WINTERSTEIGER
Thin-cutting & Repair

Timber Repair & Cosmetics

TRC
Timber Repair & Cosmetics

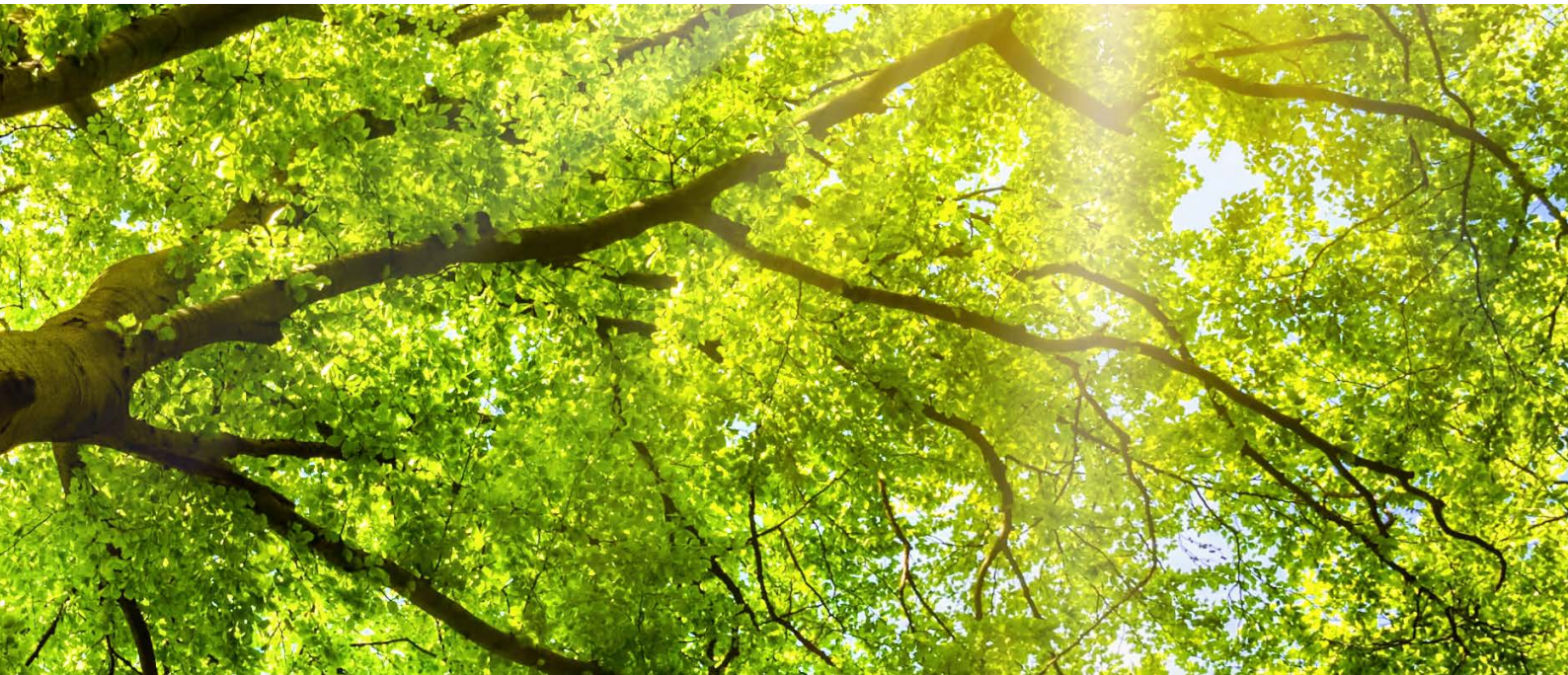TRC 作为一个总称是指以前所未有的高质量标准进行"木材修饰"，具有很大的优化潜力。无论半自动还是全自动，WINTERSTEIGER 在缺陷修补与木材修饰方面都有合适的标准解决方案可供选用！

The TRC concept stands for „timber cosmetics" in unprecedented quality, with enormous potential for economization. Whether semi-automatic or fully automatic, WINTERSTEIGER has in terms of „timber repair & cosmetics" the appropriate solution!

优势总结：

- 降低工资费用
- 不依赖于手工艺技能
- 批刮腻子效果极佳，大大减少次品
- 可以在一个部件上进行多色修补
- 可以全自动修补部件边缘处的缺陷
- 专用填料对人和环境无害
- 采用特殊的注射法，材料固着性良好
- 仅需一次批刮操作即可填补较大的缺陷
- 填补之后可以立即将修补件码垛

Your benefits summed up:

- Reduction in labor costs
- Craft skills are no longer necessary
- Significant reduction of rejects due to perfect filling
- Multicolour repair on the same board if necessary
- Proper repair of defects on the edges
- Filler material is harmless to people and the environment
- The special injection process guarantees a perfect hold of the filling material
- Large defects are repaired in only one process
- Repaired elements can be stacked immediately after filler injection has taken place

TRC
技术

Timber Repair & Cosmetics（木材修补与修饰）包括一系列用于填补木材产品面层缺陷的产品。WINTERSTEIGER 采用热塑性塑料。这类材料有很大的优点，填料的硬度高于任何其它填料。此外，使用这种材料还能确保立即进行后续处理。

TRC 生产线的全自动机器通过摄像头扫描原材料。软件随后计算缺陷的准确位置和大小。据此计算填料的用量，从而能以节省资源的方式工作，不会造成浪费。用于填补缺陷的注射单元使得材料在压力作用下以精确剂量注入到原材料之中，从而实现均匀完整的填补。

TRC
Technology

Timber Repair & Cosmetics contains a number of products used to fill in defects in the top layers of wooden products. WINTERSTEIGER uses thermoplastics for this purpose. The main advantage of thermoplastic fillers is that they are harder than alternative filling materials. Using these materials also means that further processing can be carried out on the timber product straight away.

The fully automated machines in the TRC product line scan the raw materials using a camera. The software then calculates the precise position and size of the defect. These calculations are then used to calculate the required amount of filler, ensuring that resources are used efficiently and no filler is wasted. The injection unit used for filling defects precisely injects the correct amount of filler into the raw material under pressure. This ensures that the defects are fully and evenly filled.

TRC-M Easy

TRC-M Easy 是 TRC 产品系列中的入门级机型。该产品面向手工业作坊和小型企业。可用于以半自动方式修补木材表面的缺陷。这种 TRC 机型的修补质量出色，排料性能良好，投入少。

- **应用范围**：面层、拼木地板、实木地板、实木板材、多层板、胶合板、家具板材、刨切料精加工、窗框料等等

- **木材尺寸**：长度：任意，宽度：最大 620 mm，厚度：最大 40 mm

The TRC-M Easy is the entry model in the TRC product line. This semi-automatic machine is the perfect solution for small companies who aim at having a top product. The quality of the repair with a good output and the low investment make the TRC-M Easy the right choice for a large number of customers.
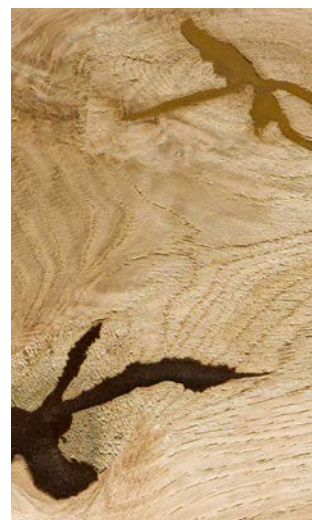
- **Applications:** top layers, engineered wood flooring, solid parquet planks, solid wood boards, multilayer boards, plywood, furniture boards, finished lumber, window elements etc.

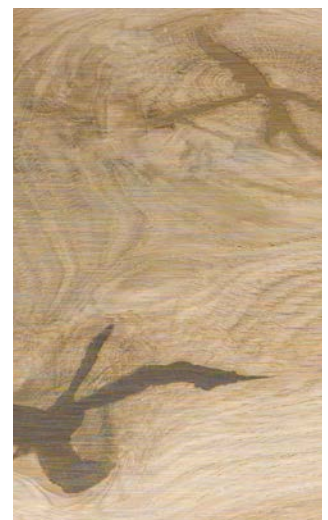- **Wood dimensions:** length: any, width: max. 620 mm (24.41"), thickness: max. 40 mm (1.57")

技术数据 / Technical data	
TRC-M Easy	
尺寸（长 x 宽 x 高） / **Dimensions (L x W x H)**	1420 x 1590 x 1820 mm
压缩空气 / **Compressed air** 连接 / Connection 压力 / Pressure 消耗量 / Consumption	3/8" 6 bar 220 l/min
1 头部 / 电气设备 / **1 Head / Electrical** 电压 / Voltage 总功率 / Total electrical power 平均功耗 / Ø consumed power	3/N AC 400 – 415 V / 50 Hz, 3 AC 480 V / 60 Hz, 3 AC 208 – 230 V / 60 Hz 3,3 kW 2 kW
2 头部 / 电气设备 / **2 Head / Electrical** 电压 / Voltage 总功率 / Total electrical power 平均功耗 / Ø consumed power	3/N AC 400 – 415 V / 50 Hz, 3 AC 480 V / 60 Hz, 3 AC 208 – 230 V / 60 Hz 5,8 kW 3,7 kW
环境 / **Environment**	+5 / +40°C
不结露的空气湿度 / **Humidity non-condensing**	85 %

修补 / filled

磨光 / sanded

TRC 1000

TRC 1000 是自动缺陷修补的理想入门级产品。TRC 1000 有多种设计方案，从简单的上料直至全自动生产单元，能满足中等产能需求的所有要求，而且性价比极高。可供使用的工作区能针对工件的尺寸极其灵活地进行处理。

- **应用范围**：拼木地板、实木地板、实木板材、多层板、胶合板、家具板材、刨切料精加工、窗框料等等

- **木材尺寸**：长度：500 mm 以上，（取决于输送系统），宽度：100 – 650 mm，厚度：3 – 50 mm

The TRC 1000 is the perfect entry into the automated timber repair process. Several executions of feeding, from a manually loading to a fully automated production line, cover all medium capacity requirements.

Additionally the operating range allows the highest fexibility and provides perfect price / performance ratio for automated timber repair.

- **Applications:** engineered wood flooring, solid parquet planks, solid wood boards, multilayer boards, plywood, furniture boards, finished lumber, window elements etc.

- **Wood dimensions:** length: starting with 500 mm (19.68"), (depends on transport system), width: 100 – 650 mm (3.94 – 25.59") , thickness: 3 – 50 mm (0.12 – 1.97")
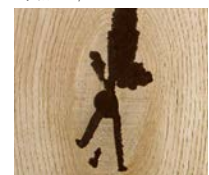
技术数据 / Technical data

TRC 1000	
尺寸（长 x 宽 x 高）/ **Dimensions (L x W x H)**	1770 x 2140 x 2066 mm
压缩空气 / **Compressed air** 连接 / Connection 压力 / Pressure 消耗量 / Consumption	1/2" 6 bar 500 l/min
电气设备 / **Electrical** 电压 / Voltage 总功率 / Total electrical power 平均功耗 / Ø consumed power	3/N AC 400 – 415 V / 50 Hz, 3 AC 480 V / 60 Hz 11,3 kW 4,5 kW
环境 / **Environment**	+5 / +40°C
不结露的空气湿度 / **Humidity non-condensing**	85 %

未加工 / raw

修补 / filled

磨光 / sanded

TRC 1500

TRC 1500 的注射单元与施涂单元协同工作，从而显著提升产能。通过配有专用涂覆系统的施涂单元使用填料填补较小的缺陷，接着滚压填料。与以前一样通过注射单元修补较大的缺陷。性价比极高。

使用 TRC 1500 也可以首次自动修补面层。

- 应用范围：面层、拼木地板、实木地板、刨切料精加工等等

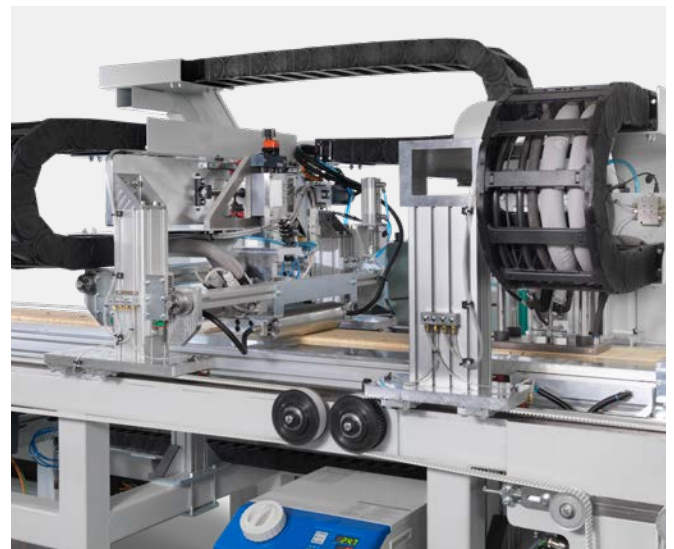- 木材尺寸：长度：500 – 3000 mm，
  宽度：100 – 350 mm，厚度：3 – 30 mm

The injection unit of the TRC 1500 works in tandem with an application unit, significantly increasing capacity. It uses a special application system to fill smaller defects with filler, which is then subsequently rolled in. As before, larger defects are repaired using an injection unit. This results in an excellent price/performance ratio.

TRC 1500 also makes the automated repair of top layers possible for the first time.

- **Applications:** top layers, engineered wood flooring, solid wood floorboards, finishing planed items, etc.

- **Wood dimensions:** length: 500 – 3000 mm (19.68 – 118.11") , width: 100 – 350 mm (3.94 – 13.78"), thickness: 3 – 30 mm (0.12 – 1.18")

技术数据 / Technical data

TRC 1500	
尺寸（长 x 宽 x 高）/ **Dimensions (L x W x H)**	13620 x 4040 x 2300 mm
压缩空气 / **Compressed air** 连接 / Connection 压力 / Pressure 消耗量 / Consumption	3/4" 6 bar 800 l/min
电气设备 / **Electrical** 电压 / Voltage 总功率 / Total electrical power 平均功耗 / Ø consumed power	3/N AC 400 – 230 V / 50 Hz, 3 AC 480 V / 60 Hz 25 kW 14 kW
环境 / **Environment**	+5 / +40°C
不结露的空气湿度 / **Humidity non-condensing**	Max. 85 %

TRC 2000

该设备面向中等至极高产能的商业和工业企业。可完美修复木材表面的缺陷。这种 TRC 机型的修补质量出色，能够全自动修补，可针对各种可能的木材尺寸灵活进行处理，并且性价比高。

- 应用范围：面层、拼木地板、实木地板、实木板材、多层板、胶合板、家具板材等等

- 木材尺寸：长度：800 – 2500 mm*，宽度：135 – 650 mm，厚度：5 – 25 mm

* 长地板选项：可以进行 6 m 长度以下的加工

This line is designed for middle and big companies. The fully automatic process with the usual top repair quality, larger dimensions to be processed and a good price/performance ratio make this line very interesting.

- **Applications:** top layers, engineered wood flooring, solid parquet planks, solid wood boards, multilayer boards, plywood, furniture boards etc.

- **Wood dimensions:** length: 800 – 2500 mm (31.50 – 98.42")*, width: 135 – 650 mm (5.31 – 25.59"), thickness: 5 – 25 mm (0.20 – 0.98")

*Option long plank: processing up to 6 m length

技术数据 / Technical data

TRC 2000

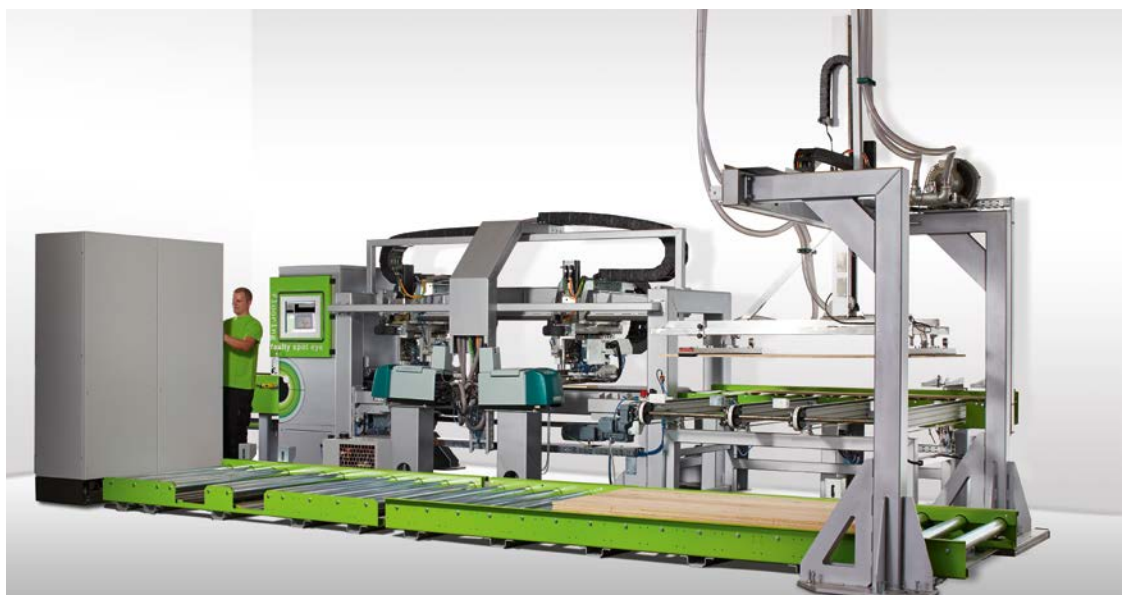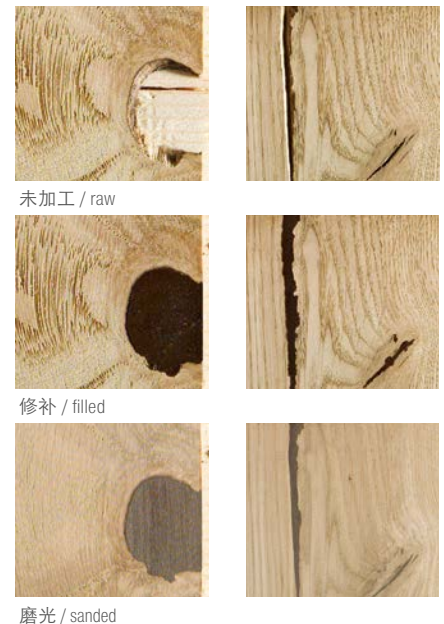|	
尺寸（长 x 宽 x 高）/ **Dimensions (L x W x H)**	10470 x 6380 x 4120 mm
压缩空气 / **Compressed air** 连接 / Connection 压力 / Pressure 消耗量 / Consumption	1/2" 6 bar 770 l/min
电气设备 / **Electrical** 电压 / Voltage 总功率 / Total electrical power 平均功耗 / Ø consumed power	3/N AC 400 – 415 V / 50 Hz, 3 AC 480 V / 60 Hz 48 kW 19 kW
环境 / **Environment**	+5 / +40°C
不结露的空气湿度 / **Humidity non-condensing**	85 %

未加工 / raw

修补 / filled

磨光 / sanded

TRC 3000

TRC 3000 是 TRC 系列产品中性能最强劲的型号。该设备面向中等至极高产能的商业和工业企业。模块化构造和各种各样的输送解决方案使得客户能够以各种不同的配置等级实现定制的自动化程度。

- 应用范围：面层、拼木地板、实木地板

- 木材尺寸：长度：800 – 2500 mm，
  宽度：100 – 270 mm，厚度：5 – 25 mm

The TRC 3000 is the line with the highest output. For this reason it is the ideal solution for those companies with a large production capacity. The modular design and various infeed/outfeed conveying systems enable customized solutions with different automation levels.

- **Applications:** top layers, engineered wood flooring, solid wood planks

- **Wood dimensions:** length: 800 – 2500 mm (31.50 – 98.42"), width: 100 – 270 mm (3.94 – 10.63"), thickness: 5 – 25 mm (0.20 – 0.98")

未加工 / raw

修补 / filled

磨光 / sanded

技术数据 / Technical data

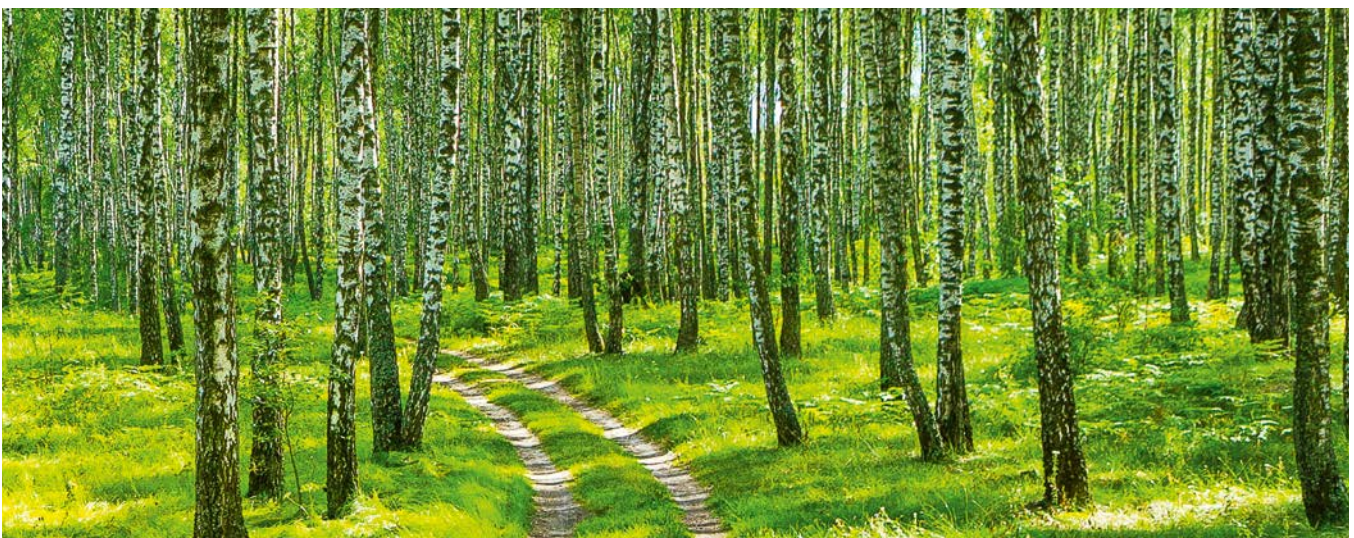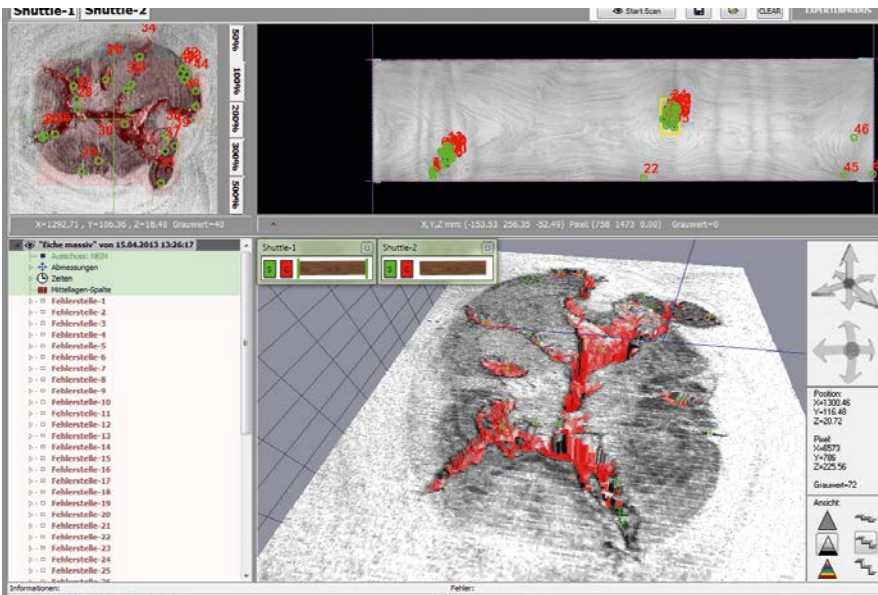| TRC 3000	
尺寸（长 x 宽 x 高）/ **Dimensions (L x W x H)**	10120 x 5530 x 3320 mm
压缩空气 / **Compressed air** 连接 / Connection 压力 / Pressure 消耗量 / Consumption	1/4" 6 bar 880 l/min
电气设备 / **Electrical** 电压 / Voltage 总功率 / Total electrical power 平均功耗 / Ø consumed power	3/N AC 400 – 415 V / 50 Hz, 3 AC 480 V/ 60 Hz 55 kW 24 kW
环境 / **Environment**	+5 / +40°C
不结露的空气湿度 / **Humidity non-condensing**	85 %

Faulty Spot Eye

我们的缺陷扫描仪 "Faulty Spot Eye" 是任何一种全自动 TRC 设备的重要组成部分，具有必不可少的全局视野，能高度精确地检测所有类型的缺陷。可在 2D 和 3D 模式下迅速精确地工作，并且能在数毫秒之内分析图像。接着通过相关的修补装置高速逼近所确定的缺陷部位并且批刮腻子。

我们的机器和设备能修补从小到大、从简单到复杂的各种缺陷。所有天然缺陷均可修补！

Our defects scanner „Faulty Spot Eye" is an essential part of any fully automatic TRC plant. It has the necessary „insight", and provides highly accurate detection of defects of any kind; it works quickly and accurately in 2D- and 3D-mode and enhances images in milliseconds. Then the identified defects are properly treated by repair units moving at high speed.

Our machines and equipment are developed to repair small to large-sized areas, with different complexity levels. We are able to repair any defect that Mother Nature can come up with!

TRC Manufactury

使用 TRC Manufactory 可保证每一处表面独一无二。该机器可加工已经过修补和磨光的材料，例如毛坯地板或者家具板材。地板可以在加工之前开料，或者可以在之后开料。TRC Manufactory 扫描每一个待加工的地板。软件据此为每一个地板创建独特的加工程序。可提供多种加工方法：铣削/磨削侧边、打磨树枝、加工纹理、铣去裂纹等。这种独一无二的地板和加工组合可将每一件最终产品打造成外观精美、手感舒适的精品。

- 应用范围：拼木地板、实木地板、多层板、家具板材等等

- 木材尺寸：长度：500 mm – 理论上无限，宽度：100 – 650 mm，厚度：8 – 45 mm

The TRC Manufactory guarantees a unique end product every time. The machine finishes materials that have already been repaired and ground, such as raw planks or furniture panels. The planks can be formatted either before or after they are finished. TRC Manufactory scans each plank before finishing it. The software uses this scan to create a custom finishing program for each plank. This program could include a variety of finishing options: Milling/grinding the side edges, reworking knots, finishing the grain, milling out cracks... the individual combination of plank and finish results in a unique product every time with an attractive look and feel.

- **Applications:** engineered wood flooring, solid wood boards, multi-layer boards, furniture panels, etc.

- **Wood dimensions:** length: 500 mm (19.68") – theoretically infinite, width: 100 – 650 mm (3.94 – 25.59"), thickness: 8 – 45 mm (0.31 – 1.77")

技术数据 / Technical data

TRC Manufactory

尺寸（长 x 宽 x 高）/ **Dimensions (L x W x H)**	10650 x 2540 x 2600 mm (419.29x 100 x 102.36")
压缩空气 / **Compressed air** 连接 / Connection 压力 / Pressure 消耗量 / Consumption	1/2" 6 bar (87 psi) 2500 l/min (88.25 cubic feet/min)
电气设备 / **Electrical** 电压 / Voltage 总功率 / Total electrical power 平均功耗 / Ø consumed power	3/N AC 400 – 230 V / 50 Hz, 3 AC 480 V / 60 Hz 21 kW 7 kW
环境 / **Environment**	+5 / +40°C (+41 / +104°F)
不结露的空气湿度 / **Humidity non-condensing**	Max. 85 %

客户专用设备

除标准规格外，我们当然也可以根据需求提供个性化解决方案。这适用于木材尺寸，但也适用于定制的自动化和输送系统。

如果需要客户专用的生产系统，WINTERSTEIGER 集团旗下 VAP Gruber Automations GmbH 公司的自动化能力就有了用武之地。

Customized Plant Engineering

In addition to the standard versions, of course, individual solutions are possible on request. This applies to wood dimensions, but also to customized automation levels and conveying systems.

If customer-specific production systems are needed, then the automation expertise of the WINTERSTEIGER group – provided by VAP Gruber Automations GmbH – is at hand.

好的结果取决于在适当的时候作出正确的决定。
我们正期待与您见面！

Success begins with the right decisions.
At the right time. We look forward to you!

WINTERSTEIGER
Thin-cutting & Repair

DEVELOPED BY
VAP GRUBER®

PART OF WINTERSTEIGER GROUP

总公司：
奥地利： WINTERSTEIGER AG, 4910 Ried, Austria,
Dimmelstrasse 9, 电话：+43 7752 919-0, 传真：+43 7752 919-58,
woodtech@wintersteiger.at

海外公司：
法国： SKID WINTERSTEIGER S.A.S.,
93 Avenue de la Paix, 41700 Contres, 电话：+33 6 825 947 62,
franck.pasqual@skid-wintersteiger.com

俄罗斯，独联体： OOO WINTERSTEIGER, 117218 Moscow,
Krzhizhanovsky str. 14, build. 3, 电话：+7 495 645 8491,
传真：+7 495 645 8492, office@wintersteiger.ru

南美洲： WINTERSTEIGER South América Comercio de
Maquinas Ltda., Rua dos Cisnes 348, CEP: 88137-300, Palhoça,
SC – Brazil, 电话/传真：+55 48 3344 1135, office@wintersteiger.com.br

东南亚，澳大利亚，新西兰： WINTERSTEIGER SEA Pte. Ltd.,
Singapore 569084, 2 Ang Mo Kio Street 64 #05-03A,
电话：+65 6363 3384, 传真：+65 6363 3378, office@wintersteiger.com.sg

美国，加拿大： WINTERSTEIGER Inc.,
4705 Amelia Earhart Drive, Salt Lake City, UT 84116-2876,
电话：+1 801 355 6550, 传真：+1 801 355 6541, mailbox@wintersteiger.com

Headquarters:
Austria: WINTERSTEIGER AG, 4910 Ried, Austria,
Dimmelstrasse 9, Tel.: +43 7752 919-0, Fax: +43 7752 919-58,
woodtech@wintersteiger.at

International Companies:
France: SKID WINTERSTEIGER S.A.S.,
93 Avenue de la Paix, 41700 Contres, Tel.: +33 6 825 947 62,
franck.pasqual@skid-wintersteiger.com

Russia CIS: OOO WINTERSTEIGER, 117218 Moscow,
Krzhizhanovsky str. 14, build. 3, Tel.: +7 495 645 8491,
Fax: +7 495 645 8492, office@wintersteiger.ru

South America: WINTERSTEIGER South América Comercio de
Maquinas Ltda., Rua dos Cisnes 348, CEP: 88137-300, Palhoça,
SC – Brazil, Tel./Fax: +55 48 3344 1135, office@wintersteiger.com.br

Southeast Asia, Australia, New Zealand: WINTERSTEIGER SEA
Pte. Ltd., Singapore 569084, 2 Ang Mo Kio Street 64 #05-03A,
Tel.: +65 6363 3384, Fax: +65 6363 3378,
office@wintersteiger.com.sg

USA, Canada: WINTERSTEIGER Inc., 4705 Amelia Earhart
Drive, Salt Lake City, UT 84116-2876, Tel.: +1 801 355 6550,
Fax: +1 801 355 6541, mailbox@wintersteiger.com

代表处：/ Representations:
阿尔巴尼亚、波兰、波斯尼亚黑塞哥维那、芬兰、韩国、黑山、科索沃、克罗地亚、马其顿、葡萄牙、日本、瑞典、塞尔维亚、斯洛文尼亚、台湾、土耳其、西班牙、南美洲、中国。
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