

天通智能装备有限公司

TDG INTELLIGENT EQUIPMENT CO., LTD.

企业简介

ABOUT US



泛半导体材料
高端装备制造商

283+项
专利授权

93+项
发明专利

天通智能装备



天通控股股份有限公司（股票代码：600330）创建于1984年，于2001年在上海证券交易所挂牌上市，是国内首家自然人直接控股的上市公司。经过四十年的艰苦创业，天通拥有多家控股和参股公司，目前已经形成电子材料、电子模组、绿色能源、智能装备四大业务板块。业务涵盖电子信息材料产业链上下游，是集科研、制造、销售于一体的国家高新技术企业。

公司致力于成为泛半导体材料高端装备制造商，专业制造生产泛半导体材料的设备，如单晶炉、硅芯炉、蓝宝石晶体生长炉，压电晶体生长炉等拉晶设备，以及相关切、磨、抛设备和自动化设备研发制造，产品范围包括用于单晶/多晶硅棒、半导体硅片、蓝宝石、光伏等泛半导体材料的加工，如：切割、开方、研磨、抛光、减薄等系列加工设备及其自动化成套设备等，产品技术指标达到国际同类产品先进水平，国内领先地位。公司拥有各种专利授权283余项，其中发明专利93余项。

公司秉承“立工匠精神、做功夫产品、创行业品牌、树百年企业”的企业精神做专“中国制造”产品。

TDG Holding Co., Ltd. (stock code: 600330) was established in 1984 and was listed on the Shanghai Stock Exchange in 2001, becoming the first domestic company with natural persons directly holding shares. After four decades of hard work, TDG has several holding and equity-participation companies and has now formed four major business segments: electronic materials, electronic modules, green energy, and intelligent equipment. Its business covers the entire electronic information materials industry chain, making it a national high-tech enterprise integrating research, manufacturing, and sales.

Our company is committed to becoming a high-end equipment manufacturer of pan-semiconductor materials, specializing in the manufacturing of equipment for the production of pan-semiconductor materials, such as single crystal furnace、silicon core furnace、sapphire crystal furnace、piezo-electric crystal furnace and other crystal growing equipment, including the research, development and manufacturing of related cutting、grinding、polishing and automation equipment. Our products include the processing of monocrystalline/polycrystalline silicon rods, semiconductor silicon wafers, sapphire, photovoltaic and other pan-semiconductor materials, such as: cutting, squaring, grinding, polishing, thinning and other series of processing equipment and complete sets of automation equipment, product technical indicators to reach the international advanced level of similar products, domestic leading position. The company has more than 283 patents, including more than 93 invention patents.

Our company adheres to the enterprise spirit of "upholding the spirit of craftsmen, making exquisite products, creating industry brands, and establishing a hundred-year enterprise" to specialize in "Made in China" products.

天通智能装备有限公司

TDG INTELLIGENT EQUIPMENT CO., LTD.

使命
Mission

用科技创新实现绿色发展
用卓越产品打造企业品牌
用发展成果承担社会责任

Achieving green development with scientific and technological innovation

Building corporate brands with excellent products

Assuming social responsibility with development results

愿景
Vision

成为全球行业技术领先、有品牌影响力的创新产业集团

To become a global industrial group
with leading industry technology and brand influence

价值观
Values

理解、尊重、和谐

Understanding、 Respect、 Harmony

企业精神
Enterprise Spirit

自信、诚心、创新

Confidence、Sincerity、Innovation

1 研发能力
Research And Development

283+ 项 专利授权
Patent Authorization

93+ 项 发明专利
Invention Patent

18+ 项 PCT专利
PCT Patent

19 项 软件著作权
Software Copyright

授权专利超283项，其中发明专利授权超93项，PCT专利超18项、软件著作权19项；

高新技术企业、省专精特新企业、省科技型中小企业，先后获得和通过省/市首台套产品、浙江制造团体标准、质量管理体系/环境与职业健康管理体系、两化融合管理体系认定，市级技术中心/研发中心、数十项省级新产品/工业新产品。

There are a total of 283 authorized patents, including over 93 invention patents, 18 PCT patents, and 19 software copyrights;

High tech enterprises, provincial specialized and innovative enterprises, and provincial technology-based small and medium-sized enterprises have successively obtained and passed the certification of the first set of products in the province/city, Zhejiang manufacturing group standards, quality management system/environmental and occupational health management system, and integrated management system of industrialization and industrialization. They are also recognized as municipal technology centers/research and development centers, and dozens of provincial-level new products/industrial new products.



资质平台 Qualification Platform

- 国家高新技术企业
  National High-tech Enterprise
- 国家专精特新小巨人企业
  National Specialized, Refined, Unique, and New Small Giant Enterprise
- 国家企业技术中心
  National Enterprise Technology Center
- 浙江省专精特新中小企业
  Zhejiang Unique and New Small and Medium sized Enterprises
- 浙江省级企业研究院
  Zhejiang Enterprise Research Institute
- 浙江省高端装备制造业骨干企业
  Zhejiang backbone enterprise in high-end equipment manufacturing industry
- 浙江省创新型示范中小企业
  Zhejiang Innovative Demonstration Small and Medium sized Enterprises
- 浙江省标准创新型企业
  Zhejiang Standard Innovative Enterprise







企业优势 ADVANTAGES

荣誉 Honors

1项 国家科技进步二等奖
The second award of the Scientific and Technological Progress of the State

2项 浙江省科技进步三等奖
Zhejiang Province Science and Technology Progress Third Prize

1项 浙江省制造业首台套产品(国内首台套)
The first set of manufacturing products in Zhejiang Province (the first set in China)

8项 浙江省制造业首台套产品(省内首台套)
The first set of manufacturing products in Zhejiang Province (the first set in the province)

1项 浙江省优秀工业新产品一等奖
First Prize for Excellent Industrial New Products in Zhejiang Province

3项 浙江精品制造产品
Zhejiang premium manufacturing products













客户认可 Recognition

- 通威：中国光伏20年·智造典范奖
  TONGWEI: China Photovoltaic 20 Years · Intelligent Manufacturing Model Award
- 隆基：协同创新奖
  LONGi: Collaborative Innovation Award
- 鸿新：优秀合作伙伴
  HONSUN: Excellent Partner







行业使命 Industry Mission

- 主导9项行业标准，5项团体标准
  Leading 9 industry, 5 group standards
- 泛半导体产业链链长单位
  Chain head enterprise of omnisemiconductor industry chain
- 金切机床标准化委员会磨床分标委员单位
  Committee enterprise of gold cutting machine standardization、grinding machine sub standardization
- 工业电热标委会单位
  Committee enterprise of industrial electric heading standard





2 装配能力 PRECISION MACHINING

公司在光伏行业深耕多年，我们不仅积累了丰富的经验，还持续创新，提升制造能力，已满足全球不断增长的清洁能源需求。我们的制造基地采用国际先进的光伏技术，结合环保理念，打造出可靠、稳定、高效的光伏产品；凭借强大的制造能力，我们能够实现规模化生产，满足国内外大规模光伏项目的需求。公司目前具备制造年产50GW所需配套的拉晶+机加设备的能力，同时，我们也为客户提供定制化的解决方案，满足不同客户的特定需求。

Our company has developed in the photovoltaic industry for many years. We have not only accumulated rich experience, but also continuously innovated and improved manufacturing capabilities to meet the growing global demand for clean energy. Our manufacturing base adopts internationally advanced photovoltaic technology and combines environmental protection concepts to create reliable, stable, and efficient photovoltaic products; With strong manufacturing capabilities, we are able to achieve large-scale production and meet the needs of large-scale photovoltaic projects both domestically and internationally. The company currently has the ability to manufacture the necessary pulling and machining equipment for an annual production of 50GW. At the same time, we also provide customized solutions to meet the specific needs of different customers.











3 精密加工
EQUIPMENT CAPABILITY

公司精密部品制造事业部分海宁、徐州两大厂区，配置了德马吉、大隈、马扎克、O-M等国际一线品牌的立式、卧式和五面体龙门加工中心，设备配置可满足车、削、铣、镗等多种加工需求，最大加工尺寸8000*3000*2000mm，更有两条马扎克自动化柔性产线，可实现个性化多品种小批次生产节拍，同时可满足对于热处理、表面处理、焊接、洁净度等特定要求。



The precision parts manufacturing division of the company has two major factories in Haining and Xuzhou, equipped with vertical, horizontal, and pentahedral gantry machining centers from international first-line brands such as Demagi, Okuma, Mazak, and O-M. The equipment configuration can meet various processing needs such as turning, cutting, milling, and boring, with a maximum processing size of 8000 * 3000 * 2000mm. There are also two Mazak automated flexible production lines, which can achieve personalized multi variety small batch production rhythm, and can also meet specific requirements for heat treatment, surface treatment, welding, cleanliness, etc.









4 品控能力
Quality Control

高标准是高质量的前提，公司建立了标准化体系，始终坚持高标准要求，发布行业标准9项，其中6项为主导制订，3项参与制订；发布团体标准3项，2项浙江制造标准。

公司坚持以质取胜，通过了质量管理体系认证，对原材料、制造、出货以及售后服务等进行全过程质量控制并策划制定完善的进货、过程和出厂等质量控制SOP文件，对产品进行严格的检验把关，严格控制产品质量。

公司拥有大尺寸的德国雷兹固定梁式高精度三坐标测量机、美国法如便携式测量关节臂、日本基恩仕图像尺寸测量仪、英国雷尼绍的激光干涉仪、日本奥林巴斯显微镜等国际著名品牌精密先进检测设备，强大的检测能力有力地保证了产品的质量。

High standards are a prerequisite for high quality. Our company has established a standardization system and always adheres to high standard requirements. It has released 9 industry standards, of which 6 are the leading ones and 3 are participating in the formulation; Publish 3 group standards and 2 Zhejiang manufacturing standards.

Our company adheres to the principle of winning by quality and has passed the quality management system certification. It conducts full process quality control on raw materials, manufacturing, shipping, and after-sales service, and plans to develop comprehensive quality control SOP documents for procurement, process, and delivery. Our company strictly inspects and controls the quality of its products.

Our company has internationally renowned brands of precision and advanced testing equipment, including large-sized German Rez fixed beam high-precision coordinate measuring machines, American French portable measuring joint arms, Japanese Keinz image size measuring instruments, British Renishaw laser interferometers, and Japanese Olympus microscopes. Its strong testing capabilities effectively ensure the quality of its products.



德国Leizi三坐标测量机
German Leizi coordinate measuring machine



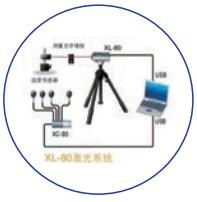
日本基恩士图像尺寸测量仪
Japanese Keyence image size measuring instrument



日本奥林巴斯测量显微镜
Japanese Olympus measuring microscope



美国法如测量关节臂
American law for measuring articulated arms



英国雷尼绍激光干涉仪
British Renishaw laser interferometer

5 售后服务团队
After Sales Service Team

500+

工程安装和
售后服务队伍人数
Engineering installation
and after-sales engineers

80%

设备维护技术型
人才占比
Equipment maintenance
engineers

公司拥有一支专业的服务管理，
Our company has a professional service management team.

500余人的工程安装和售后服务队伍，
We have more than 500 engineers for engineering installation and after-sales service;

设备维护技术型人才超过80%。
moreover, equipment maintenance engineers take up more than 80%,

通过永不满足的专业能力和超越客户需求的服务，
to maximize the value of customer equipment through professional

实现客户设备价值最大化。
competence and attentive service。



服务管理团队
Service management team

现场安装调试
Installation and commissioning team

售后服务团队
After-sale service team

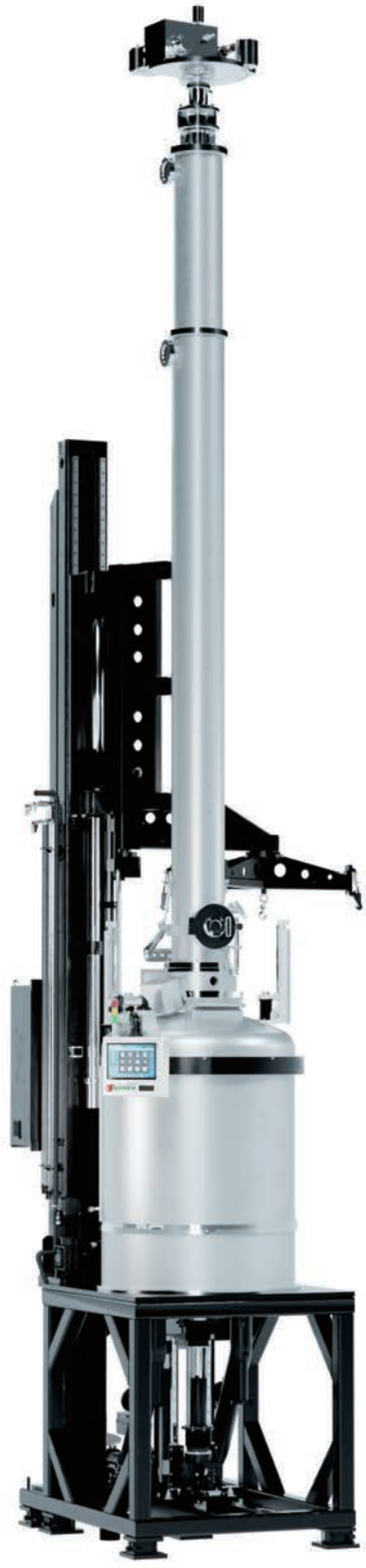
售后服务
After-sale service

备品备件仓库
Spare parts stock

现场/远程技术支持
On/off line technical support

客户端人员培训
Personnel training in customer end

160CCZ单晶炉
160CCZ SINGLE CRYSTAL FURNACE



ADVANTAGE 产品优势

1 炉台兼容RCZ及CCZ，软件功能全方面兼容自由切换，比友商领先至少2年。热场大部分兼容，RCZ更换CCZ，成本低。

The furnace is compatible with RCZ and CCZ technology, and the software functions are fully compatible with free switching, leading competitors by at least 2 years. Most thermal fields are compatible, and replacing RCZ with CCZ results in low cost.

2 底部排气加装特制的防积灰装置，减少氧化物堆积，利于降低氧含量。

Special anti dust devices are installed at the bottom of the exhaust to reduce the impact of oxides on the pipeline.

3 自带自动掺杂器，控制精度可控制在±1g。电阻率均匀，头尾电阻率差范围0.05-0.1Ω。不受分凝系数的影响，棒长不受坩埚限制。

Equipped with an automatic doper, the control accuracy can be controlled within ± 1g. The resistivity is uniform, and the difference in resistivity between the head and tail ranges from 0.05 to 0.1 Ω. Not affected by the coefficient of segregation, the length of the rod is not limited by the crucible.

4 减少熔料和稳温时间，减少碳排放。使用更多的颗粒硅减少碳排放。单次装埚量少，安全系数更高。

Reduce melting and temperature stabilization time, and reduce carbon emissions. Use more particulate silicon to reduce carbon emissions. A smaller amount of crucible per charge results in a higher safety factor.

5 整体自动化程度提升，单产高，人力成本大幅下降。

The overall level of automation has been improved, with high production per unit and a significant decrease in labor costs.

技术参数
Technical Parameter

主机 Host

加热方式&兼容热场 Heating method&compatible with thermal field	石墨电阻加热 32S~42inch
主加热器额定功率/定加热电压/电流 Rated power of main heater/constant heating voltage/current	150kW DC60/DC3000 V/A
副加热器额定功率/额定加热电压/电流 Rated power/rated heating voltage/current of the auxiliary heater	150kW DC60/DC3000 V/A
冷炉整机极限真空度（空炉） Ultimate vacuum degree of the entire cold furnace (empty furnace)	≤4Pa
晶升/晶转 速度范围 Crystal rise/crystal rotation speed range	0~800（可调）mm/min 0~30rpm
埚升/埚转 速度范围 Range of crucible lift/crucible rotation speed	0-200（可调）mm/min 0~15rpm
主腔体内径 Inner diameter of the main chamber	1600mm
主机外形尺寸 External dimensions of the host	2386×3344×13526mm

加料器 Feeder

电压 Voltage	220V
加料速度 Feeding speed	5~30Kg/h
加料精度 Feeding accuracy	±0.5Kg/h
一次填料量 Primary filling amount	≤800Kg
母合金一次填料量 Primary filling amount of mother alloy	≤3Kg
母合金加料精度 Precision of mother alloy feeding	±1g





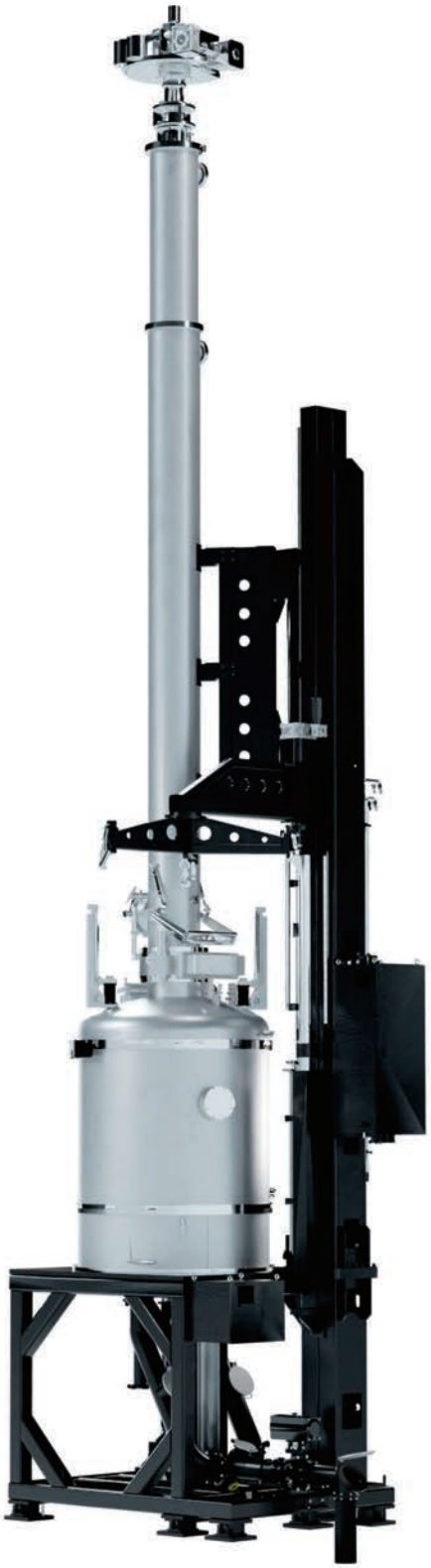
170RCZ单晶炉
170RCZ SINGLE CRYSTAL FURNACE



技术参数
Technical Parameter

电源电压 Supply voltage	3AC380V
频率 Frequency	50Hz
设备容量 Equipment capacity	375KVA
加热方式 Heating method	石墨电阻加热 Graphite resistance heating
兼容热场 Compatible with thermal field	36~42inch
主加热器1额定功率 Rated power of main heater 1	150kW
主加热器1额定加热电压/电流 Main heater 1 rated heating voltage/current	DC60V/A / DC3000V/A
主加热器2额定功率(选配) Rated power of main heater 2 (optional)	100kW
主加热器2额定加热电压/电流(选配) Main heater 2 rated heating voltage/current (optional)	DC60V/A / DC3000V/A
副加热器额定功率 Rated power of auxiliary heater	100kW
副加热器额定加热电压/电流 Rated heating voltage/current of auxiliary heater	DC60V/A / DC3000V/A
冷炉整机极限真空度(空炉) Ultimate vacuum degree of the entire cold furnace (empty furnace)	≤4Pa
晶升速度范围 Range of crystal rise speed	0~800mm/min (可调(adjustable))
晶转速度范围 Crystal rotation speed range	0~25rpm
埚升速度范围 Range of crucible lifting speed	0-250mm/min (可调(adjustable))
埚转速度范围 Range of crucible rotation speed	0~15rpm
主腔体内径 Inner diameter of main chamber	1700mm
主机外形尺寸 Overall dimensions of the host	3350mm×3150mm ×13500mm

180RCZ单晶炉
180RCZ SINGLE CRYSTAL FURNACE



技术参数
Technical Parameter

电源电压 Supply voltage	3AC380V
频率 Frequency	50Hz
设备容量 Equipment capacity	375KVA
加热方式 Heating method	石墨电阻加热
兼容热场 Compatible with thermal field	36~44inch
主加热器1额定功率 Rated power of main heater 1	150kW
主加热器1额定加热电压/电流 Main heater 1 rated heating voltage/current	DC60V/A / DC3000V/A
主加热器2额定功率（选配） Rated power of main heater 2 (optional)	100kW
主加热器2额定加热电压/电流（选配） Main heater 2 rated heating voltage/current (optional)	DC60V/A / DC3000V/A
副加热器额定功率 Rated power of auxiliary heater	100kW
副加热器额定加热电压/电流 Rated heating voltage/current of auxiliary heater	DC60V/A / DC3000V/A
冷炉整机极限真空度（空炉） Ultimate vacuum degree of the entire cold furnace (empty furnace)	≤4Pa
晶升速度范围 Range of crystal rise speed	0~800mm/min （可调（adjustable））
晶转速度范围 Crystal rotation speed range	0~25rpm
埚升速度范围 Range of crucible lifting speed	0-250mm/min （可调（adjustable））
埚转速度范围 Range of crucible rotation speed	0~15rpm
主腔体内径 Inner diameter of main chamber	1800mm
主机外形尺寸 Overall dimensions of the host	3615mm×3370mm ×13500mm

蓝宝石单晶炉
SAPPHIRE SINGLE CRYSTAL FURNACE

产品信息
PRODUCT INFORMATION

1 **用途：**采用泡生法，在真空环境中，通过电阻加热将三氧化二铝原料熔化，通过籽晶引导，采用精密上称重技术进行微量提拉生长优质光学级蓝宝石单晶。主用用于LED衬底，窗口材料，手机屏。

Purpose: Using the bubble growth method, aluminum oxide raw materials are melted by resistance heating in a vacuum environment. Through seed crystal guidance, high-quality optical grade sapphire single crystals are grown by micro pulling using precision weighing technology. Mainly used for LED substrates, window materials, and mobile phone screens.

2 **型号：**SAF80、SAF160、SC120、SC140、SC150

Model: SAF80, SAF160, SC120, SC140, Sc150

3 **晶体生长重量：**80kg-1000kg

Crystal growth weight: 80kg-1000kg



碳化硅单晶炉
SILICON CARBIDE SINGLE CRYSTAL FURNACE

产品信息
PRODUCT INFORMATION

1 **用途：**采用电感加热式物理气相传输法（PVT法）生长优质光学晶体，主要用于半导体和LED行业。

Purpose: To grow high-quality optical crystals using inductively heated physical vapor transfer (PVT) method, mainly used in the semiconductor and LED industries.

2 **型号：**SGE15、SGE20

Model: SGE15, SGE20

3 **晶体生长规格：**4英寸—6英寸

Crystal growth specifications: 4 inches to 6 inches





压电晶体炉
PIEZOELECTRIC CRYSTAL FURNACE

产品信息
PRODUCT INFORMATION

1 **用途：**压电材料（LT/LN）主要用于声表面波器件，红外探测器高频宽带滤波器。高频高温换能器，是IT产业新型电子器件发展不可或缺的功能材料。

Application: Piezoelectric materials (LT/LN) are mainly used in surface acoustic wave devices, infrared detectors, and high-frequency broadband filters. High frequency and high-temperature transducers are essential functional materials for the development of new electronic devices in the IT industry.

2 **型号：**CT15

Model: CT15

3 **晶体生长规格：**4英寸—8英寸

Crystal growth specifications: 4 inches to 8 inches



TDG

天通智能装备

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