应用奈米科技股份有限公司
APPLIED NANO TECHNOLOGY SCIENCE, INC.

General Catelog

Specialty Vacuum (transport)
Components Supplier

前 言

应用奈米科技股份有限公司成立於西元2001年元月，是一个以奈米科技应用技术研发为主要导向，提供工业技术服务与产品的营利组织。我们共同的愿景是成为立足於全球产业设计制造中心－台湾，放眼世界市场奈米科技应用的产品制造及技术服务公司。

2003年应用奈米科技於磁性奈米流体Ferromagnetic Fluid制程有革命性突破，加上专业透彻的研发及制造技术的演进，成功制作出真空设备用之磁流体轴封，为一种进行真空/大气间密封，同时可将动力由大气传递进真空的关键零组件，打破了过去由少数供应商垄断的局面，应用奈米科技开发出的磁流体轴封一系列产品，提供真空设备业与真空设备使用者一个独立的新供应来源。

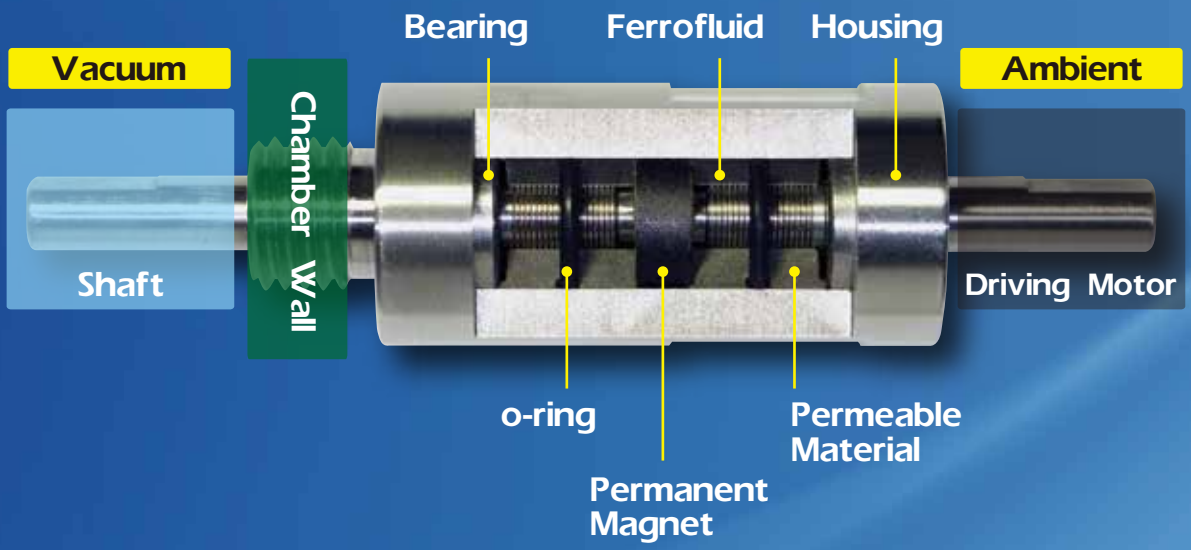
基於磁流体轴封技术是由应用奈米科技自行开发、制造，我们具有完整的轴封开发、制造与产品维修测试的能力，提供市售及特殊磁流体轴封客制化与维修的服务。

Established in January 2001, Applied Nano Technology Science, Inc. (ANTS) is a company dedicating to specialty component manufacturing and technology research & development of vacuum and nanotechnology applications and is mainly oriented to provide products and technical services to customers. Based on the global industrial design and manufacturing center - Taiwan, we are open to the world market on applications of vacuum and nanotechnology.

In 2003, ANTS succeeded to debut Taiwan's first Magnetic Rotary Feedthrough in view of Nano-scale ferromagnetic fluid synthesizing revolution coupled with professional R & D and manufacturing technology breakthroughs. Magnetic Rotary Feedthrough, playing as a vacuum / ambient sealing interface, while transferring power from ambient into vacuum, is a critical vacuum components for tremendous applications.

ANTS enrolled a series of Magnetic Rotary Feedthroughs to provide vacuum equipment users and vendors an independent brand-new source. Since Magnetic Rotary Feedthrough is developed independently by ANTS, we possess a complete set of diversity capabilities, from manufacturing, maintenance to development and test to provide commercial and specialty Magnetic Rotary Feedthrough customization and maintenance services.

磁流体轴封的构造
Feedthrough Structure



磁流体轴封的优点
Advantages of Magnetic Rotary Feedthrough

- 寿命较长
  Long lifetime
- 无摩擦力/ 无粉尘
  No friction / no particle
- 低耗能
  Low power consumption
- 高真空/高转速/高温下具高信赖性
  High vacuum / high rpm / high reliability at high temperature

1.什麼是磁流体?

磁流体是由磁性微粒，界面活性分子与基础载液所组成。 磁性微粒为奈米（nanometer，10^{-9} 公尺 ）级的铁磁分子，以界面活性分子披覆，均匀分散於基础载液中，有如一团流动的铁磁物质。当受到外加磁场的影响，会沿著磁力线分布形成各种形状。若在微小的间隙中，外加以磁场，置入磁流体，将形成一堵隔绝两侧环境屏障。

2.磁流体如何形成轴封?

磁流体轴承的轴封部份，由 磁石、 导磁环与 可导磁的旋转轴形成磁力环路，将 磁流体 置於导磁环与旋转轴的间隙，受磁力环路的拘束，可形成阻绝大气进入真空腔体的环型屏障。

3.为何磁流体轴封比橡胶轴封耐久?

磁流体轴封与传统O型封环不同，磁流体对旋转轴不产生摩擦。利用磁流体作为轴封材料，有如『液态O型封环』，在旋转轴上形成阻绝大气进入真空腔体的环型屏障， 较之以传统橡胶封环技术，具有不易磨损、无微屑污染、高速低滞等优点。正常使用下，可以数年不须保养或置换。

4.磁流体轴封可以在高温环境下运作吗?

磁流体轴封内的永久磁石及磁流体无法忍受在超过其特性温度下操作。永久磁石温度上限在 120° C 左右，而以碳氢化合物为基础的磁流体，安全温度上限在 150° C 左右。除非有适当的冷却设计，千万不可超出温度上限操作。必须在高温下操作时，请考虑使用 AW 系列水冷式磁流体轴封。

5.使用磁流体的限制

磁流体轴封的外壳以非磁性不锈钢材料制作，以屏蔽磁力对附近的电磁元件的影响。在使用磁流体轴封时，必需注意周围 20 公分以内的电磁元件布局。外在的强力磁场，也可能影响磁流体轴封 之正常运作。

长时间静置的磁流体轴封，在进入施加压力差及全速运转前，必须先行转动数圈，让磁流体在磁场中能均匀分布，以延长磁流体轴封的使用寿命。

初次使用经长时间静置的磁流体轴封，转轴因为磁流体中磁性微粒的有序排列，磁性增强，会较平常时难以转动。在进入正常运转前，必须先行转动一、二圈，增加磁性微粒的乱度，以降低磁性及转动之转矩。订定驱动马达规格时，请注意其启动转矩要在 4 kgf · cm 以上。

磁流体轴封因应不同环境之需求，会有不同基础载液的磁流体。一般用於真空轴封的磁流体，不能用於流体或化学蒸气的密封。如有特殊的环境需求，必需选用不同化学特性的磁流体。

轴封两侧的轴承，通常是高速转动下的热源所在。为保持磁石的永久磁性，切勿超过规格的最高转速。较常温为高的大气温度，会降低磁石在高速转动下的耐 温程度。

SEMICON

FPD

LED

1.What is Ferrofluid ?

Ferrofluid is composed of magnetic nanoparticles, surfactant and carrier fluid. Nanoparticles are nano-scale ferro materials. They will be coated by surfactant then to disperse homogenously in carrier fluid acting together as a magnetic liquid. When Ferrofluid is magnetized by magnetic field, Ferrofluid will be shaped according to the magnetic lines. If Ferrofluid is placed in a small vacancy and contained by magnetic field, a seal will be formed to separate ambient to the other.

2.How is Ferrofluid composed into a Magnetic Rotary Feedthrough ?

The seal of Magnetic Rotary Feedthrough is composed by Permanent Magnet, Permeable rings and shaft. The Ferrofluid is placed and confined within designed magnetic field to act as a seal in between vacuum and ambient.

3.Why is Magnetic Rotary Feedthrough durable than common O-ring seal ?

Magnetic Rotary Feedthrough is distinguished from traditional O-ring seal. Magnetic Rotary Feedthrough is running with Ferrofluid as a liquid O-ring resulting in no solid friction to shaft. The advantages are no friction, no particle contamination, low driving force at high rpm. Magnetic Rotary Feedthrough can run well for years.

4.Is Magnetic Rotary Feedthrough working well in high-temperature conditions ?

The permanent magnet and Ferrofluid in Magnetic Rotary Feedthrough is not supposed to run at temperature higher than specification. The upper limit for permanent magnet and Hydrocarbon Ferrofluid are at around 120°C and 150°C, respectively. Nevertheless, if the operating condition is over the specification, a cooling system or circuit could be implemented to protect the critical parts. The “W” series in “cooling” column of specification table are feasible to such applications.

5.Limitations to Magnetic Rotary Feedthrough applications.

The housing of Magnetic Rotary Feedthrough is made of non-magnetic material to barrier the magnetic field inside the housing to prevent any influence to neighboring electric-magnetic devices. Vice versa, neighboring massive magnetic field will possibly impact the function of Magnetic Rotary Feedthrough. A 20 cm range should be noted in caution.

A long time steady Magnetic Rotary Feedthrough should manually rotate for a while before running with bias pressure and full speed. The manual rotation could homogenize again the Ferrofluid inside.

When you unpack Magnetic Rotary Feedthrough, it might be stored for a while in your warehouse and you should manually rotate several turns to homogenize the Ferrofluid. The nanoparticles could stacked together tightly after long steady deposition, therefore, it’s recommended to rotate a bit to disturb the distribution to reduce the initiating torque of the Magnetic Rotary Feedthrough. When a motor is connected to Magnetic Rotary Feedthrough, the motor rotating torque should be larger than 4 kgf-cm.

Magnetic Rotary Feedthrough is designed and fit to different operating conditions with different Ferrofluid. A Magnetic Rotary Feedthrough for common vacuum application is not suitable for liquid or chemical vapor applications. The design and material selection is defined according to different operating conditions.

Bearings in the Magnetic Rotary Feedthrough is the heat source during high speed rotation, therefore, the rotation rpm should be kept lower than specification and ambient temperature should be put into consideration to avoid over heat.

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轴封的应用范围
The feedthrough application for diversity industries

- 炉管 Furnace
- 蚀刻 Etcher
- 物理气相沉积 PVD
- 卷对卷 Roll-to-Roll
- 化学气相沉积 CVD
- 真空机械手臂 Vacuum Robot
- 离子植入 Implanter
- 长晶炉 Crystallizer
- 有机金属化学气相沉积 MOCVD

Vacuum robot

Implanter

PVD

Furnace

Cluster Sputter

In-line Sputter

MOCVD

Roll-to-Roll

Crystallizer

In-line PVD

关於轴封服务
About rotary feedthrough service

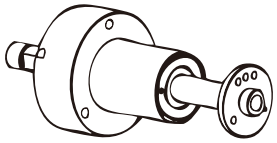
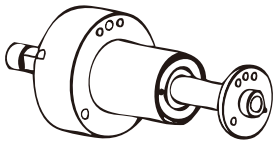
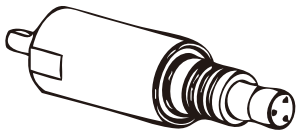
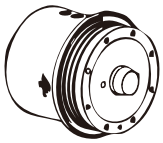
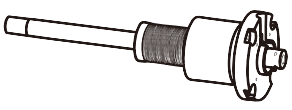
Refurbishment:

Customer ▸▸ Information ▸▸ ANTS ▸▸ Disassembly ▸▸ Assessment ▸▸ Feedback ▸▸ Approve ▸▸ Overhaul ▸▸ OQC ▸▸ Customer

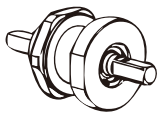
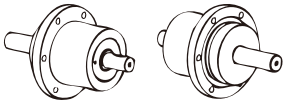
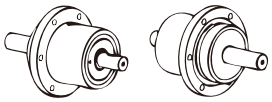
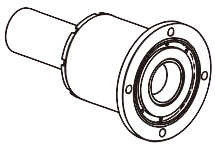
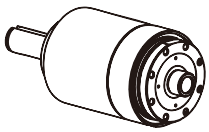
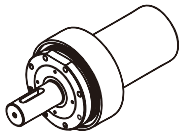
ODM:

Customer ▸▸ Request ▸▸ ANTS ▸▸ Assessment ▸▸ Quotation ▸▸ Approve ▸▸ Manufacturing ▸▸ OQC ▸▸ Customer

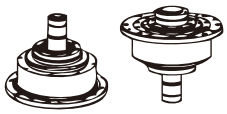
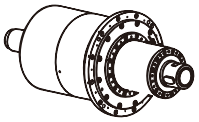
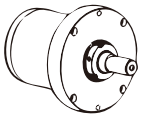
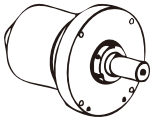
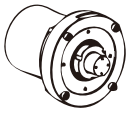
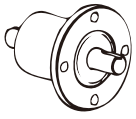
半导体用轴封 Feedthrough for SEMICON

	ANTS型号 ANTS model	轴封外观 feedthrough appearance	应用范围 application field
1	XXS0020WMR00001 原厂型号 original model 806HS		半导体制程扩散炉 DIFFUSION
2	XXS0625AMN00001 原厂型号 original model 52-120755J		离子植入机 IMPLANTER
3	XXS0625AMN00002 原厂型号 original model 52-120756H		离子植入机 IMPLANTER
4	XNS0020CNX00001 原厂型号 original model N/A		半导体制程扩散炉 DIFFUSION
5	XXS0105WNH00001 原厂型号 original model 52-121187C		离子植入机 IMPLANTER
6	BXX1000CMN00001 原厂型号 original model 52-131938C		化学气相沉积 PECVD

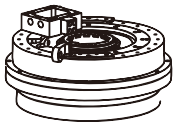
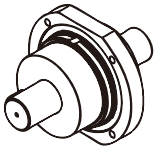
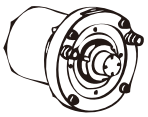
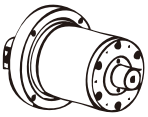
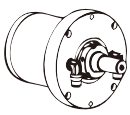
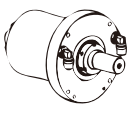
发光二极体及太阳能用轴封 Feedthrough for LED / PV

	ANTS型号 ANTS model	轴封外观 feedthrough appearance	应用范围 application field
1	BBS0375CNR01 原厂型号 original model N/A		LED镀膜设备 MOCVD
2	XXS0020CNR00004 原厂型号 original model AL3600		连续镀膜设备 In-line Sputter
3	XXS0020WNR00001 原厂型号 original model AL3560		连续镀膜设备 In-line Sputter
4	N/A 原厂型号 original model HFL025NCC03		长晶炉 Crystallizer
5	XXS0030CMR00010 原厂型号 original model AL4041		连续镀膜设备 In-line Sputter
6	XXS0030CMR00011 原厂型号 original model AL4051		连续镀膜设备 In-line Sputter

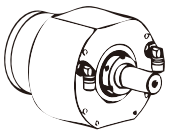
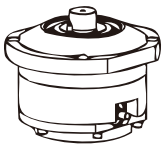
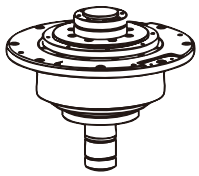
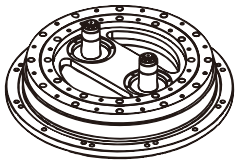
显示器 / 触控面板用轴封 Feedthrough for FPD / TP

	ANTS型号 ANTS model	轴封外观 feedthrough appearance	应用范围 application field
1	XXC0145CER00001 原厂型号 original model W-X00539		真空机械手臂 Vacuum Robot
2	XXT0260CNR00001 原厂型号 original model 42090C		真空机械手臂 Vacuum Robot
3	XXS0030CMR00001 原厂型号 original model N/A		连续镀膜设备 In-line Sputter
4	XXS0030CMR00002 原厂型号 original model AL2720		连续镀膜设备 In-line Sputter
5	XXS0030CMR00004 原厂型号 original model AL1230		连续镀膜设备 In-line Sputter
6	AFS0020CNR01 原厂型号 original model N/A		连续镀膜设备 In-line Sputter

显示器 / 触控面板用轴封 Feedthrough for FPD / TP

	ANTS型号 ANTS model	轴封外观 feedthrough appearance	应用范围 application field
7	N/A 原厂型号 original model AL1350		连续镀膜设备 In-line Sputter
8	N/A 原厂型号 original model AL2040		连续镀膜设备 In-line Sputter
9	XXS0030W/MR00001 原厂型号 original model AL1260		连续镀膜设备 In-line Sputter
10	XXS0030W/MR00002 原厂型号 original model AL2710(52-132565)		连续镀膜设备 In-line Sputter
11	XXS0030W/MR00003 原厂型号 original model N/A		连续镀膜设备 In-line Sputter
12	XXS0030W/MR00004 原厂型号 original model AL2711		连续镀膜设备 In-line Sputter

显示器 / 触控面板用轴封 Feedthrough for FPD / TP

	ANTS型号 ANTS model	轴封外观 feedthrough appearance	应用范围 application field
13	XXS0030WMR00006 原厂型号 original model AL3851		连续镀膜设备 In-line Sputter
14	XXS0030WNR00001 原厂型号 original model AL1240		连续镀膜设备 In-line Sputter
15	XXS0030WNR00011 原厂型号 original model AL2290		连续镀膜设备 In-line Sputter
16	N/A 原厂型号 original model W-X00816		真空机械手臂 Vacuum Robot
17	N/A 原厂型号 original model W-X00816		真空机械手臂 Vacuum Robot
18	客制化 Customized 原廠型號 original model 客制化 Customized	客制化 Customized	客制化 Customized

应用奈米科技股份有限公司
APPLIED NANO TECHNOLOGY SCIENCE, INC.

动态测试的品质保证
Dynamic test of quality assurance

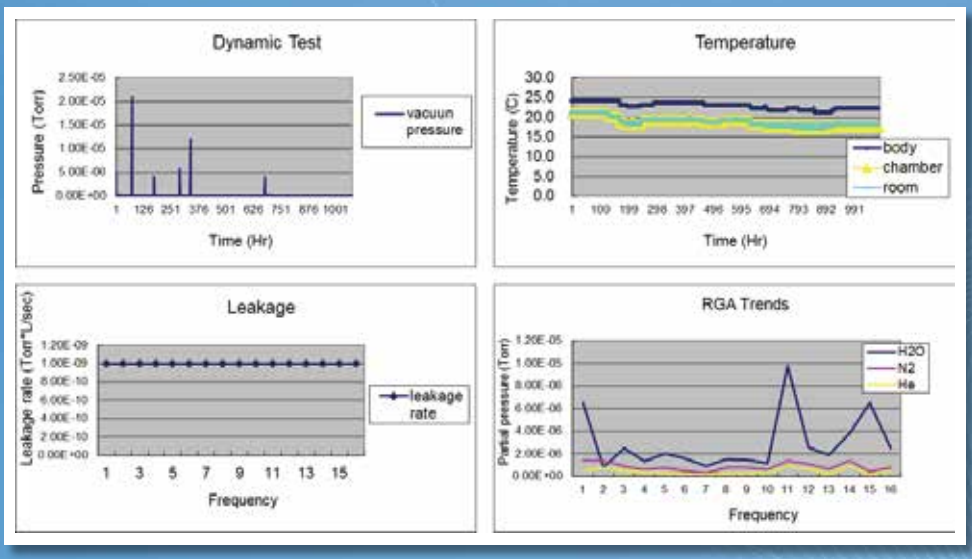
动态环境下执行真空测试
Vacuum testing under dynamic environment

动态环境下执行氦气测漏
Dynamic Helium Leak check

全自动化测试
Fully automated testing

ANTS RT IQC FQC Customers

Feedthrough dynamic process testing



应用奈米科技 磁流体真空轴封使用环境调查表

基本资料			
公司行号	联络人姓名	联络电话	填表日期
请填写下表让我们了解您的磁流体轴封使用环境，作为制作及维修评估的参考			
轴封基本资料	厂　牌	型　号	序　号
使用机台资料	厂　牌	Type	Life time
轴封冷却形式	□气冷式	□水冷式	
		冷却水压 (kg/cm2)	流速 (ℓ/min)
真空操作压力	真空操作压力(Torr)	最终真空压力(Torr)	内外最大压力差(kg/cm2)
使用气体	□空气 □氧气 □氩气 □氮气 □钝气 □无 □高活性气体。请说明：		
沉积物	□无毒性 □接触毒性，请戴手套 □挥发毒性，请戴面具		
温度范围	操作温度 (˚C)	最高温度 (˚C)	最低温度 (˚C)
转轴直径	实 心 轴	中 空 轴	
	外径(mm)：	外径(mm)：	内径(mm)：
主轴装置方向	□水平 □垂直 □斜向角度，请说明：		
主轴转速	操作转速(RPM)	最高转速(RPM)	最低转速(RPM)
转速持续时间	h/m/s	h/m/s	h/m/s
负载情况	径向（大气侧）(kg)	径向（真空侧）(kg)	轴向(kg)

请在下面或背面绘图标示外型尺寸与径向负载位置

Applied Nano Technology Science, Inc.
Feedthrough Application Condition Investigation Sheet

应用奈米科技股份有限公司
APPLIED NANO TECHNOLOGY SCIENCE, INC.

CUSTOMER INFORMATION			
COMPANY	CONTACT	TELEPHONE	DATE
Please fill out all of the information for feedthrough overhaul reference.			
FEEDTHROUGH INFORMATION	BRAND	TYPE	SERIES NO.
EQUIPMENT INFORMATION	BRAND	TYPE	APPLICATION
COOLING METHOD	☐AIR	☐WATER	
		PRESSURE (kg/cm2)	FLOW RATE (ℓ/min)
VACUUM PRESSURE	OPERATION(Torr)	MAX(Torr)	DIFFERENTIAL(kg/cm2)
GAS			
PARTICULATE CONTAMINATION	☐NONE ☐TOXIC (USE GLOVE) ☐VAPOUR TOXIC (USE MASK)		
TEMPERATURE	OPERATION (˚C)	MAX. (˚C)	MIN. (˚C)
SHAFT DIAMETER	SOLID	HOLLOW	
	OUTSIDE(mm) :	OUTSIDE(mm) :	INSIDE(mm) :
MOUNTING	☐HORIZONTAL ☐VERTICAL ☐		
ROTARY SPEED CYCLE TIME	OPERATION(RPM)	MAX.(RPM)	MIN.(RPM)
	TIME(h)	TIME(h)	TIME(h)
LOAD	ATMOSPHERE SIDE(kg)	VACUUM SIDE(kg)	AXIS(kg)

PLEASE ATTACH SKETCH FOR ADDITIONAL CLARIFICATION (IF AVAILABLE)
Shape/structure/connection information to be provided.

AST PRODUCTS, INC.

VCA Performa 300TM Wafer Surface Analysis Systems are specially designed for use in semiconductor and LED wafer processing quality control. The system provides quick and accurate contact angle/surface energy analysis on wafer surface to evaluate adhesion, cleanliness and coatings.

Applications:

- Coating assessment of the HMDS process
- Surface contamination detection
- Adhesive and primer preparation
- Coating uniformity
- Coating quality
- Surface cleanliness

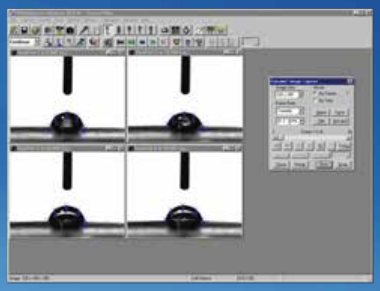
VCA Performa 300™

Hardware Features

- High-resolution video camera with magnifying lens with high intensity LED lighting for precise image capture
- 300mm rotating stage, allows access to all areas of the wafer
- High-end PC is standard with high-performance video board for advanced image analysis and video capture
- Flat Screen Monitor

Software Features

- Automatic contact angle imaging and calculation
- Dynamic droplet capture (movie viewing of droplets)
- Surface energy (dynes/cm) analysis
- SPC (Statistical Process Control)
- Pendant Drop surface analysis



Dynamic Capture Window

Syringe Assembly

- Vertical Orientation
- Straight Needle
- Motorized Drive Mechanism
- 1.8 Degree Stepping Motor
- Syringe Head: Tilt back for safe and easy removal of large samples

Sample Platform

- Platform size and shape 12” Circular
- Sample size and shape 4”, 6”, 8”, 12” circular Not wider than 12”
- Movement along the optical axis 6” by hand sliding with lock
- Movement transverse to the optical axis 6” by dial
- Vertical traveling distance 2” by dial
- Rotating 360 degrees by hand with Planary Bearing

VCA Optima

VCA 46 series (automatic mode)

Applied Nano Technology Science, Inc.
No. 266-1, Yuanshan Rd. Zhudong Township, Hsinchu County
(T): 886-3-5836150 (F): 886-3-5836253

应用奈米科技股份有限公司
APPLIED NANO TECHNOLOGY SCIENCE, INC.

如何联络ANTS?
How to contact ANTS?

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(F): 886-3-5836253
Website: www.ants-inc.com.tw
统编: 12738356

Certificat
Certificate

N° 2011/41139

AFNOR Certification certifies that the management system implemented by:

APPLIED NANO TECHNOLOGY SCIENCE, INC.

for the following activities:

DESIGN AND DEVELOPMENT OF FERROMAGNETIC SEALS AND MAINTENANCE OF SPECIAL SEALS.

has been assessed and found to meet the requirements of:

ISO 9001 : 2008

and is developed on the following locations:

266-1 Yuan-Shan Road Chutung, Hsinchu, Taiwan 310, ROC

This certificate is valid from (year/month/day): **2011-08-02** until: **2014-08-01**

Managing Director of AFNOR Certification

F. MÉAUX

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电话：(03)5836150　传真：(03)5836253
网址：www.ants-inc.com.tw