

HeWind



HeWind
华仪风能

cwea 中国风能协会会员

浙江华仪风能开发有限公司
ZHEJIANG HEWIND CO., LTD

www.hewind.com



陈道荣

华仪集团董事长

昨天，急流澎湃，大浪淘沙，历经磨难……

华仪电气依托一片雄心壮志和满腔热情，成功上市；今天，

华仪电气已成为中国风电和高压电器行业浪尖的弄潮儿。

全新的企业面貌、独特的经营理念、优秀的人才资源、先进的管理制度结合高新技术，成就了华仪品牌；良好的社会信誉及底蕴深厚的企业文化，形成了华仪电气完美的企业内涵……

明天，在新的历程里，华仪人以饱满的工作热情、创新的工作思维和务实的工作做法，团结一致，奋勇拼搏，不断谱写新的篇章……

Yesterday, hard working in a hard environment, we finally won the market and listing in SSE, because we work with full-hearted passion and confidence…

Today, we are standing in the top of the field of wind power, evolved into an enterprise with brand-new corporation concept, excellent team working, advanced management system, and innovative R&D. HV brand witnesses a high reputation and corporate culture of the company in market and community…

Tomorrow, to keep leading in the market, we are ready for the challenges and opportunities, welcome a more beautiful future …





Enterprise Introduction

企业简介

1

浙江华仪风能开发有限公司是一家成立于2002年，隶属于华仪电气股份(证券代号:600290)的专业从事大型风力发电机组的研发、制造、风资源测量与评估、风电场项目开发与维护的高新技术企业。

公司已具有成熟的600KW和780KW风力发电机组制造技术，拥有具有自主知识产权的多功能中心控制系统，并且独立研发了专为600KW和780KW配置的多种厢式变电站。目前该系列机型已在河北、山东、内蒙古、浙江、广东、甘肃、新疆、辽宁等地成功运行，颇受用户的肯定和好评。

目前公司正与欧洲知名风电企业德国AeroDyn合作同步研发1.5MW大型风力发电机组，2008年年中可投放市场。华仪风能密切关注国内外风电行业的信息动态，与国内外各大院校、科研院所及风电企业保持着紧密的技术交流和业务往来。华仪风能拥有一支由一大批长期专注于国内风电行业产业发展的学科带头人和技术精英组成的开发团队，誓为中国的风电事业贡献华仪人的一份力量。

Zhejiang HeWind Co., Ltd. (hereunder called "HeWind") has established in 2002, affiliating to Huayi Electric Stock (Stock Code: 600290). As a large High-tech enterprise, HeWind is specialized in wind turbine generator research and development, manufacture, evaluation and measurement of wind resources, as well as development and maintenance of wind plant project.

Currently, HeWind has held systematic technology of manufacturing 600kW and 780kW WTGS, owned multifunctional central controlling system with owns independent intellectual property rights, and developed various kinds of PFSS special for 600kW and 780kW turbines. At present, these series turbines have been successfully operated in many provinces, such as Hebei, Shandong, Inner Mongolia, Zhejiang, Guangdong, Gansu, Xinjiang, and Liaoning, which enjoy a good reputation from our clients.

Now HeWind cooperates in developing and designing 1.5MW WECS with AeroDyn, a famous wind energy consulting company in Europe. This turbine will be put on the market in the mid of 2008. HeWind highly focuses on the information of wind power industry of domestic and overseas market. Meanwhile, HeWind keeps closely contact with domestic and overseas colleges, universities, research institutes and other wind power enterprises on technology communication and cooperation. HeWind has a professional research and development team consisting of pioneers and experts, engaging in contributing to the wind power industry of China.

Huayi Centre Industry Park

华仪工业园



华仪风能坚持“以人为本”的管理理念。重视员工素质和企业团队精神的培养，以人才推动企业的发展，不断提高企业产品质量和企业经济效益，使华仪风能成为国际知名企业。

Hewind values people-oriented management principle and pays more attention to set up an efficient teamwork, as well as qualified staffs. With the high quality products, increased profits and enterprise based on talent people, Hewind will be emerged as an international well-know company.

Company Mentality

企业理念

先做人，后做事，致力于民族工业的振兴。
To work after to be a qualified person.

Company Spirit

企业精神

团结敬业，力求超越。
Be united to respect the work, pursue excellence.

Company Object

企业目标

成为国际知名企业集团
Become the international known company group.

2007年12月浙江华仪风能开发有限公司与内蒙古宇峰风力发电有限公司举行“内蒙古翁牛特风电场49.5MW项目风力发电机组供货合同”签约仪式。

The Signature Ceremony of 49.5MW project contact of Wenniute wind farm between Zhejiang Hewind Co.,Ltd and Neimenggu YuFeng Wind Energy Co.,Ltd.in December,2007.



华仪电气股份有限公司与温州能源投资公司进行战略合作签约仪式。

The Signature Ceremony of Strategic Cooperation on Wind Energy between Huayi Electric Co.,Ltd. and Wenzhou Energy Investment Co.,Ltd.



2008年3月浙江华仪风能开发有限公司与苍南格林风力发电有限公司举行“苍南霞关风力发电工程风力发电机组供货合同”签约仪式。

The Signature Ceremony of wind turbine contact of Cangnan Xiguang between Zhejiang Hewind Co.,Ltd. and Cangnan Gelin Wind Energy Co.,Ltd.in March,2008.



浙江华仪风能开发有限公司
Zhejiang HeWind Co.,Ltd

智利ECOINGENIEROS公司
Ecoingenieros Ltd

风能发电战略合作项目及首批风力发电机组供货合同签约
Strategic Cooperation on Wind Energy
& First Wind Turbines Contract Accomplish

新闻发布会
Press Conference



2007年9月，中国风能行业企业浙江华仪风能开发有限公司与智利ECOINGENIEROS公司在京举行“风能发电战略合作项目及首批风力发电机组供货合同签约”新闻发布会。

The public meeting of Strategic Cooperation on Wind Energy & First Wind Turbines Contact between Zhejiang Hewind Co.,Ltd. and Ecoingenieros Company. in Beijing in September 2007

4

Quality Assurance

质量管理

质量就是企业的生命，华仪风能一直以来坚持把质量作为“生命工程”来建设规范化推进全面质量管理，使质量文明渗透到生产、销售、服务的每一个领域，并成为一种自觉行为。

公司严格执行ISO9001国际质量管理体系和ISO14001环境管理体系标准。

公司的质量管理体系已全面与国际接轨，使企业走上了一条可持续发展的道路。



Hewind Quality Assurance is backed up by the advanced technology and has chosen to pursue value in comprehensive quality control strategy, regarding quality as the life of enterprise, from manufacture, sales to service. It helps us control our design, product development, supply and delivery, creating peace of mind for our customers. In order to meet the future needs of sustaining development, our quality control system accord to ISO9001:2000 and ISO14001 completely.





Production Control

生产管理

5

公司积极推进6S管理，加强员工训练，强化文明生产观念，使得企业中每个场所的环境、每位员工的行为都符合6S精神的要求，从而改善生产现场环境，提升生产效率，保障产品品质，营造企业氛围以及创建良好的企业文化。

Hewind intends to operate professionally and knowledgeably, build a satisfied customer base by providing high quality products and service, and react flexibly, reliably and competitively to customer demands and market trends. Thus, we boost 6s production control actively, enhance employee's ability and establish modern corporation's production concept.



整理 SEIRI

整顿 SEITON

清扫 SEISO



清洁 SEIKETSU

素养 SHITSUKE

安全 SAFETY



Project Development

项目开发

华仪风能长期致力于风电场项目的开发，以项目开发来不断积累自己的经验和提高企业在风电场建设和风电场管理上的能力，使企业形成风电场前期测风服务，风电场项目开发，风电机组生产，风电场管理维护的一条龙服务体系。

华仪风能通过风电场开发，不断进行研究，促使风电场建设，管理及维护的成本降低，使投资企业的效益实现最大化。

华仪风能通过wasp软件和windfarm软件对风电场进行模拟选址，使风机在风电场内进行合理配置，以此促使风电场的发电量达到最大。

Hewind has engaged in the research of wind energy projects for several years. With the abundant experience, we become a professional company in the area of wind observation, project research and development, manufacture, evaluation, as well as maintenance.

As a leading wind energy enterprise, Hewind has a R&D team with extensive scientific background to provide added-value service to customer all over the world and try best to maximize profits and to minimize risks.

As for the turbine location selected, we use Wasp and Windfarmer to arrange the wind turbine properly and our goal is optimum power production of your wind farm.

服务平台	Service Platform
风资源评估分软件Wasp	Wind resource estimate software Wasp
风电场优化设计软件Windfarmer	Optimum design of wind farm Windfarmer
风力发电能量测算软件	Production calculation software of wind turbine
风电项目经济评价软件	Economic estimate software of wind energy project
风电场物资管理软件	Material control software
风电场远程监控软件	Remote monitoring software
客户服务热线系统	Customer service system
大型旋转机械设备振动测试系统	Vibration test system of large-scale rotational mechanism
风力发电机组载荷性能测量系统	Load capability calculation of WTGS
项目可行性研究阶段	Phase of Project Feasibility Research
测风咨询：测风塔选点、确定测风塔数量与测风塔高度、	Wind Measurement Consult: wind observation tower location, tower quantity and height confirmation.
风资源评估：月、季、年分析报告及发电量的确定、	Wind Resource Estimate: month, season, annual analysis reports and power production confirmation.
区域规划：可开发区域的界定及装机容量确定、	Regional Plan: exploitative area definition and installation capacity confirmation
项目可行性研究：风资源、上网、交通的可行性分析、	Project Feasibility Research: the feasibility analysis of wind resource, grid combination, traffic
投资分析：投资构成、金融方案、经济评价、	Investment Analysis: investment element, financial project, economic estimate
其他的 服务	Other Service
交钥匙工程服务；	Key given project service
风力机零部件、备品备件、消耗品、工具的供应；	Supply assembly, spare part, expendable and tools
风力机零部件、备品备件的国产替代；	Domestic substitution of components and spare parts.
风力机出力优化、	Power optimum of wind turbine
风力机塔架、基础的优化设计、	Optimum design of tower and base
风力机性能测试及运行状况的诊断分析	Analysis of the performance test and run situation
项目建设阶段	Phase of Project Construction
施工组织设计	Construction Design
工程监理	Project Supervision
塔架监测	Tower Supervision
工程安装	Project Installation
项目运行维护阶段	Phase of Run and Maintenance
风电场运行维护	技术组训
Run and Maintenance of Wind Farm	Technical Training

公司同时代理美国NRG测风设备，可为客户提供更加专业的仪器选型及测风服务。

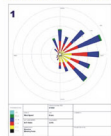
We also supply American NRG observation equipment as their agent that makes our supplied equipments and observation service even more professional for customers.



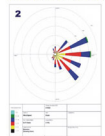
华仪风能为用户提供全面的测风服务工作，包括测风塔选点，安装，维护和数据分析。公司设计的10m、40m、50m、70m测风塔可满足风电场前期测风工作的不同需要。

Hewind offers comprehensive wind observation package including, but not limited to, observation tower location, installation, maintenance, and data analysis. Our observation tower with 10m, 40m, 50m, and 70m satisfied the different demands of the prophase observation.

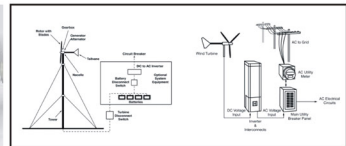
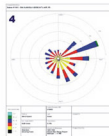
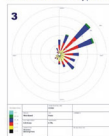
Wind Rose For Colonia Kennedy (JFMA 2008)



Wind Rose For Colonia Kennedy (JJJAS 2008)



Wind Rose For Colonia Kennedy (OND 2008)





HW50/780KW风力发电机组/
Wind Turbine Generator System



技术参数/Technical Data

技术参数		Technical Data	
额定功率 (kW)	780	Rated power(kW)	780
切入风速 (m/s)	3.5	Cut-in wind speed(m/s)	3.5
额定风速 (m/s)	14	Rated wind speed(m/s)	14
切出风速 (m/s)	25	Cut-out wind speed(m/s)	25
抗最大风速 (m/s)	70	Survival wind speed(m/s)	70

叶轮/Rotor

叶轮直径 (m)	50	Rotor diameter	50
叶轮转速 (r/min)	21.68	Rotational speed(r/min)	21.68
叶片材料	玻璃纤维增强树脂	Blade material	Glass fiber
叶片长度 (m)	24	Blade length(m)	24
叶片数量	3	Blade number	3
扫风面积 (m²)	1963	Swept area(m²)	1963

齿轮箱/Gearbox

类型	一级行星两级平行轴	Type	Three stages with planetary and spurgear
额定输入功率 (kW)	880	Rated input power(kW)	880
传动比	1:70.022	Ratio	1:70.022

刹车系统/Brake system

主刹车系统	独立叶尖气动刹车	Primary BrakeSystem	Blade Tip-break
第二刹车系统	液压机械刹车	Secondary Brake System	Mechanical brake on the high speed shaft

发电机/Generator

型号	异步发电机	Type	Asynchronous generator
额定功率 (kW)	800	Rated power (kW)	800
额定电压 (V)	690	Rated voltage(V)	690

偏航系统/Yaw System

类型	主动对风	Type	Active yawing
偏航速度 (r/min)	0.114	Yawing speed(r/min)	0.114

控制系统/Control system

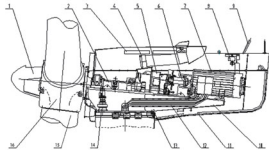
控制类型	PLC	Controller Type	PLC
------	-----	-----------------	-----

塔架/Towers

类型	钢制锥筒	Type	Tubular steel
轮毂高度 (m)	50/60	Hub height (m)	50/60

重量/Weight

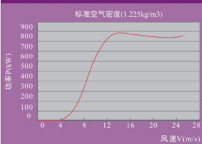
机舱	24t	Nacelle	24t
风轮	15.5t	Rosor	15.5t
塔架	55.499m/48.78m 62.46/57.92m	Tower	55.499m/48.78m 62.46/57.92m



- | | | | |
|------------|---------|---------------|------------|
| (1) 风轮罩 | (5) 齿轮箱 | (9) 风向标、风速仪支架 | (13) 偏航轴承 |
| (2) 主轴 | (6) 联轴器 | (10) 机舱底座 | (14) 偏航减速器 |
| (3) 照明系统 | (7) 发电机 | (11) 机舱罩 | (15) 叶片 |
| (4) 润滑冷却系统 | (8) 提升机 | (12) 供电电缆 | (16) 轮毂 |



HW50/780kW功率曲线/Power Curve



HW50/780 风力发电机组采用水平轴、三叶片、上风向、定桨距失速调节、异步发电机并网的总体设计方案，推荐轮毂高度60m，风轮直径50m，是目前世界上技术成熟、结构简单、性能可靠的设计方案之一。机组的整机及单个部件都是按照IEC、GL规范及GB标准或等同标准设计制造的。

HW50/780 wind turbine design package includes horizontal axis, three blades, up wind, stall adjusting by fixed blade and asynchronous generator. The commendatory hub height 60m and rotor diameter 50m is one of the most mature, simple and reliable designs in the world. The turbine and every component are strictly according to IEC, GL and GB standard or equal design standard.

华仪1.5MW风力发电机组是华仪风能与美国艾罗迪共同设计研发的。跟我们合作开发的设计咨询公司——德国艾罗迪，是一家国际著名的风机设计咨询公司，曾为国外多家大型主机制造商设计开发过性能优良、大批量商业运行的风力发电机组。艾罗迪具有优秀的风机设计能力和丰富的工程应用经验。华仪1.5MW机组是在总结现有风电市场上运行稳定可靠的同类型机组的特点的基础上，设计开发的一款适合中国风资源特点的新型机组。

HW77/1500 wind turbine is researched and designed by Hewind Co., Ltd. and AeroDyn Company. Our cooperator AeroDyn in Germany is a famous consult company of wind turbine design, showing abundant experience in designing and running project, which has designed various high quality and business used turbines for large-scale manufacturers. The design concept of Hewind 1.5MW turbine is not only use same type turbine in the wind energy marketing for reference, but also suitable for the situation of wind resource in China.

在选择设计路线之初，我们综合分析了风力发电机组技术的几种主要方向，认为采用双馈电机的变速恒频风力发电机组是风力发电技术目前的主要方向，依据国内的制造业的基本情况来看，也是零部件供应质量上面最有保证的。同时，从国内外目前的装机的情况来看，采用双馈电机和变速恒频技术的风机装机量也是最大的。风力发电技术的成熟和完善，需要整个产业链上的各个环节的完整性。我们选择的技术路线也是国内外投入技术力量最多的一个技术方向。同时该机型也是最具有前景的一款新机型。

Before selecting the best concept——D.F.I.G wind turbine, we have analyzed several ideas of the turbine design completely and the situation of the manufacture in domestic, as well as supply of high quality components. Otherwise, looking for the situation of current installed capacity, D.F.I.G technology also is a best chosen. The maturation and improvement of wind energy technology need comprehensive development of single tache of production chain. Our selected design obtains the best supports and used widely and reliably. HW77/1500 is a new turbine, showing the lightest prospect in the turbine market.

风力发电及设备

技术参数/Technical Data

技术参数		Technical Data	
额定功率 (kW)	1500	Rated power(kW)	1500
切入风速 (m/s)	3	Cut-in wind speed(m/s)	3
额定风速 (m/s)	11.3/11	Rated wind speed(m/s)	11.3/11
切出风速 (m/s)	25	Cut-out wind speed(m/s)	25
抗最大风速 (m/s)	70/52.5	Survival wind speed(m/s)	70/52.5

叶轮/Rotor

叶轮直径 (m)	77/82	Rotor diameter	77/82
叶轮转速 (r/min)	10-19.5	Rotational speed(r/min)	10-19.5
叶片材料	玻璃纤维增强树脂	Blade material	Glass fiber
叶片长度 (m)	37.5/40.25	Blade length(m)	37.5/ 40.25
叶片数量	3	Blade number	3
扫风面积 (m²)	4654/ 5278	Swept area(m²)	4654/ 5278

齿轮箱/Gearbox

类型	一级行星两级平行轴	Type	Three stages with planetary and spurgear
额定功率 (kW)	1663	Rated power(kW)	1663
传动比	1: 99.74	Ratio	1: 99.74

刹车系统/Brake system

主刹车系统	独立变桨	Primary BrakeSystem	Individual pitch control
第二刹车系统	液压机械刹车	Secondary Brake Systtem	Mechanical brake on the high speed shaft

发电机/Generator

型号	双馈异步发电机	Type	D.F.I.G
额定功率 (kW)	1590	Rated power (kW)	1590
额定电压 (V)	690	Rated voltage(V)	690

偏航系统/Yaw System

类型	主动对风	Type	Active yawing
偏航速度 (r/min)	0.11	Yawing speed(r/min)	0.11

控制系统/Control system

控制类型	PLC	Controller Type	PLC
------	-----	-----------------	-----

塔架/Towers

类型	钢制锥形	Type	Tubular steel
轮毂高度 (m)	61.4/70/80	Hub height (m)	61.4/70/80

风力发电及设备

重量/Weight

机舱	58t	Nacelle	58t
风轮	32t	Rotor	32t

针对中国东南沿海的台风袭击，我们的风机设计等级达到了抗IEC I类风速的性能，能够抵抗70米/秒风速的台风袭击，针对我国多地地质灾害的情况，在设计中应用了抗震设计。针对我国北方地区的沙尘暴、严寒等情况，我们的风机设计了特殊的防沙尘暴装置，并具有抵抗-40℃低温的能力。

华仪1.5MW机组采用了新型的桨叶设计技术，使机组的利用风能效率相对于国内现有机型有一定的提高。同时在传动链上采用的各个部件如轴承、增速箱、发电机等，都应用了国内外最新、最好的技术，使风机的整体性能和可靠性得到了良好保障和提升。艾罗迪凭借其多年的设计经验，在机组的结构上进行了很多优化，使轮毂、机架、塔架、回转支承、基础等主要零部件的受力路径得到了优化，在保证机组承载能力的情况下，合理的利用各种材料降低了风机的制造成本。

In order to avoid Typhoon damage, our design rank has reached to resist IEC first lever wind speed, which could repel the speed of 70m/s. Regard of the geological hazard, we adopt anti-knock design. For the sand storm, chilliness weather in the north of China, our turbine has the anti-sand storm device that could resist the low temperature of -40℃.

By the new blade design, Hewind 1.5MW did better than other ones in wind availability. Meanwhile, with best and newest design of bearing, speed increasing gear and generator, Hewind 1.5MW enjoy reliable and holistic performance than before. The special design from AERODYN makes structure of turbine, load route of hub, tower, bearing and base more optimum which not only ensures the load capability, but also decrease the manufacture cost.

HW77/1500kW功率曲线/Power Curve

