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Development of New Wire-Harness Tape Base Material

新型線束保護膠帶基材開發

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至成不織布股份有限公司

Outlines

- Background Introduction 背景簡介
- Manufacturing Process 生產流程
- Features 特性
- Market Analysis 市場分析
- Development of Fleece tape material 膠帶布未來發展
- Q & A 問答

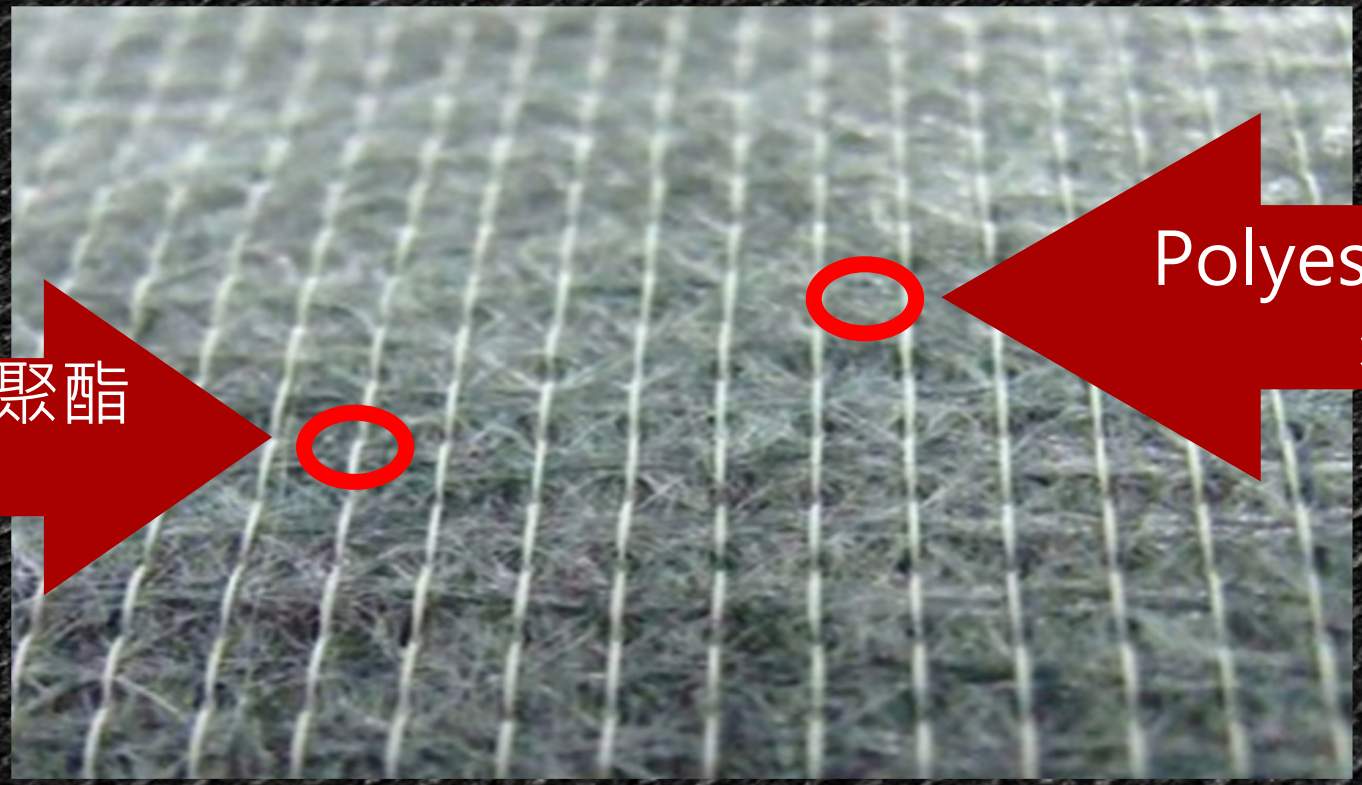
Background Introduction

背景介紹

What is Stitch-bond 什麼是縫編不織布

Originated from the non-woven fabric manufactured by the Maliwatt machine invented by a German company.
源自德國公司發明的Maliwatt機器製造的不織布。

What is Stitch-bond 什麼是縫編不織布



Polyester Yarn 聚酯紗

Polyester Stable Fiber 聚酯短纖維

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Manufacturing Process

生產流程

Raw Fabric

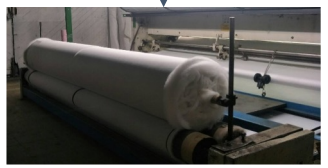
胚布

Raw Fabric 胚布









Process 過程	Manufacture 生產	Transportation 運輸	Storage 貯存
Bale Open 開包			
Fiber Beating 開纖			
Mixing, Reserve and Feeding 混合、儲備和餵料			
Carding 梳棉			
Fabric Forming棉網形成			
Stitch 針縫			
Winding 卷取			

Raw Fabric 胚布

Stage 1. Bale Open

Using Bale Opener to unlock the bundled fibers evenly without damaging the fibers.

Raw Fabric 胚布

Stage 2. Fiber Beating

Using beater of fiber to make sure fibers are stable evenly.

Raw Fabric 胚布

Stage 3.

Mixing, Reserve and Feed-in

Using vibrate feeder for mix and reserve to provide stable feed-in for next process.

Raw Fabric 胚布

Stage 4. Carding

Using carding machine for stable fiber to form into a fiber-web of thin layers

Raw Fabric 胚布

Stage 5. Fabric Forming

Using Forming machine adjust thickness of thin layers fiber-web according to customer needs.

Raw Fabric 胚布

Stage 6. Stitching

Using Maliwatt stitch machine to stitch-bond yarn and fiber-web.

Raw Fabric 胚布

Stage 7. Winding

Using winding machine to winding finish goods.

Manufacturing Process

生產流程

Finishing Process

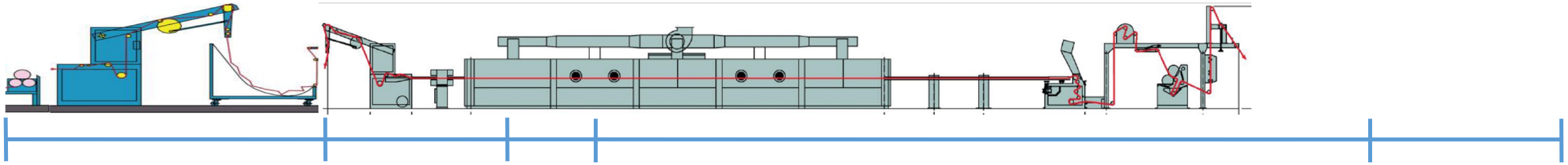
後加工

Setting 定型

Apply setting process to ensure the stabilization of fabric size, surface and chemical properties. Adjusting the softness in the meantime.

定型提供布匹尺寸，表面與化學穩定性，同時調整柔軟度。

Stenter include five parts as below 定型機包括以下五個部分



A Fabric releasing machine 放布機

B Water tank 水箱

C Control bridge 控制橋

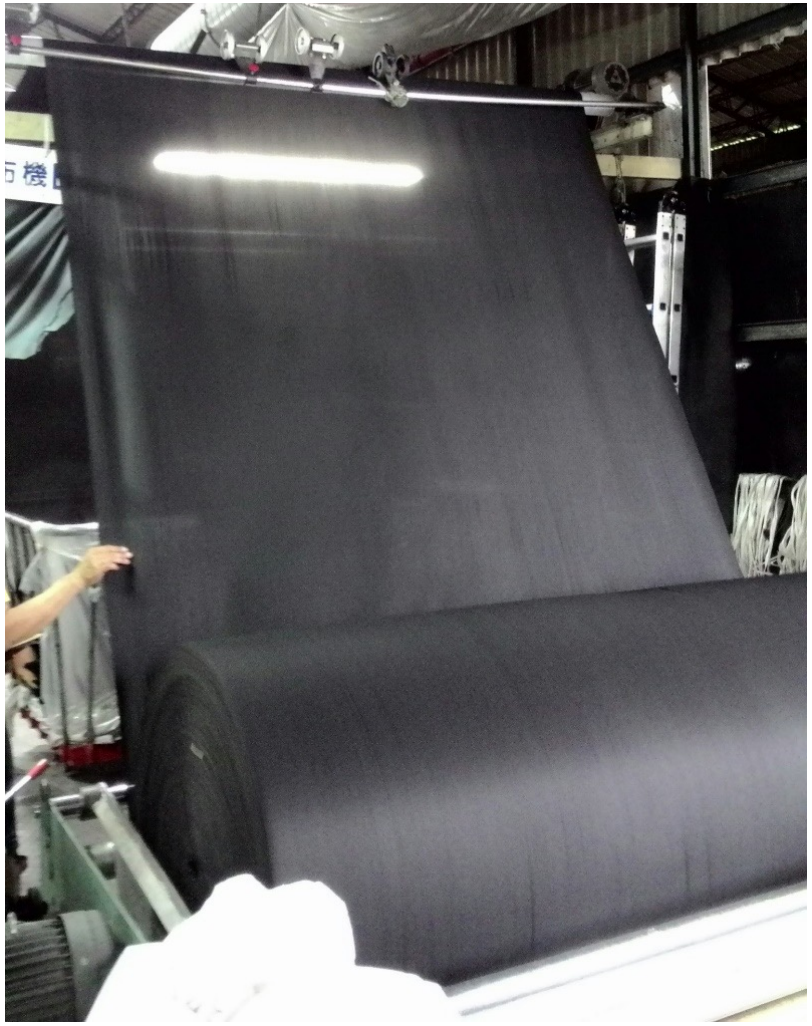
D Heating chamber 暖氣室

E Coiling and batch arrange device 配料裝置

Setting 定型

A. Fabric releasing machine

This unit is for fabrics inspection and short storage.



Setting 定型

B. Water tank

Make fabric contain moisture to facilitate the drying setting of the next procedure.

Setting 定型

C. Control bridge

This control bridge is for parameter setting of stenter include as below, width, speed and temperature of drying chamber.

Setting 定型

D. Heating chamber

This heating chamber provides different heat sources to achieve the fabric shrinkage and setting the irregularities in its structure shaping of the fabric structure.

Setting 定型

E. Coiling and batch arrange device

This unit is for product coiling and batch arrange device

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Product Process

生產流程

Finishing Process

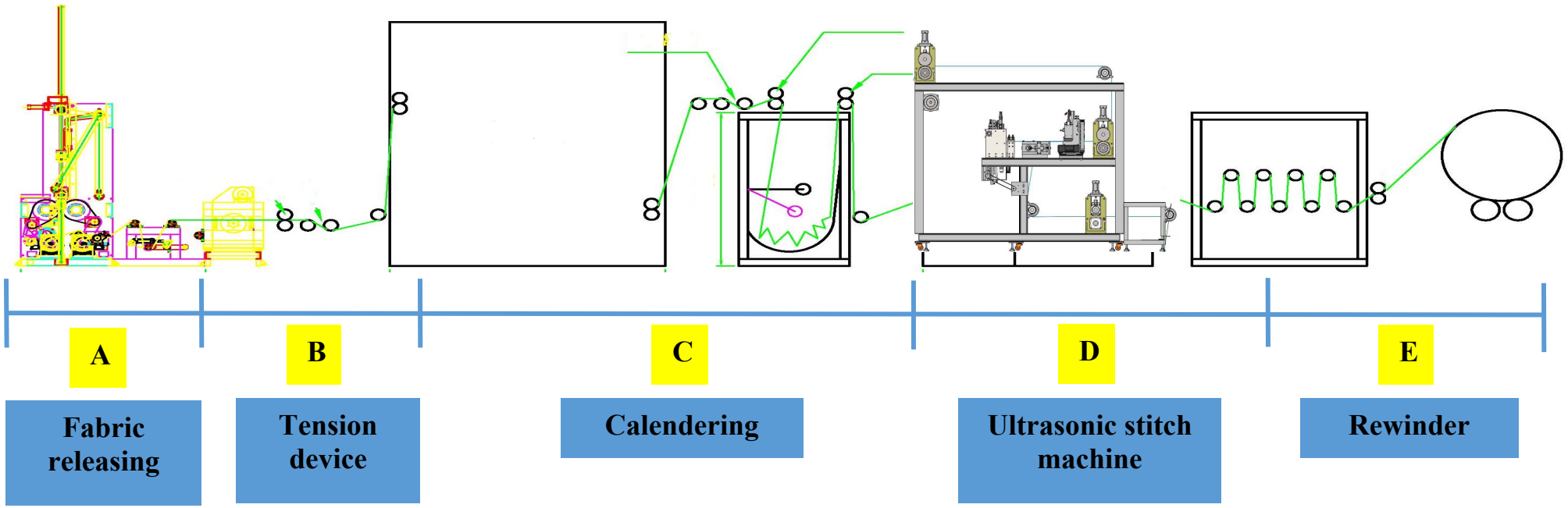
後加工

Calendering 壓光

Apply calendering process to compress the thickness of the fabric, and enhance the adhesive ability to the back.

利用壓光製程來縮減布匹厚度，與增加背黏性。

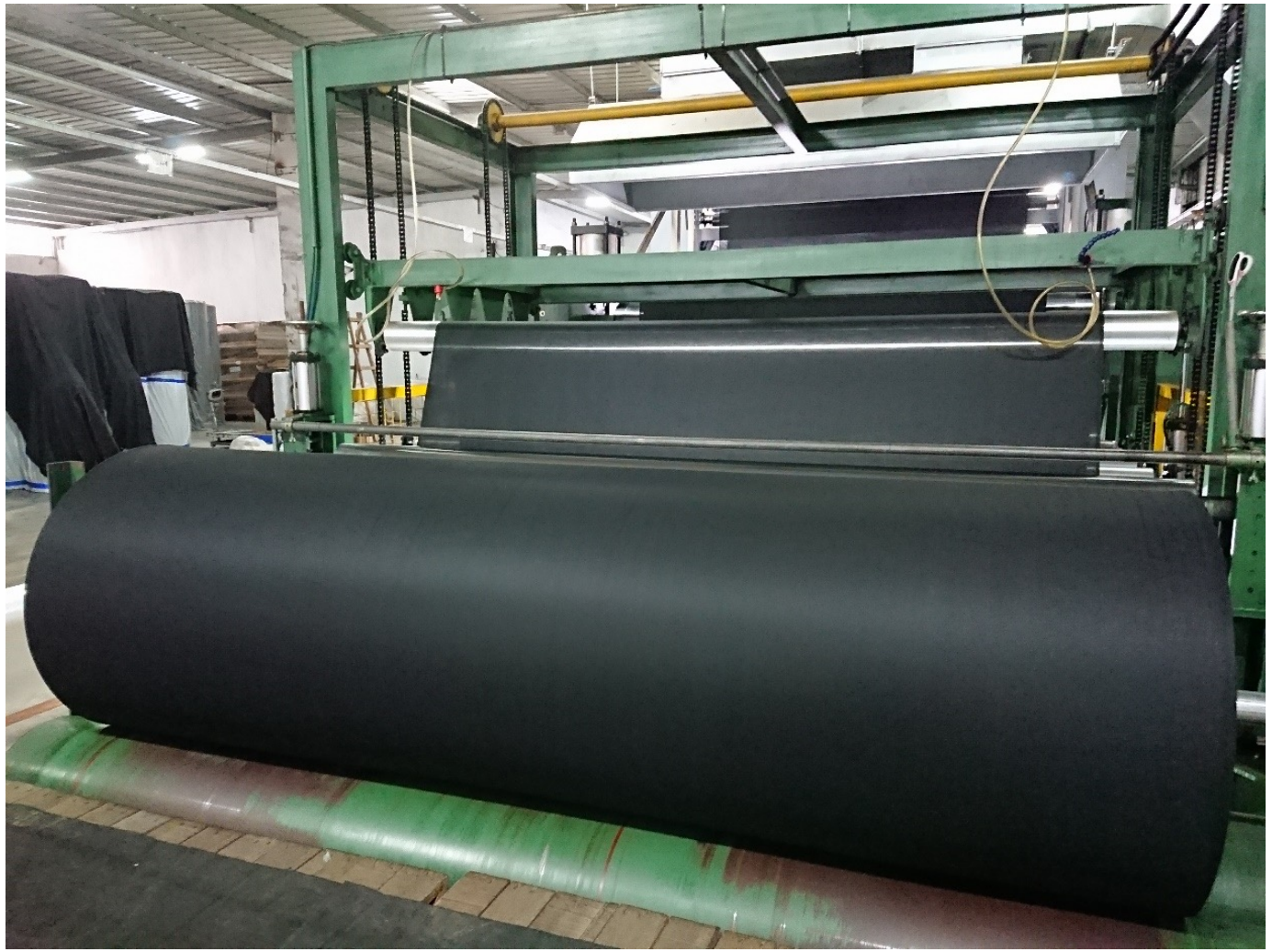
Calendering include five parts as below 壓光包括以下五個部分



Calendering 壓光

A. Fabric releasing

Fabric feed-in and thread decide dependent on customer requirement.



Calendering 壓光

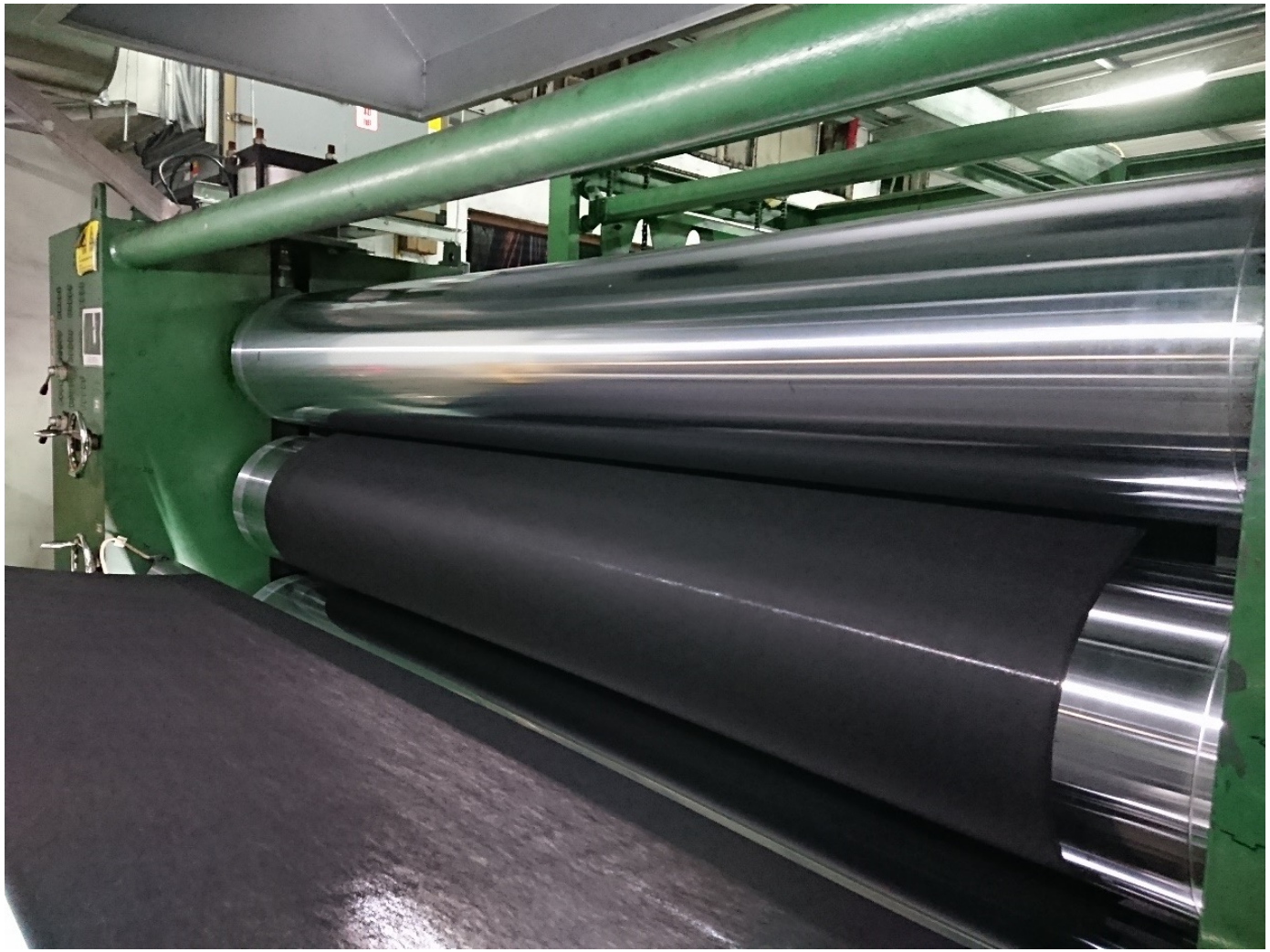
B. Tension device

Control fabric tension by tension device to achieve stable feed-in for calendering.

Calendering 壓光

C. Calendering

Control product thickness by calender pressure and temperature.



Calendering 壓光

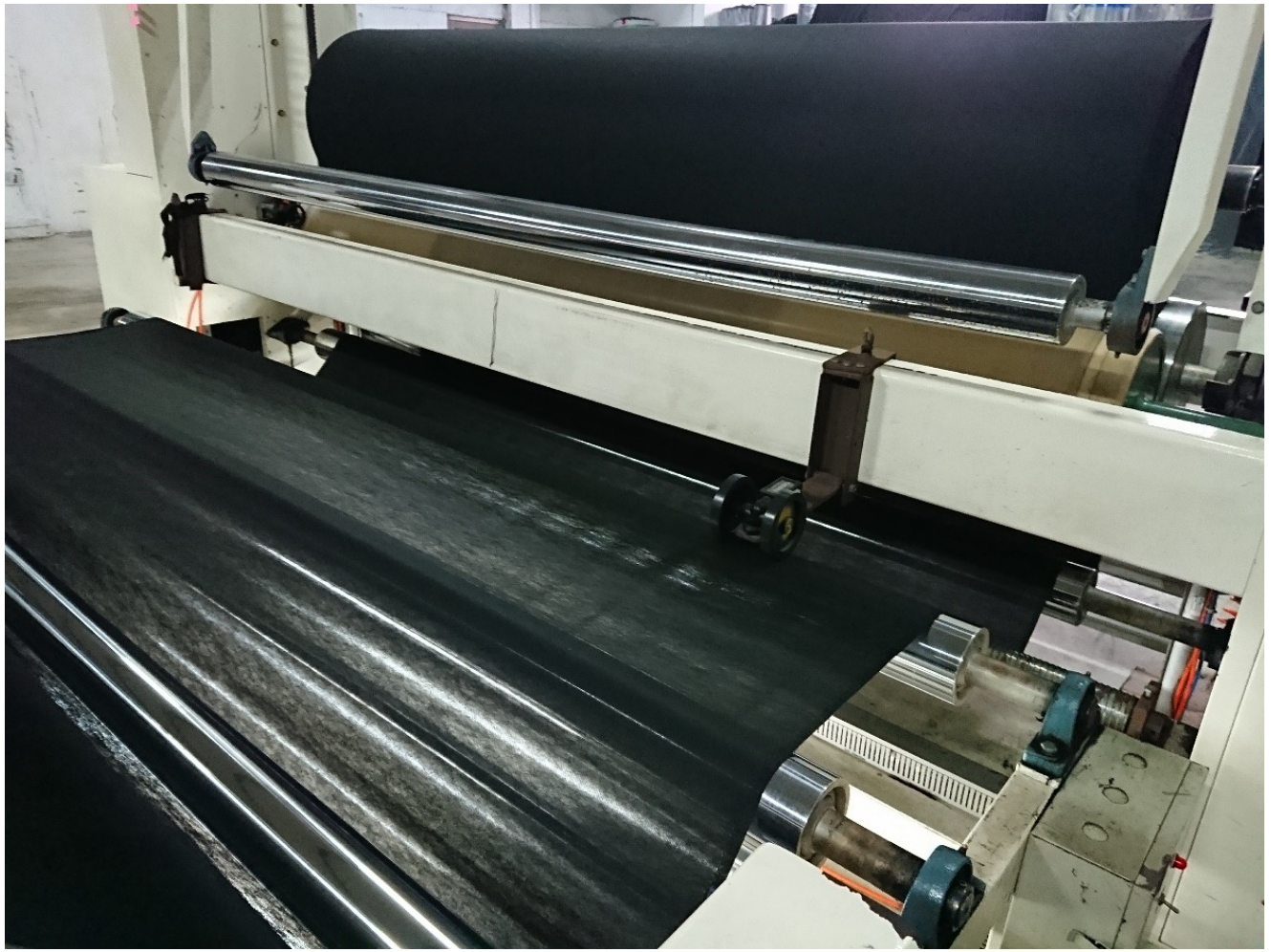
D. Ultrasonic stitch machine

- Ultrasonic technology to make fabric seams flatter than traditional way that sewn seams.
- Use the special tape that can be glued to strengthen the breaking strength of the seams.

Calendering 壓光

E. Rewinder

Using auto edge position controller and active coiler to achieve stable tension product.



Featrues

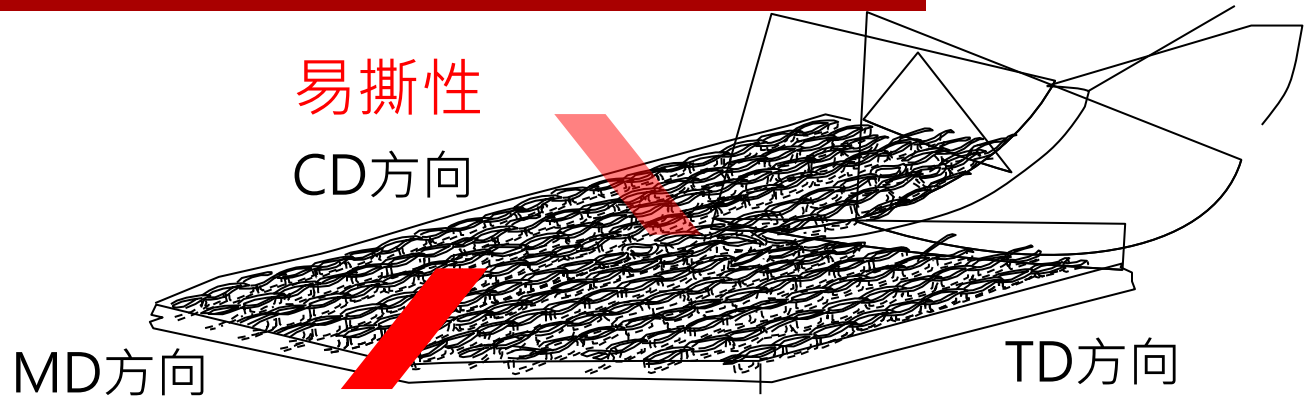
特性

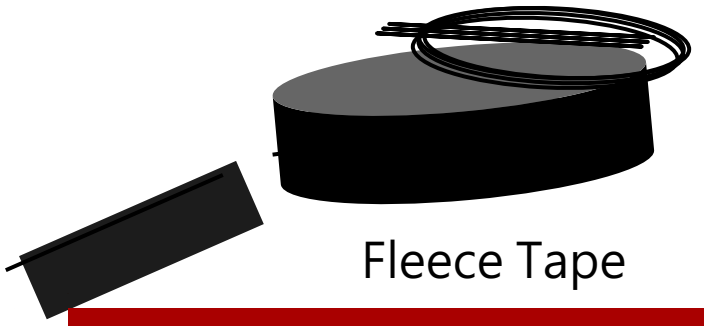
Features 特性

Stitch-bond non-woven fabric has high abrasion resistance , easy-to-tear and noise-reduction properties.

縫編式不織布具備高耐磨、易撕 、 與降噪特性。

Orthogonally arranged structure of long and short fibers (providing easy tearing function) 長、短纖纖正交排列結構 (提供易撕的功能)





Fleece Tape

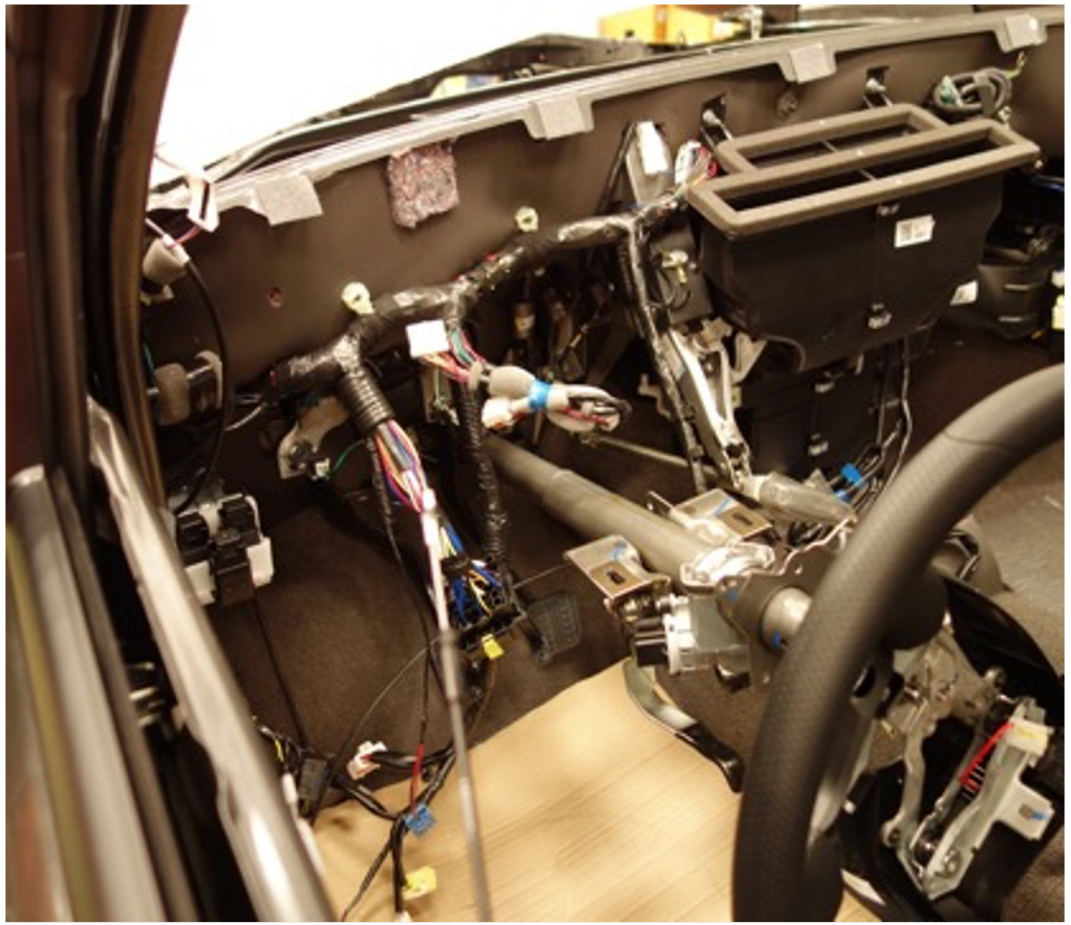
Wide range of thickness with fluffy properties provides noise reduction effect
調整幅度大的厚度與蓬鬆的特性，提供降噪效果

A multi-layered structure strong abrasion ability.
多層結構提供高耐磨特性

Market Analysis

市場分析

Applications for Automotive wire-harness 應用於汽車線束



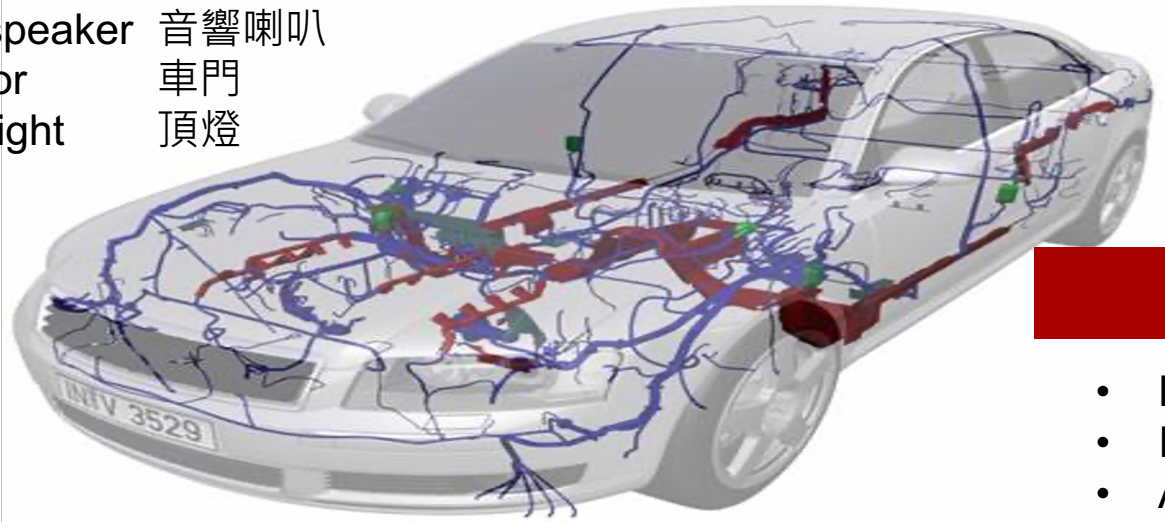
Market Analysis 市場分析

An automobile circuit system is connected by about 2,000 wires, which need to be organized into a wiring harness using 8 to 20 m^2 of tape to fix. The automotive tape market demand in 2022 is 400 million m^2, with a total output value of approximately US$ 1 billion.

汽車電路系統約由2000根電線作連結，需利用8~20平米膠帶整理成線束加以固定。2022年車用膠帶市場需求4億m^2，總產值約10億美元。

Roof Harness 篷頂線束

- Audio speaker 音響喇叭
- Car door 車門
- Dome light 頂燈



Rear Wiring Harness 車尾線束

- Tail light assembly 尾燈總成
- License Plate Light 牌照燈
- Trunk light 行李箱燈

Head wiring harness 車頭線束

- Front light assembly 前燈光總成
- Instruments . engine 儀錶 .發動機
- Air conditioner . battery 空調 .蓄電池

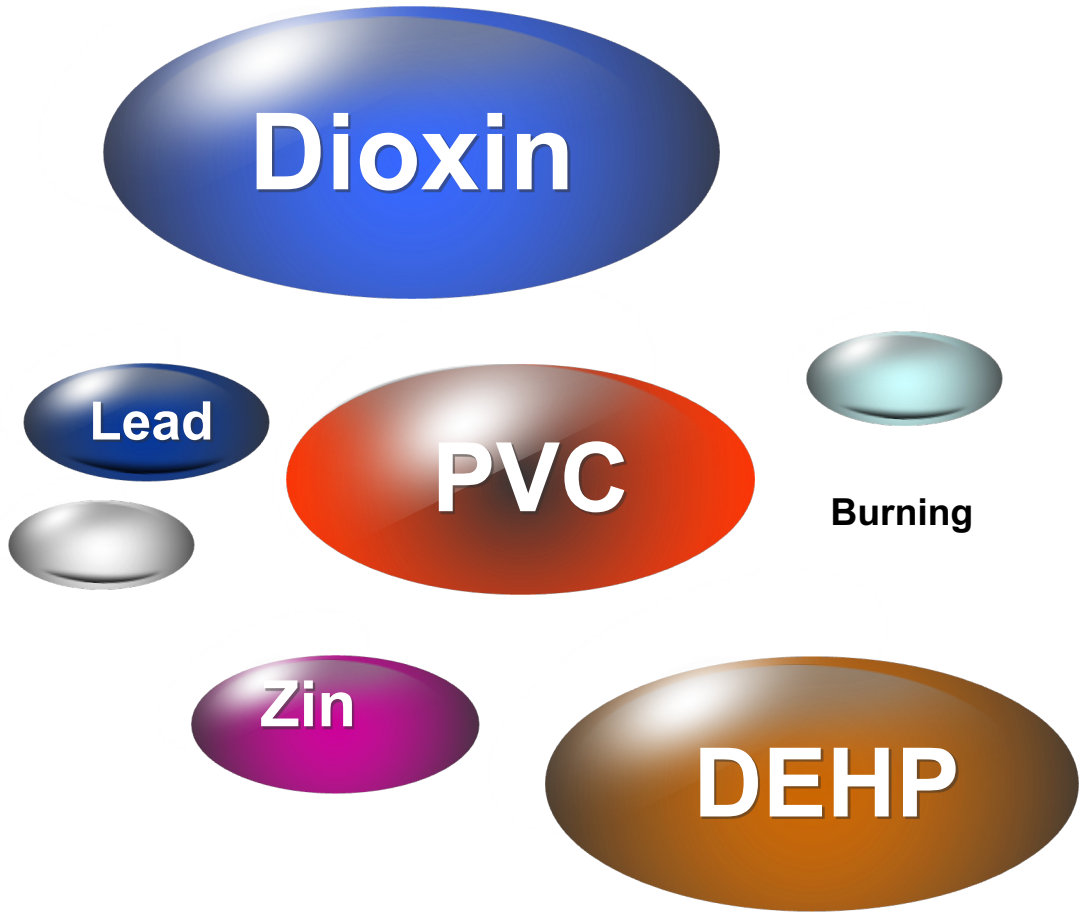
Restriction of PVC tape in Automotive Industry
PVC膠帶於汽車產業的限制

- Most common tape for wire-harness: pvc insulation tape、PET cloth tape…
- Well-known car manufacturers (BMW、Benz、Volkswagen、Toyota…) started to prohibit the use of PVC tape from 2003 (Greenpeace International UK 2003 report) due to the environmental restriction.

Type	Insulation tape	PET cloth tape	Fleece tape
Base layer	pvc film	PET cloth	PET stitch-bond
Elongation (%)	200	70	15
Thickness(mm)	0.2	0.06	0.33
Tearing strength (kgf)	5	8	≦5
Adhesive to steel (N/cm)	8	3	8
Temperature resistance (°C)	80	105	105 (3000 hr) class b
Application	Integrated harness, wire winding, insulation protection, demagnetization coils, communication wiring, and so on.	Transformer and capacitor coil fixed insulation bundling.	Wire and cable bundling, automotive harness tape,

Why use fleece tape?為什麼要使用絨布膠帶？

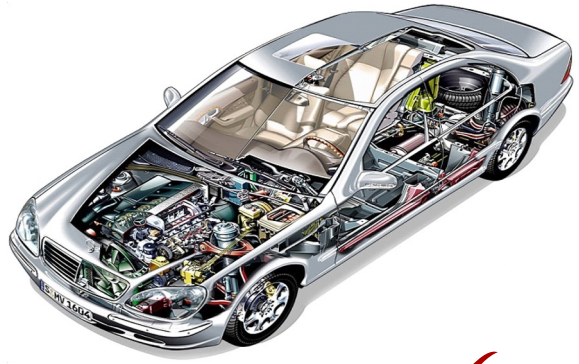
- Environmental reasons 環境原因
- Noise reduction 噪音抑制
- Heat durability 耐熱性
- Abrasion resistance 抗磨性
- Tear easily by hands 用手輕鬆撕開



Applications of Fleece tape material in the Future

膠帶布未來應用發展

Application 應用領域



polyester stitch-bond nonwoven tape

聚酯縫編不織布膠帶

Transportation industry 運輸業

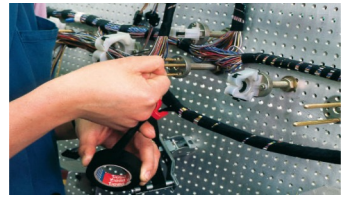
Looking for Alternative PVC Tape Materials

尋找替代PVC膠帶材料

Countries begin to ban PVC products

各國開始禁用PVC產品

Electronics industry 電子業



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Q & A

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Thank You