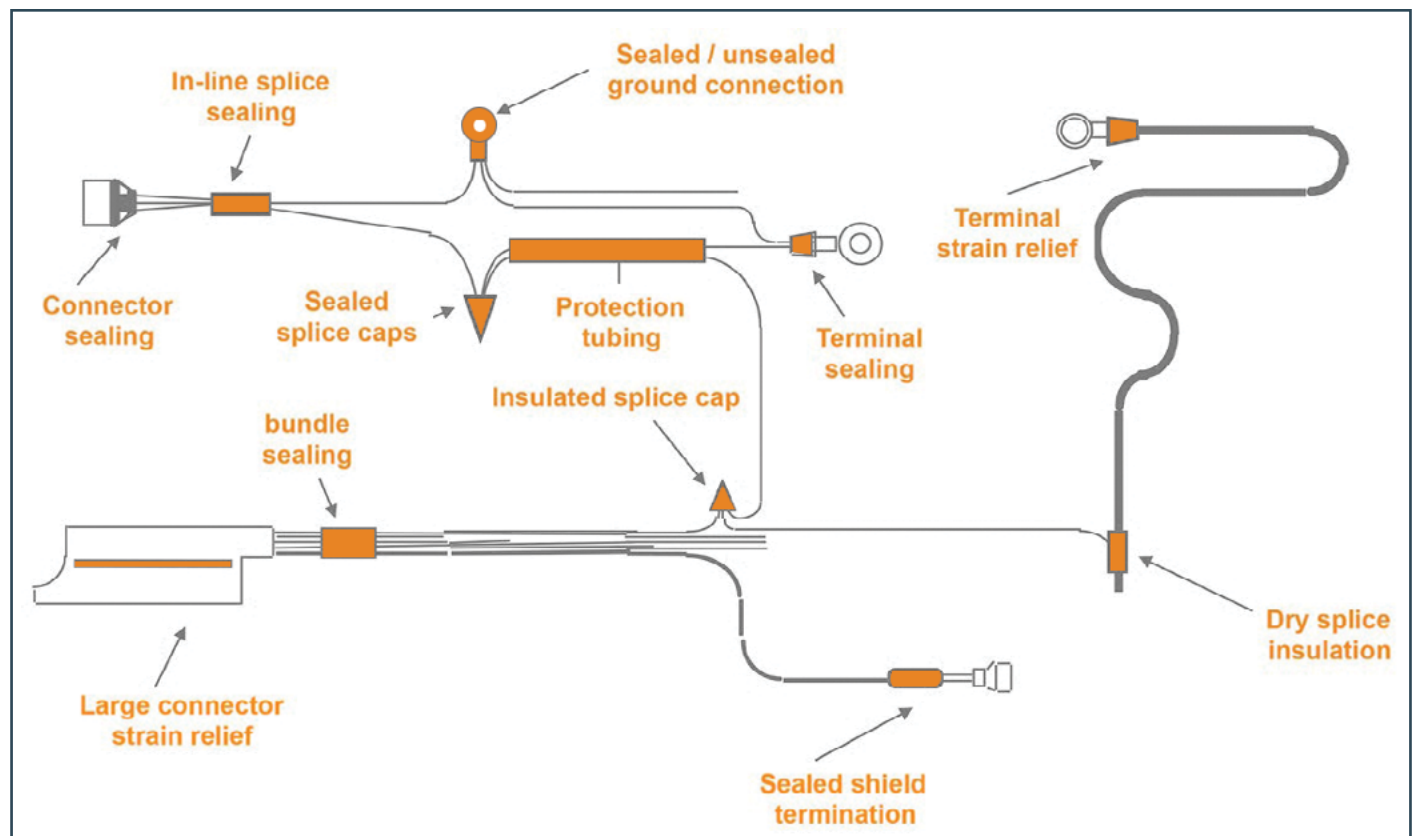
TE's Raychem heat-shrink products are in service throughout the world in automotive, telecommunications, power distribution, aerospace, defence, industrial and commercial applications.

Produced using Raychem state-of-the-art manufacturing facilities and processes, TE's Raychem tubing products are made from uniquely formulated materials that have been enhanced by radiation cross-linking, a technology that TE Connectivity under the brand of Raychem, famously pioneered.

These easy-to-use products provide cost effective, proven solutions in a wide range of automotive applications from sealing and protecting electrical splices to providing mechanical protection for fluid management systems in harsh environments.

The single wall tubing products have a wide range of characteristics. They can be used wherever reliable insulation, strain relief and protection from mechanical abrasion and chemical abuse is needed. They are an ideal way to identify or code components or simply use them to enhance aesthetics.

The adhesive-lined range shows its strength where sealing and encapsulation are critical requirements, as well as demonstrating many of the feature of the single wall products. The inner adhesive can deliver a true seal against moisture and fluid ingress.



- Simple and fast installation.
- Renowned for their unrivalled performance and reliability in demanding environments.
- Durable, provide long-term protection against moisture ingress, corrosion, mechanical damage and extremes of temperature.
- Engineered to be cost-effective.
- Product design ensures a repeatable, reliable, shrink to fit installation compatible with present day manufacturing processes.
- Available in a wide range of materials, polyolefins, fluoropolymers and elastomers.
- Different degrees of flexibility, from highly flexible to semi-rigid tubings.
- Designed for operation in high or low temperature environments.
- Halogen free and flame retardant to meet a range of industry standards.
- Available in many sizes, constructions, lengths and colours.
- Available with shrink ratios of 2:1 up to 4:1.
- Customer specific sizes on request.
- RoHS/ELV compliant
- Fully certified production plants according to TS16494 and ISO 14001



Technology

• Polymer formulation

TE Connectivity's Raychem formulations are blends of polymers and additives that are carefully designed to meet the stringent customer demands and internal specification requirements. They meet international standards and OEM approvals in many electronics markets.

The selection of polymers, flame-retardants, anti-oxidants, UV-stabilisers and other additives is of great importance for products to meet requirements of properties such as tensile strength, elongation at break, flame retardancy, continuous operating temperature, heat shock, heat ageing, flexibility, chemical and solvent resistance and shrink temperature.

TE Connectivity's Raychem hot melt adhesives are specifically formulated to be compatible with individual heat-shrink tubing compounds. These adhesives include a balance of polymers and additives that allow the adhesive to melt, flow, seal and adhere to a range of substrates at the shrink temperature of the overall tubing.

• Cross-linking

Radiation cross-linking enhances the polymer properties and provides heat-shrinkability or shape memory.

Polymeric tubing is extruded and in a separate process the chemical structure is modified to provide improved properties such as reduced deformation under load (creep), improved chemical and solvent resistance, increased abrasion resistance, improved impact properties and shape memory characteristics.

Due to the three dimensional cross-links which are formed during the cross-linking process, the tubing does not melt and obtains its perfect shape memory.



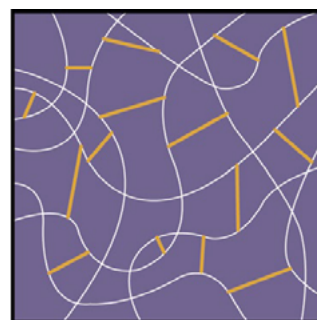
Unmodified Polymer

• Manufacturing technology

Based on many years of experience Raychem tubing by TE Connectivity is produced using optimised manufacturing processes by the following steps: compounding, extrusion, radiation cross-linking and expansion.














Compounding processes are used to mix selected polymers and additives. The resulting compounds are then extruded using optimised screw and die designs to produce homogeneous and consistent tubing. The tubing is then cross-linked using electron beam radiation.

In the expansion process the diameter of the tubing is increased by forces at high temperature. Immediately after the tubing reaches its required expanded size, it is cooled down and retains its expanded dimensions.



Cross-linked Polymer

Protection: Chemical / Mechanical Abrasion

Application	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
Hoses 	<p>Vehicle engine compartments are becoming ever more crowded and compact, often forcing cooling hoses to be routed in close proximity to high temperature engine components and under-bonnet parts. This makes hoses highly vulnerable to abrasion and chafing. This same space considerations may require hoses to be designed with sharp bends and other radical shapes, making difficult for manufacturers to fit protective sleeves where damage is likely to occur. An added complication is the effect that any over-protection may have on its surrounding components. Contacts between two hoses or a hose and a harness are hard to avoid. Where over-protection is used to alleviate this problem it needs to be non-abrasive itself and protect both components.</p>	HFT 5000 <ul style="list-style-type: none"> Highly flexible woven fabric construction for easy installation onto bent hoses Excellent mechanical and abrasion protection Extremely tough meeting even demanding automotive abrasion specifications Grips substrates without additional fixing Resists harsh engine compartment environments Safe installation with no hot knife cutting equipment required Resists hose pulsing effects Protect only where protection is needed - minimizing cost Halogen free    	Model 105 <ul style="list-style-type: none"> Closed-loop speed and temperature control Continuous controlled process Adaptable for different applications CE approved Heater operation and over temperature alarm lights 
Diesel Injection Clusters 	<p>Manufacturers are constantly searching for new ways to reduce engine noise, particularly in diesel vehicles where higher mechanical noise levels are perceived as a major disadvantage compared to petrol engines. Research has shown that high pressure diesel fuel injection clusters, which take fuel from the fuel pump to the injector can emit a significant “rushing” noise as fuel is transferred along the pipes.</p>	ATUM <ul style="list-style-type: none"> ATUM tubing provides excellent noise dampening performance Reduced production times as tubes can be bent or formed on the pipe Moisture proof sealing - adhesive melts and flows to provide permanent bond High strength bonding to substrates      <p>*(black and colours only)</p>	Model 105 <ul style="list-style-type: none"> Closed-loop speed and temperature control Continuous controlled process Adaptable for different applications CE approved Heater operation and over temperature alarm lights 



Operating
Temperature Range



Shrinking
Ratio



Shrink
Temperature








Flame
Retarded










Fluid
Resistant







Strain Relief

Application	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
In-line Splices 	<p>All electrical splices in a wiring harness need to be insulated and protected from mechanical abuse. Effective protection is becoming even more critical as ultrasonic welding is increasingly being used to make the electrical connection. Ultrasonic welding, while providing a much better electrical connection than traditional crimping, is mechanically weak, especially in peel and tear, so additional mechanical protection and strain relief must be provided.</p>	<p>RPPM</p> <ul style="list-style-type: none"> • Single component solution - to insulate and protect almost all dry area splices • Low profile protection - reducing diameter of conduit required • Flexible while providing superior strain relief than PVC tape • Rapid installation • Repeatable process • High shrink ratio - allow one size to cover a wide range of splice combinations 	<p>RBK X1 Heat Shrink Machines</p> <ul style="list-style-type: none"> • Automatic centering (standard on select models, but also available as an upgrade for earlier models) enhances product quality by automatically centering tubing over the splice prior to heating. • Stand-alone operation mode allows operator to set time and temperature. • Sequenced operation mode lets preset times and temperatures be sequenced automatically (and also randomly selected from stored sequence) • Communication with upstream ultrasonic welder allows time and temperature to be automatically set without operator intervention. • Compact format with touchscreen interface • Traceability with optional bar code scanner and data collection software • Suited for low volume/high mix production. • Long life heating elements • Operator key lock/ password protection levels and individual selections for installation times Temperature and product size information. 
Miniature Splices 	<p>Following the trend to reduce cost, weight and space, wire is being replaced by smaller cross-sections and the splices are particularly fragile requiring mechanical protection and strain relief. Given the very low profile of these splices, the use of conventional PVC tapes might become an increasingly unsatisfactory solution.</p>	<p>QSZH</p> <ul style="list-style-type: none"> • Adhesive liner that melts to provide strong mechanical bond • Mechanical protection against flexing, abrasion and cut-through • Small cross-sectional profile • Quick installation • Zero halogen 	

Sealing

Application	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
In-line Splice 	<p>An automotive wiring harness is only as strong as its weakest link. In many instances that weakest link is where wires are spliced together. Non-sealed splices exposed to water, salt spray and other fluids in wet areas of the vehicle can rapidly corrode, degrading both the electrical and mechanical properties of the harness. In addition, splice joints are mechanically weak. Welded splices, in particular, are highly susceptible to peel and tear loading, and must be provided with effective strain relief.</p>	<p>QSZH</p> <ul style="list-style-type: none"> • Excellent environmental sealing • Inspectable after installation • Mechanical protection against flexing, abrasion and cut-through • Small cross-sectional profile • Quick installation • Zero halogen • Applications versatility - one size covers a broad range of ground wire sizes and wire combinations  <p>RPPM</p> <ul style="list-style-type: none"> • Single component solution - to insulate and protect almost all dry area splices • Low profile protection - reducing diameter of conduit required • Flexible while providing superior strain relief than PVC tape • Rapid installation • Repeatable process • High shrink ratio - allow one size to cover a wide range of splice combinations 	<p>XB 17 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature. • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder. • Emergency stop-switch • Slim profile design for easy production layout • CE approved.  <p>XB 19 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder • Emergency stop-switch • Slim profile design for easy production layout • All models are CE approved • Lrdays • An adjustable belt distance feature on the XB 19 allows operators to extend the processing range of tubing products from 100 mm up to 160 mm.  <p>RBK X1 Heat Shrink Machines</p> <ul style="list-style-type: none"> • Automatic centering (standard on select models, but also available as an upgrade for earlier models) enhances product quality by automatically centering tubing over the splice prior to heating. • Stand-alone operation mode allows operator to set time and temperature. • Sequenced operation mode lets preset times and temperatures be sequenced automatically (and also randomly selected from stored sequence) • Communication with upstream ultrasonic welder allows time and temperature to be automatically set without operator intervention. • Compact format with touchscreen interface • Traceability with optional bar code scanner and data collection software • Suited for low volume/high mix production. • Long life heating elements • Operator key lock/password protection levels and individual selections for installation times • Temperature and product size information.  <p>XS-D1 Shuttle Heater</p> <ul style="list-style-type: none"> • Innovative fork movement of heating elements for accuracy and flexible operation • Machine includes two separate workstations for higher and quicker output of product • Automatic heating height adjustment with programmable functionality for wider scope of projects • Manual heating height adjustment for application where automatic in not necessary • CE approved 










Sealing

Product Name	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
ES2000 	<p>Specially designed for environmental sealing and electrical insulation of wire splices, terminations, and components</p>	<ul style="list-style-type: none"> • 4:1 shrink ratio allows a few sizes to cover a wide range of splice and component diameters • Flame-retardant and mechanically tough, the tubing provides strain relief and abrasion protection of wire splices, terminals, and other components • Thick adhesive liner forms an effective barrier against fluids and moisture and performs well at an extended temperature range • UL recognized • RoHS compliant 	<p>Model 105 Tunnel Oven</p> <ul style="list-style-type: none"> • Closed-loop speed and temperature control • Continuous controlled process • Adaptable for different applications • CE approved for worldwide use • Heater operation and over-temperature alarm lights 
FL2500 	<p>Tough flame-retardant polyolefin tubing lined with a flame-retardant adhesive provides the optimum solution for applications where full flame-retardancy is preferred or specified. Rated to 135°C [275°F] for 3000 hours, FL2500 is suitable for use in the automotive harness market and other harsh environments. As the tubing shrinks, the adhesive lining melts and flows to fill all voids and create a complete seal against moisture, oils, chemicals and other fluids.</p>	<ul style="list-style-type: none"> • 4:1 shrink ratio allows a few sizes to cover a wide range of wire terminations and components • Flame-retardant tubing jacket and adhesive provide full flame-retardancy • Fully flame-retardant and mechanically tough, the tubing provides strain relief and abrasion protection of wire splices, terminals and other components • Thick high-performance adhesive lining offers permanent sealing of splices, fusible links, terminals and in-line components • RoHS compliant 	<p>XS-D1 Shuttle Heater</p> <ul style="list-style-type: none"> • Innovative fork movement of heating elements for accuracy and flexible operation • Machine includes two separate workstations for higher and quicker output of product • Automatic heating height adjustment with programmable functionality for wider scope of projects • Manual heating height adjustment for application where automatic is not necessary • CE approved  <p>XB 17 Belt Heater XB 19 Belt Heater RBK X1 Heat Shrink Machines Model 105 Tunnel Oven XS-D1 Shuttle Heater</p>








Sealing

Application	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
End Splice 	<p>Many automotive harness suppliers produce a basic harness after which the harness is modified to meet the requested specification of the vehicle. Sub harnesses are added which requires electrical connections being realised on the assembly line. Ultrasonic and crimped connections require sealing. ES Caps can provide an on-board solution to this requirement and they can be installed using especially designed equipment.</p>	<p>ES-CA</p> <ul style="list-style-type: none"> • Mechanically tough jacket provides strain relief and abrasion protection • Adhesive lined product to environmentally seal stub splices • Highly resistant to automotive fluids and solvents • High shrink ratio - three sizes cover a broad range of stub splices 	<p>XS-D1 Shuttle Heater</p> <ul style="list-style-type: none"> • Innovative fork movement of heating elements for accuracy and flexible operation • Machine includes two separate workstations for higher and quicker output of product • Automatic heating height adjustment with programmable functionality for wider scope of projects • Manual heating height adjustment for application where automatic is not necessary • CE approved  <p>XB 17 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature. • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder • Emergency stop-switch • Slim profile design for easy production layout • CE approved  <p>XB 19 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder • Emergency stop-switch • Slim profile design for easy production layout • All models are CE approved • Lrdays • An adjustable belt distance feature on the XB 19 allows operators to extend the processing range of tubing products from 100 mm up to 160 mm  <p>Model 105</p> <ul style="list-style-type: none"> • Closed-loop speed and temperature control • Continuous controlled process • Adaptable for different applications • CE approved • Heater operation and over-temperature alarm lights  <p>RBK X1 Heat Shrink Machines</p> <ul style="list-style-type: none"> • Automatic centering (standard on select models, but also available as an upgrade for earlier models) enhances product quality by automatically centering tubing over the splice prior to heating. • Stand-alone operation mode allows operator to set time and temperature. • Sequenced operation mode lets preset times and temperatures be sequenced automatically (and also randomly selected from stored sequence) • Communication with upstream ultrasonic welder allows time and temperature to be automatically set without operator intervention. • Compact format with touchscreen interface • Traceability with optional bar code scanner and data collection software • Suited for low volume/high mix production. • Long life heating elements • Operator key lock/ password protection level and individual selections for installation times: Temperature and product size information. 

Sealing

Application	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
Connector 	<p>2 to way 18 connectors are frequently used on cars, often in wet and high temperature areas such as engine compartments. Manufacturers need simple, versatile sealing systems with a minimum number of components that provide connector sealing even when not all of the contact cavities are in use.</p>	<p>HTAT</p> <ul style="list-style-type: none"> • Low profile mechanical protection, strain relief and sealing • Seals a wide range or different number/gauge sizes of wires into the same connector housing • Semi-flexible, dual-wall moisture proof • Environmental sealing • Ideal for connector sealing covering large diameter differences • High strength bonding  <p>SCT</p> <ul style="list-style-type: none"> • Excellent environmental sealing • Mechanical protection against flexing, abrasion and cut-through • Small cross-sectional profile • High shrink ratio allows a few sizes to cover a wide range of splices • Strain relief 	<p>Model 105</p> <ul style="list-style-type: none"> • Closed-loop speed and temperature control • Continuous controlled process • Adaptable for different applications • CE approved • Heater operation and over temperature alarm lights  <p>XS-D1 Shuttle Heater</p> <ul style="list-style-type: none"> • Innovative fork movement of heating elements for accuracy and flexible operation • Machine includes two separate workstations for higher and quicker output of product • Automatic heating height adjustment with programmable functionality for wider scope of projects • Manual heating height adjustment for application where automatic in not necessary • CE approved 
Ring Terminal 	<p>Maintaining the electrical quality of ring terminal connections has always been critical. In today's cars it is even more important as manufacturers are increasingly using ring terminals to ground low current 'quiet' and 'logic' signal circuits. Any increase in resistance, usually caused by corrosion as a result of moisture entering the wire terminal connection, can critically impair these electrically sensitive circuits. Mechanical damage can also reduce electrical performance, so protection during handling is important, as well as effective strain relief when in use.</p>	<p>QSZH</p> <p>See page 9</p> <p>SCT</p> <p>See above</p> <p>RBK-RTP</p> <ul style="list-style-type: none"> • Environmental protection • Mechanical protection against flexing, abrasion and cut-through • Small cross-sectional profile 	<p>XS-D1 Shuttle Heater</p> <ul style="list-style-type: none"> • Innovative fork movement of heating elements for accuracy and flexible operation • Machine includes two separate workstations for higher and quicker output of product • Automatic heating height adjustment with programmable functionality for wider scope of projects • Manual heating height adjustment for application where automatic in not necessary • CE approved  <p>RBK X1 Heat Shrink Machines</p> <ul style="list-style-type: none"> • Automatic centering (standard on select models, but also available as an upgrade for earlier models) enhances product quality by automatically centering tubing over the splice prior to heating. • Stand-alone operation mode allows operator to set time and temperature. • Sequenced operation mode lets preset times and temperatures be sequenced automatically (and also randomly selected from stored sequence) • Communication with upstream ultrasonic welder allows time and temperature to be automatically set without operator intervention. • Compact format with touchscreen interface • Traceability with optional bar code scanner and data collection software • Suited for low volume/high mix production. • Long life heating elements • Operator key lock/ password protection levels and individual selections for installation time: Temperature and product size information. 





Sealing

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Wire Bundle 	<p>Low cost, but reliable sealing of multi-wire bundles of up to 20 wires is becoming increasingly important as vehicle harnesses grow in size and complexity. Typically, sealing is needed to provide a water block where the wire bundle passes through a moulded rubber boot into the back of a connector, or at a grommet between a wet and dry area, such as the engine to passenger compartment. Ideally, this seal should not add significantly to the overall diameter of the bundle, allowing easy positioning of grommets and other components during the harness assembly.</p>	<p>RayBlock Sealing Kit</p> <ul style="list-style-type: none"> • RayBlock sealing kit provides ultra low profile seals only marginally larger than the cable bundle itself • Excellent resistance to automotive fluids and solvents • Excellent electrical insulation • Outstanding vibration resistance <p>RayBlock 85</p>  <p>RayBlock 105</p> 	<p>XS-D1 Shuttle Heater</p> <ul style="list-style-type: none"> • Innovative fork movement of heating elements for accuracy and flexible operation • Machine includes two separate workstations for higher and quicker output of product • Automatic heating height adjustment with programmable functionality for wider scope of projects • Manual heating height adjustment for application where automatic is not necessary • CE approved  <p>XB 17 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature. • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder. • Emergency stop-switch • Slim profile design for easy production layout • CE approved.  <p>XB 19 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder • Emergency stop-switch • Slim profile design for easy production layout • All models are CE approved • Lrdays • An adjustable belt distance feature on the XB 19 allows operators to extend the processing range of tubing products from 100 mm up to 160 mm.  <p>Model 105</p> <ul style="list-style-type: none"> • Closed-loop speed and temperature control • Continuous controlled process • Adaptable for different applications • CE approved • Heater operation and over temperature alarm lights 





Sealing Matrix

Application	Products								
	QSZH	RBK-ILS	RBK-VWS	ES-CAP	SCT	RBK-RTP	HTAT	RBK-105-KIT	RBK-85-KIT
Splice Sealing - Inline	✓	✓	✓		✓				
Splice Sealing - Stub				✓					
Ring Terminal Sealing	✓	✓	✓		✓	✓			
Connector Sealing					✓		✓		
Bundle Wire Sealing								✓	✓





Identification / Beautification

Application	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
Gas Pipes 	<p>Vehicle manufacturers need to improve on the enviromental impact of materials. Replacing paint with heat shrink tubing is an effective way of reducing the use of solvents and chemicals.</p>	<p>LSTT</p> <ul style="list-style-type: none"> • Rapid recovery at low temperatures • Can be used with temperature sensitive materials • Excellent physical and electrical performance • Flexible  <p>CGPT</p> <ul style="list-style-type: none"> • Very good chemical and solvent resistance • Wide range of colours • Flexible • Excellent physical and electrical performance 	<p>Model 105</p> <ul style="list-style-type: none"> • Closed-loop speed and temperature control • Continuous controlled process • Adaptable for different applications • CE approved • Heater operation and overtemperature alarm lights 








Identification / Beautification

Application	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
Ring Terminal 	<p>Identification of voltage, ground and signal wires is increasingly required within automotive harnesses to prevent incorrect connections during the lifetime of the vehicle. More electrical apparatus results in an increased need to distinguish individual circuitry.</p>	<p>CGPT</p> <ul style="list-style-type: none"> • Very good chemical and solvent resistance • Wide range of colours • Flexible • Excellent physical and electrical performance 	<p>XS-D1 Shuttle Heater</p> <ul style="list-style-type: none"> • Innovative fork movement of heating elements for accuracy and flexible operation • Machine includes two separate workstations for higher and quicker output of product • Automatic heating height adjustment with programmable functionality for wider scope of projects • Manual heating height adjustment for application where automatic in not necessary • CE approved  <p>XB 17 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature. • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder. • Emergency stop-switch • Slim profile design for easy production layout • CE approved.  <p>XB 19 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder • Emergency stop-switch • Slim profile design for easy production layout • All models are CE approved • Lrdays • An adjustable belt distance feature on the XB 19 allows operators to extend the processing range of tubing products from 100 mm up to 160 mm.  <p>RBK X1 Heat Shrink Machines</p> <ul style="list-style-type: none"> • Automatic centering (standard on select models, but also available as an upgrade for earlier models) enhances product quality by automatically centering tubing over the splice prior to heating. • Stand-alone operation mode allows operator to set time and temperature. • Sequenced operation mode lets preset times and temperatures be sequenced automatically (and also randomly selected from stored sequence) • Communication with upstream ultrasonic welder allows time and temperature to be automatically set without operator intervention. • Compact format with touchscreen interface • Traceability with optional bar code scanner and data collection software • Suited for low volume/high mix production • Long life heating elements • Operator key lock/password protection levels and individual selections for installation times Temperature and product size information. 

Cosmetic: Appearance / Beautification

Application	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
Seat Belt Stalks  	<p>Metal fixtures within the vehicle require finishing which is both aesthetically pleasing and functional.</p>	<p>LSTT</p> <ul style="list-style-type: none"> • Rapid recovery at low temperatures • Can be used with temperature sensitive materials • Excellent physical and electrical performance • Flexible <div>    </div>	<p>XB 17 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature. • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder. • Emergency stop-switch • Slim profile design for easy production layout • CE approved.  <p>XB 19 Belt Heater</p> <ul style="list-style-type: none"> • Closed-loop time and temperature control. • Continuous controlled process • Integrated multi-language touchscreen interface with programmable logic system can adjust belt speed, temperature settings, and offers users the ability to create hundreds of unique profiles • Belt automatically reverses direction to prevent wire from entering into chamber before reaching desired temperature • Connection ports support several functions such as a bar-code scanner, automatic temperature calibration, and remote access to an upstream welder • Emergency stop-switch • Slim profile design for easy production layout • All models are CE approved • Lrdays • An adjustable belt distance feature on the XB 19 allows operators to extend the processing range of tubing products from 100 mm up to 160 mm.  <p>Model 105</p> <ul style="list-style-type: none"> • Closed-loop speed and temperature control • Continuous controlled process • Adaptable for different applications • CE approved • Heater operation and over temperature alarm lights 

Cosmetic: Appearance / Beautification

Application	Challenge facing manufacturers	Products: Features + Benefits	Application Tooling
<div>Antenna</div> <div></div>	<p>Car radio and cellular antennas need a protective coating to protect the antenna from mechanical abuse, abrasion and corrosion. The majority of antennas are straight and smooth and are typically painted or dip-coated. However, some antennas have a glass or fibre winding that extends around part or all of the antenna. In these cases a different protective covering is needed to hold the winding in place over the antenna base and provide abrasion protection to the entire assembly. Eliminating wind noise is also a critical factor in antenna design.</p>	<div>CGPT</div> <ul style="list-style-type: none">• Very good chemical and solvent resistance• Wide range of colours• Flexible• Excellent physical and electrical performance <div></div>	<div>Model 105</div> <ul style="list-style-type: none">• Closed-loop speed and temperature control• Continuous controlled process• Adaptable for different applications• CE approved• Heater operation and over temperature alarm lights <div></div>

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