

AGT800 Laser Thickness Measurement and S.P.C. Reporting System

AGT800 测厚系统和S.P.C报告系统

Introduction 简介

The AGT800 is designed for measuring metals and virtually any other material that is processed in coil, sheet or strip form. It provides fast and reliable thickness measurements and S.P.C. reporting using the latest in laser triangulation technology. Direct benefits realized through these measurements include documented compliance with ISO9002, QS9000, and other quality specifications, improved process control, increased productivity, and scrap reduction. The standard system also provides disk and/or network data storage and easy recall of all S.P.C. information. This feature eliminates the need to maintain large files of printer paper for long-term record-keeping purposes.

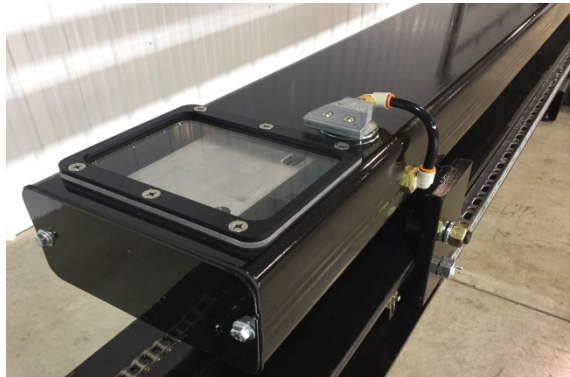
AGT800 激光检测系统用来测量任何材质的带材、卷材、板材的厚度、宽度、轮廓等规格尺寸，它能够提供高速且准确的测量，系统运用了最新的激光三角技术对条状物以及薄板材料的物体进行精准的规格检测，这些测量的直接好处是提高了生产线上的控制，提高了生产质量、产量，也降低了废品的产生。精准高效的在线检测是 ISO9002, QS9000 以及其他技术法规所认可的最为有效和直接的手段和途径，AGT800 标准系统提供了磁盘和网络数据的存储以及也可以很容易的查阅所有产品的检测数据信息的功能，就有利于减少大量书写、打印性书面文件的保存。



人机界面与处理器



人机界面与处理器



Principle of Operation 工作原理-----

The AGT800 is an optical based measuring system. For this reason, it is important to keep the glass cover over the sensors clean and free of excessive dust, dirt, scale, water and oil mist. Two non-contact, high precision semi-conductor laser sensors are mounted above and below the strip to be measured, and their beams are focused on the same spot on the target material. Each sensor emits a Class II laser beam and receives the beam back on a RS-CMOS pixel array. The gauge determines the distance to the target material and precise material thickness is then calculated. The system is calibrated based on this data allowing it to provide continuous, high speed, non-contact, accurate and reliable thickness measurements.

AGT800 是一个基于光学原理的测量系统。基于这个原因，保持激光探头上方玻璃盖洁净，无灰尘，异物，水和油污至关重要。两个非接触式高精度激光探头安装在待测物料的正上方与正下方位置，并且它们的光束都照射在相同的物料位置，每一个探头发射出的激光光束自对象的被测表面返回被接收在一个 RS-CMOS 像素阵列上。每一个探头都精确的检测出到目标物料的距离，并计算出精确的物料厚度。该系统是通过这些数据进行标定的，需要提供连续的，高速的，非接触式的，精确可靠的厚度测量。

Features 特点-----

1. **Easy Installation** – C-frames typically mount on two pedestals, and there is no requirement for water.
2. **Highly Stable Laser Sensors** – our development engineers tested more than a dozen laser sensor models from five different countries and made the decision to manufacture all A.G.T. laser thickness gauges with high-end Keyence sensors. These are the fastest sensors in the world, and they produce the highest possible accuracy and repeatability. This translates to the most consistent and stable thickness measurements possible.
3. **Reliability** – simplified hardware configuration increases the reliability of this gauge. The measurement system utilizes the latest in technology, reducing the requirement for peripheral hardware. This allows us to provide an extremely reliable platform for thickness measurement and S.P.C. reporting.
4. **Calibration Verification** – the system features a fast and accurate calibration verification procedure known as ISOcal™.
5. **Automatic Reporting** – the system automatically generates several reports, providing all the information you need in user friendly formats.
6. **Hassle Free** – there are no licensing or leak test requirements, no risk of terrorism, and no shipping or radioactive source disposal fee issues.
7. **Networking** – the system is fully capable of network data storage, remote printing and control. Auto Data Gathering can be used to automatically position the C-frame, start the measurement and reporting function. Auto Data Entry can be used to automatically enter coil data. Using both functions simultaneously, the AGT800 can run itself with no operator intervention.
8. **Data Storage** – all coil data is automatically stored to disk and/or network. Any desired information can be easily and conveniently accessed at any point in the future, and the respective reports reprinted with relative ease.
9. **Diagnostics** – all digital inputs and outputs, analog inputs, and DC power supplies can be monitored simultaneously in real-time on a single screen. This feature provides for a means of greatly simplified troubleshooting.
10. **Upgradeability** – the unique system design enables future software upgrades to be performed in a matter of minutes.

1、安装简便—C 框架结构一般安装在两个可滑动的导轨上，运动与检测部位无需特别的冷却措施

2、稳定精准激光—我们采用了世界上最先进的最准确的激光探头，我们工程师用了半年的时间对产自世界上 5 个国家的十多种探头进行了大量测试与运行试验，最终选取了其中最为优秀的品牌。它是世界上反应最快最精准的探头，这些都转换成为了最稳定最持久的厚度测量。

3、信赖可靠—简化了硬件软件配置，提高了仪器的可靠性，这些测量系统利用了最新的技术，降低了次要硬件的需求，这个系统配置为厚度测量和 S.P.C 检测报告提供了可靠的平台。

4、校准简便—我们的系统具有快速和精确的标定程序，叫做 ISOcal™。

5、自动报告—这个系统可以自动产生若干个报告，提供了所有你可能会需要的数据信息。

6、安全便捷—无污染无辐射，无须办理特种许可，极低的维修与运行费用。

7、网络扩展—这个系统可以进行网络数据的存储以及远程打印和控制功能。

8、数据存储—所有的数据都是自动存储在磁盘或者网络里面的，任何想要的资料都可以很快很方便的获得，这些各自的报告也可以很轻松的进行重印。

9、诊断便捷—检测与扫描系统的各类数字输入和输出，模拟输入以及电源都是被实时监控并显示在一个屏幕上，这就为发现并处理故障简化了很多手续。

10、无限升级—系统具备升级功能，有助于及时优化升级相关应用。

S.P.C. Reports S.P.C 报告-----

1. [Coil Report](#) – presents a graphic representation of strip thickness over the coil length, in strip chart fashion, and indicates location of out-of-tolerance material. In addition, this report presents a histogram of thickness distribution, footage, weight, average thickness, UCL, LCL, UTL, LTL, X Double Bar, R Bar, Cp, Cpk, and CR. This entire report is automatically scaled to fit on a single page allowing for much neater record-keeping.
2. [Defect Summary Report](#) – presents a useable summary of each defect type along with its respective location in the coil.
3. [Shift Summary Report](#) – presents a period summary of production, available automatically at regularly scheduled times, or on demand.
4. [ISOcal™ Report](#) – this routine allows the gauge to check its own calibration over a range of samples. This report can be sent to the system printer, allowing for regular system performance checks, and providing the necessary documentation to keep you in compliance with quality requirements.
5. [Diagnostic Data Report](#) – this report shows the real-time status of all digital and analog I/O, nominal and actual power supply voltages, and much more. All of the major test points in the system are displayed simultaneously, making troubleshooting a very straightforward process. This screen can easily be printed and emailed or faxed to Advanced Gauging Technologies for troubleshooting assistance.
6. [System Setup Report](#) – this report shows all setup parameters for a specific gauging system listed on a single page.

1. 检测记录—以横截面二维图型展示了横向各个坐标位置的检测数值，以条状图显示，并显示出超出公差的物料的位置，另外这个报告也展示了厚度分布，平均厚度，时间、坐标、检测数据的列表记录。这个所有的报告都在自动生成在一个页面上便于之后更加清晰的保存。

2. 超标记录—这个主要是展示了一些标注出来的位置的超标的总结。

3. 自动转存—展示一段时间内检测数据自动转存到可移动硬盘或 U 盘里面，并可以将数据转存到电脑便于查阅。

4. ISOcal™ 报告—这个程序能够让仪器自主校准根据样品的范围，除了所有的电压，这个报告可以被送到打印机，可以允许一些正规系统性能的检查，并提供一些必须的文件用于服从高质量的需求。

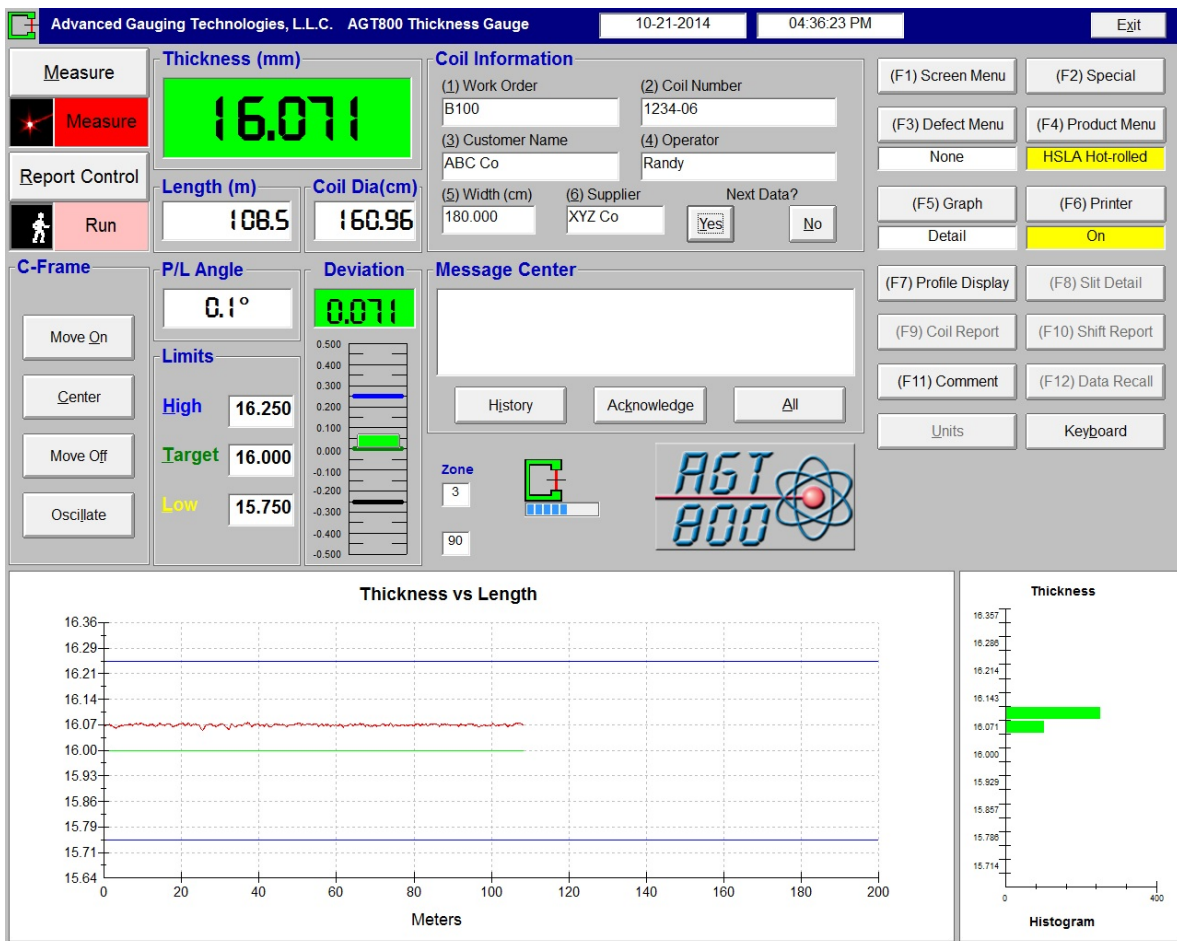
5.诊断数据报告—这个报告是打印输出的诊断数据，它显示了所有数字和模拟输入和输出的实时状态，正常和真实的电源供应以及其他一些数据，所有这些系统中的测量点都被同步显示出来并为发现处理问题提供了一个直观的方法，这个图片也可以打印或者传真到 AGT 公司用于故障处理。

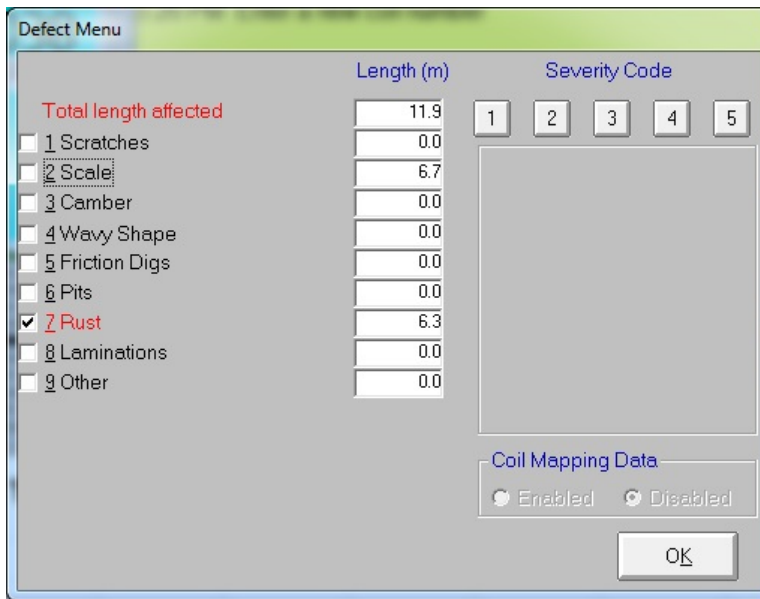
6.系统设置报告—这个报告显示了所有设置参数对于一个特有的仪器系统，并显示在一个单独的页面上。

System Display 系统显示

During normal operation, the interactive Main Screen display shows real-time graphical representations of measured thickness, deviation, and a histogram of thickness values for the current coil. Also displayed are thickness, target, upper and lower tolerance limits, job number, coil number, shutter status, coil footage, coil width, defects if selected, product, and much more. Additional display screens are provided for next coil data, strip profile (thickness versus width), product setup, defect setup, report setup, calibration, diagnostics, message review, and data recall.

在正常的工作情况下，就会实时显示出被测物的厚度，误差，厚度值的柱状图在图表上，同时也显示了厚度，目标，上限，下限，生产编号，生产日期等。另外界面上可设置被测物标准参数，扫描范围，产品批号设置，公差超标报警设置，校准，诊断，信息回查以及数据回查等。





The Defect Menu can be called from on the AGT800 Main Screen, making it easy for Operators to toggle any defects they may want to track. 这个故障菜单可以通过 AGT800 主屏幕进行访问，这个可以使工作人员更容易的进行故障处理。

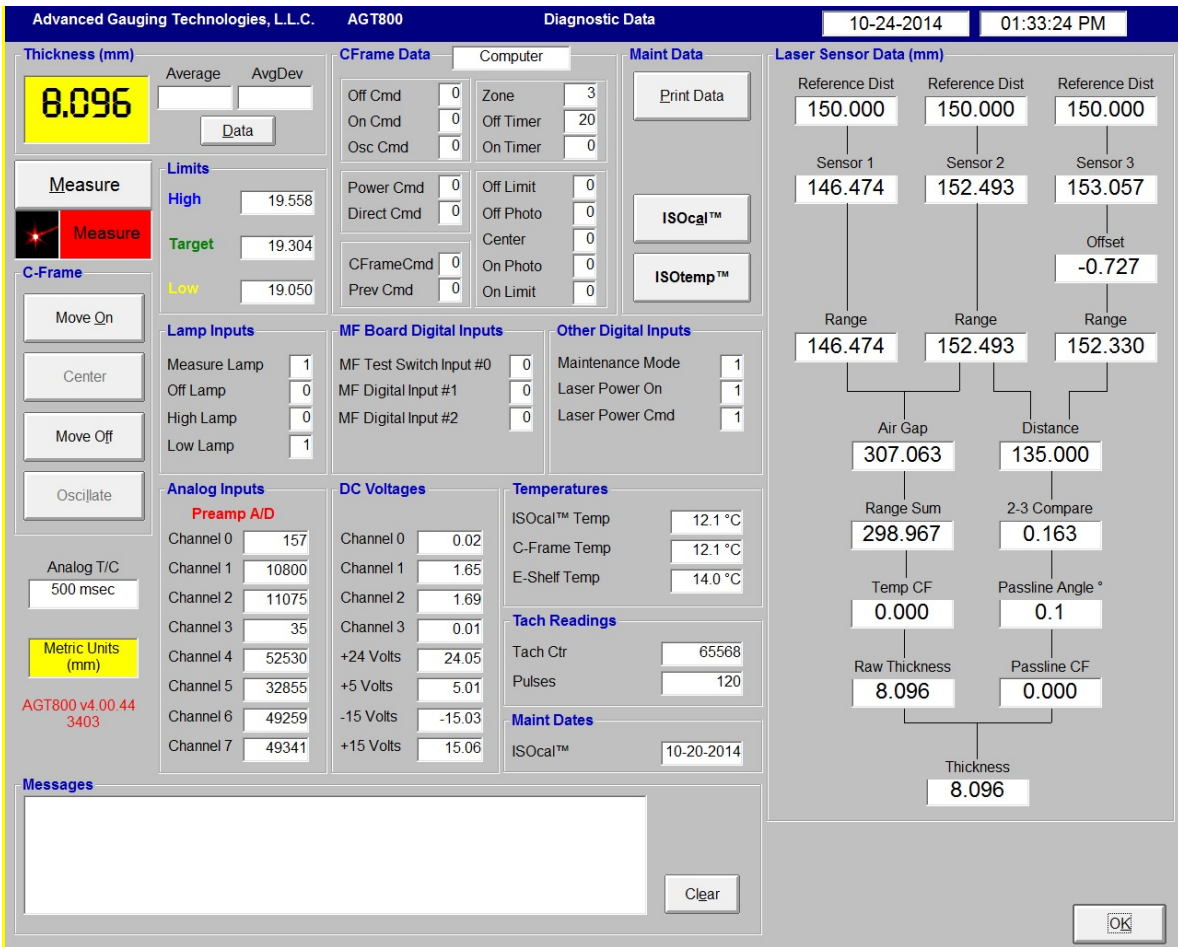
Diagnostic Data 诊断数据

Advanced Gauging Technologies is a service oriented company, and for that reason we're proud that all of our thickness gauges have incredibly useful built-in diagnostic features. The Diagnostic Data Screen shows the real-time status of all digital and analog I/O, nominal and actual power supply voltages, and much more. All of the major test points in the system are displayed simultaneously, making troubleshooting a very straightforward process. This screen can easily be printed and emailed or faxed to A.G.T. for troubleshooting assistance.

AGT 是一家以客户服务为导向的公司，因此我们的产品都配备了不可思议的内置诊断功能。这个诊断数据界面显示了所有模拟和数字输出和输入的实时状态，正常电压以及实际电压的显示以及更多其他信息，系统中所有的主要的测试点都显示在屏幕上，这就为检修提供了很大的方便，同时这个界面也可以打印，邮件或传真给 A.G.T.公司用于故障维修。



AGT800 Thickness Gauge operating on a 96" Stretch Leveler Line
AGT800 测厚仪用于 2.4 米 (96") 钢板压延生产线



AGT800 Diagnostic Data Screen
AGT800 诊断数据屏幕



AGT800 Thickness Gauge installed on a 74" EPS Pickle Line
AGT800 测厚仪在 74 寸 EPS 酸洗线上的应用

Calibration 标定

The AGT800 uses ISOcal™, which is the most advanced calibration routine available on the market today. This procedure can be performed in less than five minutes. N.I.S.T. certified samples are placed on a custom fabricated sample holder. Data is calculated and statistical outliers are automatically removed by the program. The calibration is then determined using all valid data points, and C-frame temperature is stored at that time. Once the calibration is saved, all future measurements are temperature compensated to automatically account for expansion and contraction of the C-frame

AGT800 运用了 ISOcal™ 标定程序，是目前市场上最先进的标定程序，这些步骤可以在 5 分钟之内完成，N.I.S.T. 验证过的样品会放置在客户焊接的样品盘中。数据计算以及误差值都会被程序自动移出，然后标定会利用所有有效的数据以及 C 形架之前存储的温度补偿来获得，一旦标定存储下来，测量中由于 C 形架的膨胀或收缩造成的温度变化都会自动补偿。

The screenshot displays the Laser ISOcal™ software interface. At the top, there is a table with columns for Sample, Nominal, Calc Air Gap, Measured, and Deviation. The table contains six rows of data, all with checked boxes in the Sample column. To the right of the table is an 'Averaging Counter' set to 20. Below the table is a cyan message box stating: 'ISOcheck™ calculations complete. You can change selected samples and rerun calculations by pressing check again. You can press 'Save Air Gap' to use the recommended air gap.' Below the message box are buttons for 'Check', 'Print Report', and 'Print Screen'. At the bottom left, there are buttons for 'Load Set', 'Save Set', and 'Check All'. In the bottom center, there are two sections: 'Calibration Accuracy' showing 'Metric Units (mm)' and '8.4 μ 99.74%' with a 'Clear Data' button; and 'Air Gap' showing 'Current 307.063' and 'Recommended 307.078' with a 'Save Air Gap' button. At the bottom right, there is a 'Samples' section with 'Add Sample' and 'Rename' buttons, and a 'Remove Sample' button. An 'OK' button is located at the very bottom right.

Sample	Nominal	Calc Air Gap	Measured	Deviation
<input checked="" type="checkbox"/> 1	1.000	307.086	0.993	-0.007
<input checked="" type="checkbox"/> 2	2.000	307.089	1.989	-0.011
<input checked="" type="checkbox"/> 3	5.000	307.085	4.994	-0.006
<input checked="" type="checkbox"/> 4	10.000	307.079	9.999	-0.001
<input checked="" type="checkbox"/> 5	15.000	307.059	15.019	0.019
<input checked="" type="checkbox"/> 6	20.000	307.072	20.006	0.006

Averaging Counter: 20

ISOcheck™ calculations complete. You can change selected samples and rerun calculations by pressing check again. You can press 'Save Air Gap' to use the recommended air gap.

Buttons: Check, Print Report, Print Screen, Load Set, Save Set, Check All, Add Sample, Rename, Remove Sample, OK

Calibration Accuracy: Metric Units (mm), 8.4 μ, 99.74%, Clear Data

Air Gap: Current 307.063, Recommended 307.078, Save Air Gap

Options 可选项

1. **C-frame (required)** – includes an electric drive motor that allows the operator to position the C-frame from the operator's station. Optional oscillating configuration equipped with additional logic and control circuits enable the gauge to automatically sense strip edges and oscillate accordingly. In this configuration, the Profile Display screen and reports are enabled, which show a strip cross-section of thickness versus width.



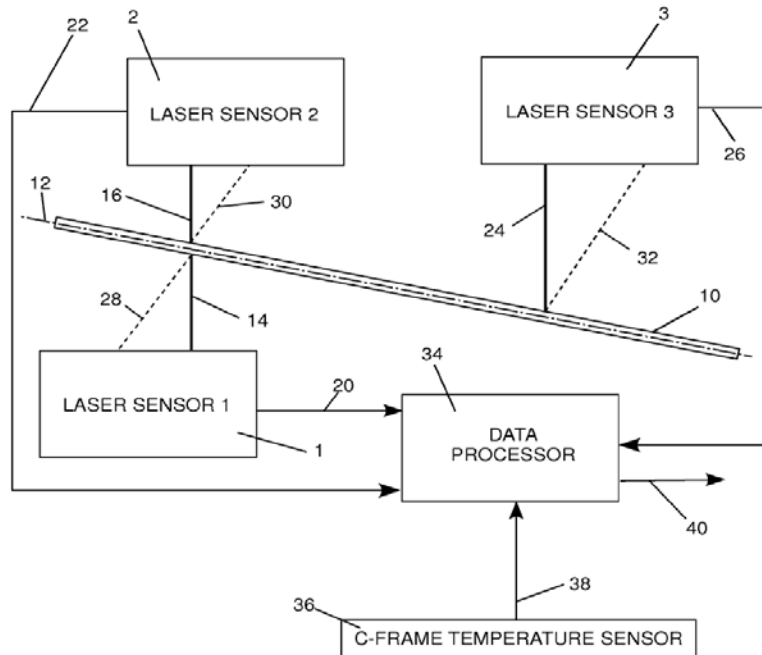
2. **Certified Samples (required)** – set of six aluminum calibration sample plates which have their thicknesses certified as traceable to N.I.S.T. Also includes a custom sample holder assembly to properly position the samples on the C-frame.



Calibration takes less than five minutes using six certified samples, which are placed on the custom sample holder.

标定时间少于5分钟用6块样品进行标定，放置于自定的样品固定器中。

3. **Passline Angle Compensation** – uses a third laser sensor to determine passline angle. Then calculates and applies a correction factor (Patent Pending).



4. **Remote Operator Control Station** – includes an additional remote monitor, keyboard, and touchpad mouse.



5. **Offline Data Analysis Software** – allows easier access to coil reports by enabling the recall of reports from a single or multiple gauges simultaneously via a company network or USB stick. Reports can be accessed without interrupting the gauge measurement or line operation. Also allows coil reports to be formatted as PDF files.

1. C 型架——一个电力驱动马达可以使操作员定位 C 型架和操作台的位置，可选的来回摆动设置可以提供另外的逻辑和控制回路用于仪器自动的感应到条状的宽度并来回移动，这个配置，显示屏以及报告上都会显示条状的横截面的厚度和宽度。

2. 通过验证的样品（必需的）——一套含有 6 块铝块的标定样品盘并有各自的厚度是通过 N.I.S.T. 验证过的，并且也包含一个自定义的样品固定器用于固定样本在 C 形架的位置。

3. 角度补偿——运用第三个激光探头来确定角度。最后计算并应用正确的参数（专利申请）。

4. 远程操作控制台——包含一个额外的远程监视器，键盘和一个触屏鼠标。

5. 离线数据分析软件——可以允许更容易的得到数据报告用于记录的记录单个仪器或多个仪器通过电脑网络或者 USB。报告可以在仪器测量时或者生产线上直接获得，同时也会以 PDF 格式存储。

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	AGT800 (20)	AGT800 (50)	AGT800 (80)	AGT800 (150)
Thickness range 厚度范围	25 μ m — 2.5 mm. (.001 — .100")	0.06 — 6.3 mm. (.003 — .250")	0.10 — 10 mm. (.004 — .400")	0.19 — 19 mm. (.008 — .750")
Strip width 带状物宽度	— 18 cm. (7")	— 61 cm. (24")	— 122 cm. (48")	— 244 cm. (96")
Sensor air gap 探头空气缝隙	41 mm. (1.61")	103 mm. (4.06")	165 mm. (6.50")	310 mm. (12.20")
Measurement range 测量范围	+/- 2 mm. (+/- 0.08")	+/- 7 mm. (+/- 0.28")	+/- 12 mm. (+/- 0.47")	+/- 25 mm. (+/- 1.00")
Sampling cycle 取样周期	50 μ s. — 1 ms. (adjustable) (可调整)	50 μ s. — 1 ms. (adjustable) (可调整)	50 μ s. — 1 ms. (adjustable) (可调整)	50 μ s. — 1 ms. (adjustable) (可调整)
Calibration accuracy 校准精度	< 1.3 μ m. (.05 mils)	< 3.3 μ m. (.13 mils)	< 5.3 μ m. (.21 mils)	< 10 μ m. (.39 mils)
Linearity 线性度	+/- 2.4 μ m (.09 mils)	+/- 8.0 μ m (.31 mils)	+/- 14.4 μ m (.57 mils)	+/- 32.0 μ m (1.26 mils)
Mounting mode 探头模式	Diffuse reflection 漫反射	Diffuse reflection 漫反射	Diffuse reflection 漫反射	Diffuse reflection 漫反射
Light source 光源	Red semi-conductor laser (红色半导体激光)	Red semi-conductor laser (红色半导体激光)	Red semi-conductor laser (红色半导体激光)	Red semi-conductor laser (红色半导体激光)
Wavelength 波长	650 nm.	650 nm.	650 nm.	650 nm.
IEC/IFDA (CDRH) Laser Class IEC/IFDA (CDRH) 激光	Class 2/Class II	Class 2/Class II	Class 2/Class II	Class 2/Class II
Output	0.95 mW	0.95 mW	0.95 mW	0.95 mW

输出

Spot diameter (光斑大小) (at reference distance) (在参考距离)	25 μm. x 1,400 μm.	50 μm. x 2,000 μm.	70 μm. x 2,500 μm.	120 μm. x 4,200 μm.
Sensor enclosure rating 探头防护等级	IP67	IP67	IP67	IP67
Ambient light resistance 抗环境温度	10,000 lux (最大) (白炽灯或日光灯)	10,000 lux (最大) (白炽灯或日光灯)	10,000 lux (最大) (白炽灯或日光灯)	5,000 lux (最大) (白炽灯或日光灯)
Temperature range 温度范围	0 — 50° C (32 — 122° F)	0 — 50° C (32 — 122° F)	0 — 50° C (32 — 122° F)	0 — 50° C (32 — 122° F)
Relative humidity range 相对湿度	35 — 85% (no condensation) (无凝结)	35 — 85% (no condensation) (无凝结)	35 — 85% (no condensation) (无凝结)	35 — 85% (no condensation) (无凝结)