

Precision Devices

Precision Devices is globally regarded as a leading manufacturer of high-end component loudspeaker transducers. Established in Rotherham in 1987, it is a family-owned and managed company which operates from its purpose-built manufacturing facility at Wakefield Europort, drawing upon the skills and rich engineering and manufacturing heritage of West Yorkshire. Mark Barnes, who has been the managing director since 2012, explains the journey that has allowed the company to remain competitive for over 30 years.

PD 是全球公认的高端组件扬声传感器的领先制造商。于 1987 年在 Rotherham 成立，是一家家族拥有和管理的公司，利有西约克郡的技能和丰富的工程和制造业遗产，在 Wakefield Europort 专门建造的工厂运营。自 2012 年以来 Mark Barnes 一直担任董事总经理，他解释了让这家公司一直保持竞争力 30 多年的历程。

We have always been driven by a passion and philosophy to design and manufacture the world's finest professional audio speaker transducers, which are capable of achieving superior levels of acoustic performance and efficiency combined with the outstanding engineering characteristics of strength and reliability. Precision Devices transducers are synonymous with uncompromising quality and enviable performance, and are highly prized and desired by audio professionals around the world. 我们致力于设计和制造世界上最好的专业音频扬声传感器，且一直被这样的激情和理念驱动和激励，这些传感器能够实现卓越的声学性能和效率，并结合强度和可靠性的出色工程特性。 Precision Devices 传感器是不妥协的质量和令人羡慕的性能的代名词，并且受到全世界音频专业人士的高度重视和期望。

All Precision Devices loudspeakers are engineered using the finest materials, without compromise or exception. Manufactured in our factory in Castleford, West Yorkshire, our technical and engineering team has generations of experience in the production of high-quality audio components. Although measured performance is the goal of all professional audio development, science alone can never establish the true finite quality of a loudspeaker. Following in-depth scientific analysis, therefore, we subject all products to extended listening tests. It is only through this process that we can satisfy the ultimate audio reference – the human ear.

所有 Precision Devices 扬声器均采用最优质的材料设计，不会有任何妥协或例外。在位于西约克郡 Castleford 我们的制造工厂，我们的技术和工程团队拥有多年生产高品质音频组件的经验。虽然可测量性能表现是所有专业音频开发的目标，但单单靠科学无法确定扬声器的真正有

限质量。因此，经过深入的科学分析，我们会对所有产品进行扩展的听力测试。只有通过这个过程，我们才能满足最终的音频参考 - 人耳。

Design 设计

At the design stage, audio simulation computer software is utilised to establish the correct component parts, considerably reducing conventional R&D lead times to achieve optimum acoustic performance in line with, or exceeding, our customers' required expectations. Our in-house toolroom and coil-winding expertise ensures R&D prototypes can be produced within extremely short timelines.

在设计阶段，利用音频模拟计算机软件建立正确的零部件，大大减少了传统的研发交付周期，且达到甚至超过客户所要求的最佳声学性能。我们的内部工具室和线圈绕组专业技能可确保在极短的时间内生产出研发原型。

Our responsiveness to OEM requests for bespoke designs, our in-house engineering capabilities which greatly reduce lead times and our flexibility in providing large or small production runs according to customer need means that we are particularly well suited to working with systems manufacturers who are looking for something special to delineate themselves from their competition, a particular advantage in a market in which an increasingly limited number of product options from our competitors are being used interchangeably by a number of OEMs. Precision Devices gives the OEM the opportunity to differentiate themselves with their genuinely bespoke product (rather than an off-the-shelf variant), to give them a unique advantage and identity in terms of performance and branding.

我们响应 OEM 定制的设计要求，我们的内部工程能力大大缩短了交货时间，并且我们根据客户需求可提供大批量或小批订单的灵活生产安排，这意味着我们特别适合与成品制造商合作，他们会寻求一些特殊的东西可以将他们从竞争中脱颖而出，这在市场上是一个特殊的优势，来自我们竞争对手的产品选择越来越有限，许多的 OEM 制造商都可以互换来使用。PD 为 OEM 制造商提供了用其真正定制产品（而不是现成的变体）来使其差异化的机会，让其在性能和品牌方面具有独特的优势和身份。

Case studies 案例分析

Precision Devices were approached by a major UK OEM to participate in the development of a groundbreaking new product utilising a 24-inch chassis and a 6-inch twin voice coil. After a development time greatly reduced by our ability to act quickly to produce prototypes (through a

combination of in-house engineering ability and excellent supply-chain flow from our local suppliers of CNC precision-machined steel parts in Yorkshire), we developed a product described as “the best performing solution”, eventually developing a double 6-inch voice coil motor with an unprecedented BL factor of 50 to give the necessary motive power.

PD 受英国的一家主流 OEM 制造商之邀，参与其一款突破性新产品的开发，使用 24 英寸盆架和 6 英寸的双层音圈。由于我们对产品原型快速行动的能力，大大缩短了开发时间（通过结合内部工程能力和当地约克郡 CNC 精密加工钢件供应商的优秀供应链），我们开发了一种产品被称为“性能最佳的解决方案”，最终开发出具有前所未有的 BL 系数为 50 的双 6 英寸音圈电机，以提供必要的动力。

Our loudspeaker technology and expertise also allow us to engineer creative solutions for situations outside the conventional parameters of the moving cone loudspeaker. We manufacture tactile transducers for applications such as drum throne monitoring, bass guitar platforms and in educational facilities for the hearing-impaired where the sensation provided by sound is “felt” rather than heard through a series of vibrations which are incredibly responsive through the frequency range.

我们的扬声器技术和专长还使我们能够为纸盆扬声器在传统参数以外设计创造性的解决方案。我们制造触觉传感器，应用于鼓座的监听、低音吉他平台和有听力障碍的教育设施，其中声音所提供的知觉是被“感觉到的”而不是通过一系列的振动而被听到的，这些振动在频率范围内具有令人难以置信的响应。

Manufacture 制造

UK-manufactured die-cast aluminium chassis, cones, suspensions and precision CNC-machined steel components are used in all Precision Devices loudspeakers. Random QC sampling at Goods Inwards followed by in-line QC production inspection ensures that every component part used is within specification.

所有 PD 扬声器均采用英国制造的压铸铝盘架、纸盘、弹波和精密 CNC 加工钢制部件。货物内向的随机 QC 采样再进行随后的在线 QC 生产检测，确保使用的每个组件都符合规范。

Unlike other manufacturers we produce all our own voice coils – the motor of the loudspeaker – ranging from 1.5 to 6 inch diameter in both copper and copper-clad aluminium wire. The wire is coated with high-temperature enamel, and precision wound onto an epoxy resin-impregnated woven glass fibre former using CNC-controlled bespoke machinery. Once this is completed, the whole assembly is cured at high temperature to give it a rigid and integrated structure.

与其他制造商不同，我们自己生产所有的音圈 - 扬声器的马达 - 直径范围从 1.5 至 6 英寸铜线和铜包铝线。金属线表面涂有高温珐琅，并使用定制的数控机器精确地缠绕在环氧树脂浸渍的玻璃纤维成形器上。一旦完成，整个组件在高温下固化，使其具有刚性和整体结构。

Combining modern technology and artisanal skills, all component parts are assembled using bespoke jigs and fixtures in a factory designed to optimise production workflow. Each modular sub-assembly is individually tested and QC certified by the operator; final assembly and QC includes precise electronic testing. The result is the optimal synergy between state-of-the-art technology and time-honoured craftsman processes to produce a product that delivers both aesthetic refinement and a distinct performance advantage.

结合现代技术和手工艺技能，所有零部件都在工厂中使用定制的工具和夹具进行组装，旨在优化生产流程。每个模块的分组装配均经过单独测试，并经操作员进行 QC 认证；最终装配和 QC 包括精密的电子测试。这样的结果是最先进的技术和历史悠久的工匠流程之间的最佳协作，以生产出既有美感又具有独特性能的产品。

People 人文

Precision Devices is driven by a larger team of people who are the vital foundation of the company's success. It is their passion for sound that ensures our products are the best. Constantly working on refinements, new product development and improving production methods, we strive to efficiently manufacture the world's most high-performance loudspeakers.

PD 的团队是公司成功的基石，他们对声音的热情确保我们的产品是最好的。不断对细节地改进、新产品研发和改善生产方法，我们力求高效地制造出世界上最高性能的扬声器。

Our most important asset and resource, we value the individual members of the workforce and invest in personal development through internal and external training programmes and maintaining a friendly working environment.

我们最重要的资产和资源，我们重视每一个成员劳动力，通过内部和外部培训计划投资于个人的发展，且维持友好的工作环境。

» Multiskilled workforce allowing job rotation, minimising bottlenecks, balancing workflow and increased flexibility to achieve objectives. 多种技能的员工可以轮换工作，最大限度地减少瓶颈，平衡工作流程并提高灵活性以实现目标。

- » NVQ training in multiple disciplines: warehousing, manufacturing operations, team leadership, management, customer service. NVQ 在多个方面的培训：仓储·生产运作·团队领导·管理·客户服务。
- » MAS on-site lean manufacturing training. MAS 现场精益制造培训。
- » Modern engineering apprenticeships through college and on-site assessments. 通过大学和现场评实行现代工程学徒制。
- » Regular employee appraisals recognising achievements and setting professional and personal development goals with promotion made from within the organisation as far as possible. 定期进行员工评估认可成就·制定专业和个人发展目标·尽可能在组织内进行内部提升。

World-class manufacturing and best practice

世界一流的制造和最佳实践

We are committed to world-class manufacturing standards. Lean manufacturing using the Toyota Production System was formally implemented at Precision Devices in 2012 and is now a firmly embedded culture within the company with the objective of removing non-value-added activity; this is as relevant today as ever.

我们致力于达到世界一流制造标准。使用丰田生产系统的精益制造于 2012 年在 PD 正式实施，现已牢固地融入公司内部文化，旨在消除非价值行动；这到今天依然重要。

Another key principle is that of continuous improvement, which is inculcated through every aspect of the company and with full employee involvement and empowerment to facilitate positive change.

另一个关键的原则是持续不断地改进。通过公司各个方面地反复灌输，且由全体员工的共同参与和授权，以促进积极的改变。

Collectively, these processes contribute towards Precision Devices being an outstanding manufacturer of high-end bespoke professional audio transducers.

总的来说，这些过程成就了 PD 成为高端定制专业音频传感器的杰出制造商。

FUTURE 未来

I am optimistic about the future as Precision Devices has always been highly esteemed internationally, with particularly strong followings in key growth markets such as China, India and Indonesia, where British products carry great prestige. In collaboration with the Department of Industry and Trade (DIT) and their worldwide research partners, we are focused upon developing our export

sales outside Europe and are highly optimistic that the world economy offers outstanding opportunities for high-end British manufactured products in markets beyond the European Union. We approach the future with confidence and hope.

我对未来充满信心，因为 PD 一直受到国际上的高度尊重，在中国，印度和印度尼西亚等主要增长市场中具有特别强烈的关注，在那里英国产品享有很高的声誉。通过与工业和贸易部 (DIT) 及其全球研究合作伙伴的合作，我们专注于开发欧洲以外的出口销售，并高度乐观地认为世界经济为高端英国制造的产品提供了超越欧盟以外市场的绝佳机会。我们充满信心和希望地迎接未来。