



专业 / 信赖 / 品质  
Speciality Trust Quality

**Accessen**

上海艾克森集团有限公司 / 上海艾克森新技术有限公司  
Shanghai Accessen Group Co., Ltd. / Accessen.New-Tech.Shanghai.Co.,Ltd

营销总部: 上海金沙江路1628弄绿洲中环中心1号楼3层  
邮 编: 200333  
电 话: +86 21 6117 6666  
传 真: +86 21 6117 2600  
网 址: www.accessen.cn  
信 箱: sales@accessen.cn trade@accessen.cn

生产总部: 上海市嘉定区谢春路1458号  
邮 编: 201804  
电 话: +86 21 6959 5555 6958 5555  
传 真: +86 21 6959 0007

销售热线: 4006 191 191  
服务热线: 8008 191 191


Sales Headquarter: 3rd Floor, NO.1 Building, Lvzhou Zhonghuan Business Center, No. 1628, Jin Shajiang Rd, Shanghai, China.  
Zip Code: 200333  
Tel: +86 21 6117 6666  
Fax: +86 21 6117 2600  
Website: www.accessen.cn  
E-mail: sales@accessen.cn trade@accessen.cn

Production Headquarters  
Add: No.1458 Xiechun Rd, Jiading District, Shanghai 201804, China  
Tel: +86 21 6959 5555 6958 5555  
Fax: +86 21 6959 0007  
Sales Line: 4006 191 191  
Service Line: 8008 191 191



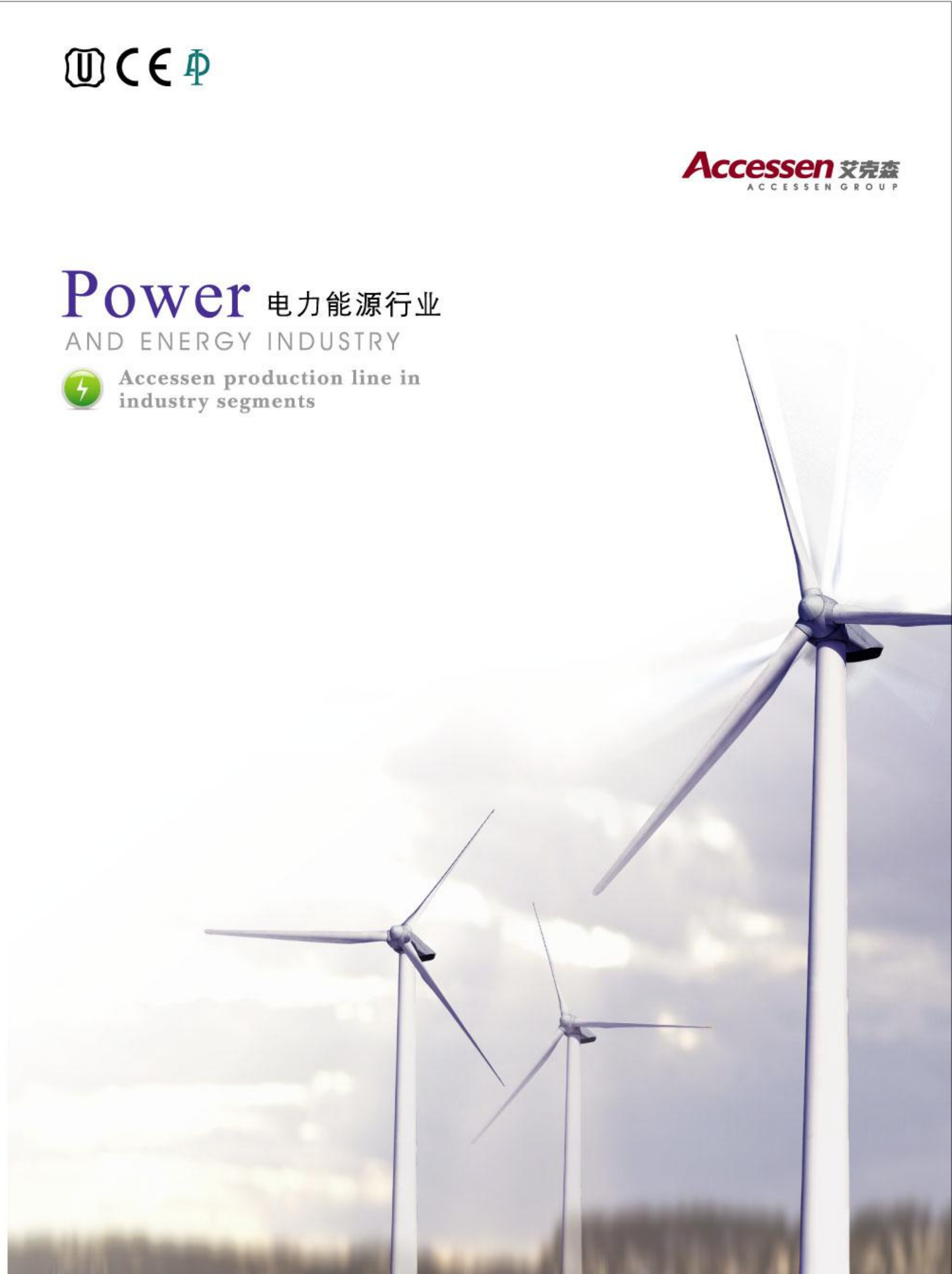
**Accessen 艾克森**  
ACCESSEN GROUP

**Power** 电力能源行业  
AND ENERGY INDUSTRY

 Accessen production line in industry segments

2011 05 PW

若设计与规格变更, 恕不另行通知  
Designs and Specifications are subject to change without notice for further improvement.



## 公司简介 / About Us

上海艾克森新技术有限公司是专业从事换热设备研发、制造、销售及服务的中美合资企业，公司通过ISO9001:2000质量体系认证、ISO14001:2004环境质量体系认证、OHSAS18001:1999职业健康安全体系认证。

公司于2002年在上海成立，生产基地位于上海市嘉定区黄渡工业园。今天，艾克森在中国投资建立了2家公司，4个制造工厂，遵照全球统一的AS标准生产包括板式换热器、板壳式换热器、全焊式换热器、蒸发器及冷凝器、板式换热机组、工艺水冷却系统、余热回收系统在内的全系列换热设备，同时也提供符合ASME、PED、API、JIS、IEC、DNV、BV、CCS、GB等国际规范和标准的产品。

公司主要负责向亚太地区的暖通空调、制冷、能源电力、冶金、化工、食品、电子、船舶及环境处理等市场提供随需应变的换热解决方案和客户服务。公司直属的销售和服务网络覆盖国内27个主要省市，拥有400多个服务网点，2个技术培训和产品中心，产品提供全国或全球联保服务，能就近为客户提供快速、高效的服务。赢得了包括SIEMENS、BAYER、BASF、DOW、BOSCH、3M、HITACHI、TATA、COCA-COLA、UNILEVER、INTERCONTINENTAL、EMERSON、HYDNDAL、SINOPEC、LAFARGE、FOXCOCOM等全球500强客户的信赖。

艾克森随时为客户提供全球领先的换热解决方案，专业提供高品质的换热设备和快速、高效的服务。



艾克森二期厂房

Shanghai Accessen New-Tech Co.,Ltd is a Sino-US joint venture, founded in 2002, belonging to Shanghai Accessen Group, which located in Huangdu Industrial Park Jiading District in Shanghai. The first phase plant of Accessen Group covers 15000 square meters and second phase plant area is more than 250,000 square meters with 600 employees.

Accessen New-Tech Co.Ltd is scientific and technological enterprise with international advanced design concept and independent intellectual property design, which specializing in manufacturing heat exchanger and heat exchanger unit etc. We achieved several national utility new model patents and won the Shanghai New and High Technology Recognition Certificates, was named as Shanghai New and High-Tech Enterprise, Little Giant, Most Potential Enterprise in Yangtze River Delta.

We have also obtained the BVQI quality certificates of ISO9001:2000, ISO14001:2004,OHSAS18001:1999, certificates of CCS, ASME, API and BV. The products are strictly manufactured in accordance with the international standard such as CE, ASME, JIS, PED and so on.

Accessen products are widely applied in many fields, such as heating supply, air-condition, food industry, energy and power plant, metallurgy, pharmaceutical, chemical industry, electronics, marine, desalination, environmental treatment, etc. Accessen has occupied China mainland market and expanded to all over the world. Depending on its advanced technology, outstanding quality, professional service and cost-effective products, which ACCESSEN attracts clients with top grade projects, and we have provided service to lots of Top 500 world famous corporations, such as SIEMENS, BAYER, BASF, DOW, 3M, HITACHI, TATA, COCACOLA, UNILEVER, INTERCONTINENTAL, EMERSON, HYDNDAL, SINOPEC, LAFARGE, FOXCOCOM, etc, more than 200 companies.

Accessen insists "technology + capital" development strategy all the time, regards energy saving and environment protection as our responsibility to serve the nation. There are 28 branches and more than 200 offices all around China in order to provide top services to our customers. Also we would like to provide whole solution according to customer's requirements with more than 30 persons R&D team.



艾克森一期厂房

## 艾克森板式换热器 / ACCESSEN Plate Heat Exchanger

- 与其他换热器相比，板式换热器结构更紧凑。
- 可以在1℃的温差下进行热交换，设计压力高达40Bar,最大处理量可达4500m³/h。
- 丰富的板型，多种角度，多种槽深，不同的组合形成一款最适合工况的理想的换热器。
- 板片均一次成型，采用高精度的模具，减少板片物理应力和提高板片的均衡性，大大延长板片的使用寿命。
- 改进后的板片导流设计，有效防止板片结垢，提高传热系数，最高可达7000w/m².k。
- 板片定位系统和单边流设计以及特殊的夹紧尺寸标识，便于安装接管、运行维护。
- 备有不同材质的换热器，例如不锈钢、钛或其他特殊合金制成的板片，以满足不同工业需求。
- 板片易于接近检查，便于手工清洗。在许多场合可以用逆流冲洗加以清洗，日常清洗不需耗费太多时间，无需专门培训人员。
- 全部系列采用免粘贴形式，减少运行维护成本及停机，节约维护时间。
- 热混合形式，通过改变流动方式或增加流道数量，可以达到无数种组合，从两种流体单一逆流方式到三种或者三种以上的流体的多流程流动方式，均可以做到，为设计师提供了更多、更合理的选择来满足不同的工艺要求。
- 传热和压力降可以调节，通过板片的组合在传热系数和压力降得调整，得到最佳的传热系数，从而减少设备投资。
- 经济型，由于其传热系数高、安装和维修简便使得初期投资和运行维护成本大大降低。

• Plate Heat Exchanger is more compact in structure compared to other heat exchanger.

• It can perform heat transfer under differential temperature of 1℃with a designed pressure as high as 40 Bar and capacity 4500 m³/h

• Abundant many plate shape ,various angle and groove depth, and different assembly, to be an ideal heat exchanger that fit your working condition perfectly.

• All plates are formed in one time with high precision mold so as to reduce the plate's physical stress,improve the plate's uniformity and prolong the plate's service life.

• Scientific diversion design of the plate can avoid the scaling and increase the heat transfer coefficient up to 7000 w/m².k.

• The plate positioning system and single side flow design as well as clamping size mark provide convenience for connection and maintenance.

• The heat exchangers can be made of different material, for example stainless steel,titanium or other special alloy steel, which are available to meet the requirements of various industries.

• The plate is easy to inspect and to manually clean. The plate can be cleaned with countercurrent washing under many

circumstances. The daily cleaning of the plate is not time consuming and does not require skilled personnel.

• All gaskets are nonadhesive so that there are less operational costs and maintenance costs.

• The heat exchanging can be designed in many types from two fluid with single countercurrent to three or more fluid media with multi current,through the changing of flow types from two fluid with single countercurrent to three or more fluid with multi current, according to the changing of flow type or increasing the flow passages. Therefore more suitable solutions can be selected by designers to meet different technical requirements.

• Heat transfer and pressure drop can be regulated. The best heat transfer coefficient and pressure drop can be regulated and achieved through the plate's assembly to minimize the investment of equipment.

• It is economical. The initial investment and maintenance costs is substantially reduced because of its high heat transfer coefficient, convenient installation and service.



## 板式换热器工作原理 / Working Principle of Plate Heat Exchanger



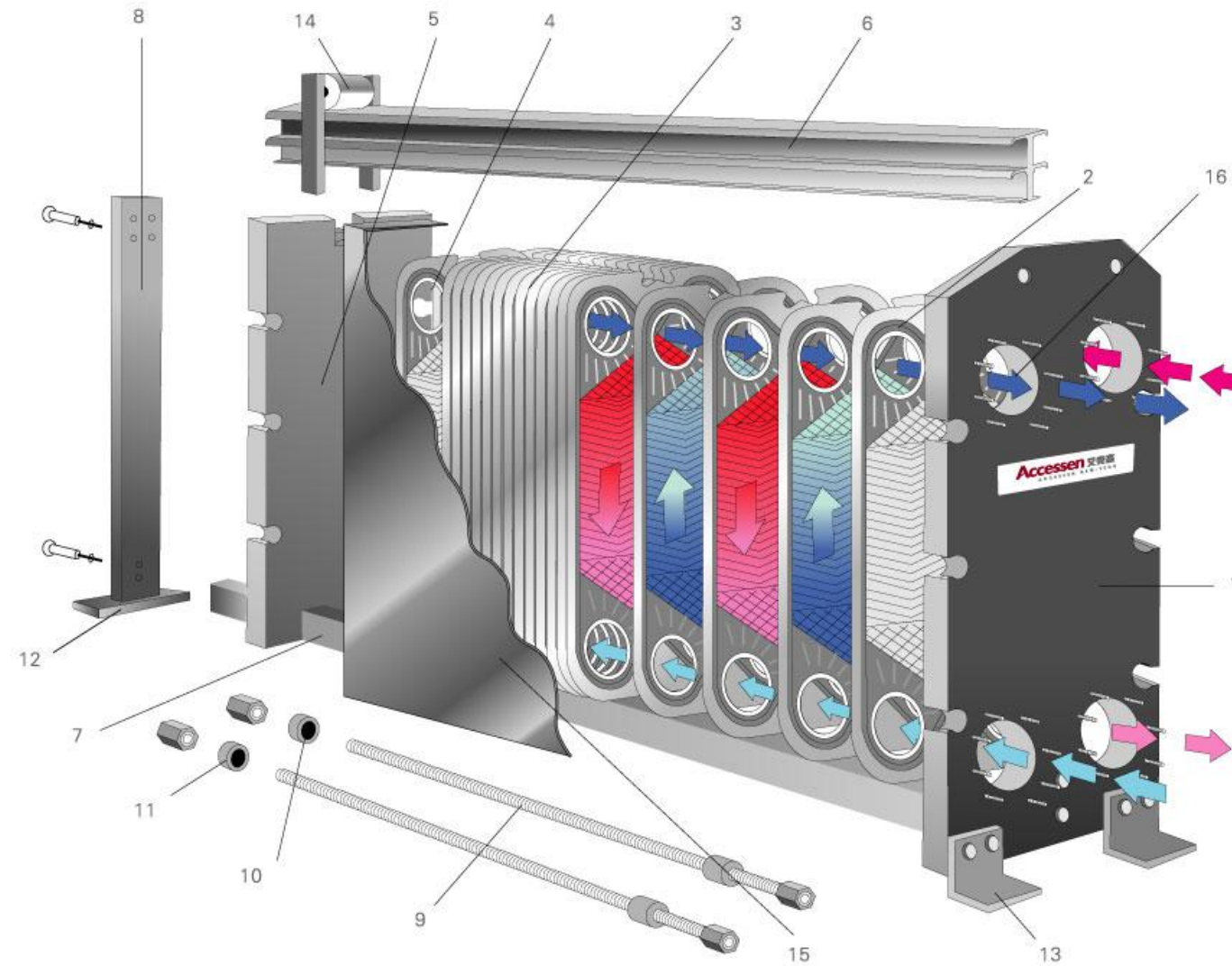
板式换热器是由一组带有波纹的金属板片组成，板上有孔，供传热的两种液体通过。金属板片安装在一个侧面有固定板和活动压紧板的框架内，并用夹紧螺栓夹紧。板片上装有密封垫片，将流体通道密封，并引导流体交替地流至各自的通道内。流体的流量、物理性质，压力降和温度差决定了板片的数量和尺寸。波纹板

不仅提高了湍流程度，并且形成许多支撑点，足以承受介质间的压力差。

金属板和活动压紧板悬挂在上导杆上并由下导杆定位，而杆端则固定在支撑柱上，但如果其中一种液体或两种液体在换热器内不止通过一次，则接口应开在固定板和活动压紧板上。

Plate heat exchangers consist of a number of corrugated plates. The plates pack is mounted between a fixed and movable frame plate, positioned by an upper and lower carrying bar, and compressed by several tightening bolts. The fluids involved in the heat exchange process, are fed into the plate pack via connections on the fixed and movable pressure plates. The arrangement of the plates creates two separate channel systems, enabling the two media to flow past and between each other without physical contact, leaving the exchanger again via connections in the pressure plates.

Plate with different patterns can be mixed into the heat exchanger in order to achieve optimum efficiency at a given pressure drop. By installing special distribution plates in the plate pack, the media can be conducted several times through the flow channel, if so, the connections will be arranged separately on fixed and movable plates.



- 固定压紧板 1 Fixed frame plate
- 前端板 2 Front plate
- 换热板片 3 Heat exchanging plate with gasket
- 后端板 4 End plate
- 活动压紧板 5 Movable frame plate
- 上导杆 6 Carrying bar
- 下导杆 7 Guiding bar
- 后立柱 8 Supporting column

- 夹紧螺栓 9 Tightening bolt
- 锁紧垫圈 10 Lock washer
- 紧固螺母 11 Fastening nut
- 支撑地脚 12 Support foot
- 框架地脚 13 Frame foot
- 滚轮组合件 14 Roller assembly
- 保护板 15 Protection board
- 接口 16 Stud bolt connection

板片材质 Plate Material	适合流体 Media
不锈钢(AISI304,316,316L)	净水、河水、食用油、矿物油 Pure Water, River Water, Edible Oil, Mineral Oil
钛及钛钨(Ti, Ti-Pd)	海水、盐水、盐化物 Sea Water, Salt Water, Salt Material
20Cr, 18Ni, 6Mo(254SMO)	稀硫酸、稀硫酸盐物水溶液、无机水溶液 Thin Sulfuric Acid, Thin Salt Fluid, Inorganic Liquor
镍(Ni)	高温、高浓度苛性钠 High Concentration Caustic Soda
哈氏合金 HASTELLOY	浓硫酸、盐酸、磷酸 Concentrated Sulfuric Acid, Hydrochloric Acid, Phosphoric Acid

密封垫材质 Gasket Material	使用温度℃ Temperature	适合流体 Media
NBR	-15 □ +120	水、海水、矿物油、盐水 Water, Sea Water, Mineral Oil, Salt Water
HNBR	-15 □ +140	高温矿物油、高温水 High Temperature Mineral oil and Water
EPDM	-25 □ +170	热水、水蒸气、酸、碱 Hot Water, Steam, Acid, Alkali
VITON	-5 □ +180	酸、碱、流体 Acid, Alkali, Fluid

### 框架材质及接口材质

#### Frame and Connectins material

##### 一. 框架材质 Frame:

- \* 喷漆碳钢 Carbon steel painted
- \* 不锈钢 Stainless steel

##### 二. 接口材质 Connections:

- \* 标准: SS不锈钢衬套  
Standard: SS Stainless Steel Lining
- \* 特殊: 合金钢 哈氏合金 钛  
丁腈橡胶 三元乙丙胶  
Special: Alloy Steel Hastelloy Titanium  
NBR EPDM

### 符合的标准和质量保证体系

#### Pressure Vessel Code and Quality System

ACCESSEN板式换热器采用美国ASME标准制造，在满足中华人民共和国《板式换热器》GB16409-1996标准的同时，还可以满足众多其他国际标准：

Accessen plate heat exchanger is manufactured following the ASME Standard of U.S.A. while complying with the 'standard of GB 16409-1996 of the People's Republic of China. The plate heat exchanger can also be manufactured following other international standards:

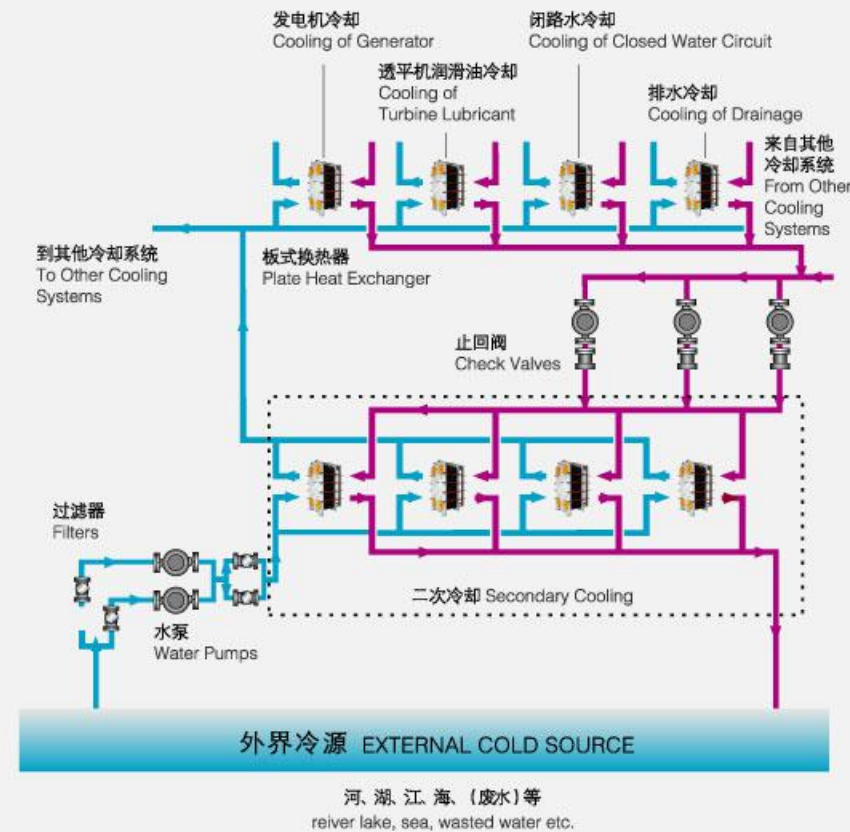
- 美国ASME标准规范 America ASME standard
- 美国规范 API
- 欧盟规范 CE
- 法国规范 BV
- 日本JIS等规范 Japanese JIS Standard
- 中国压力容器标准规范等 Chinese Pressure Vessel Standard

## 板式换热器在电力能源行业的应用 / Plate Heat Exchanger Application

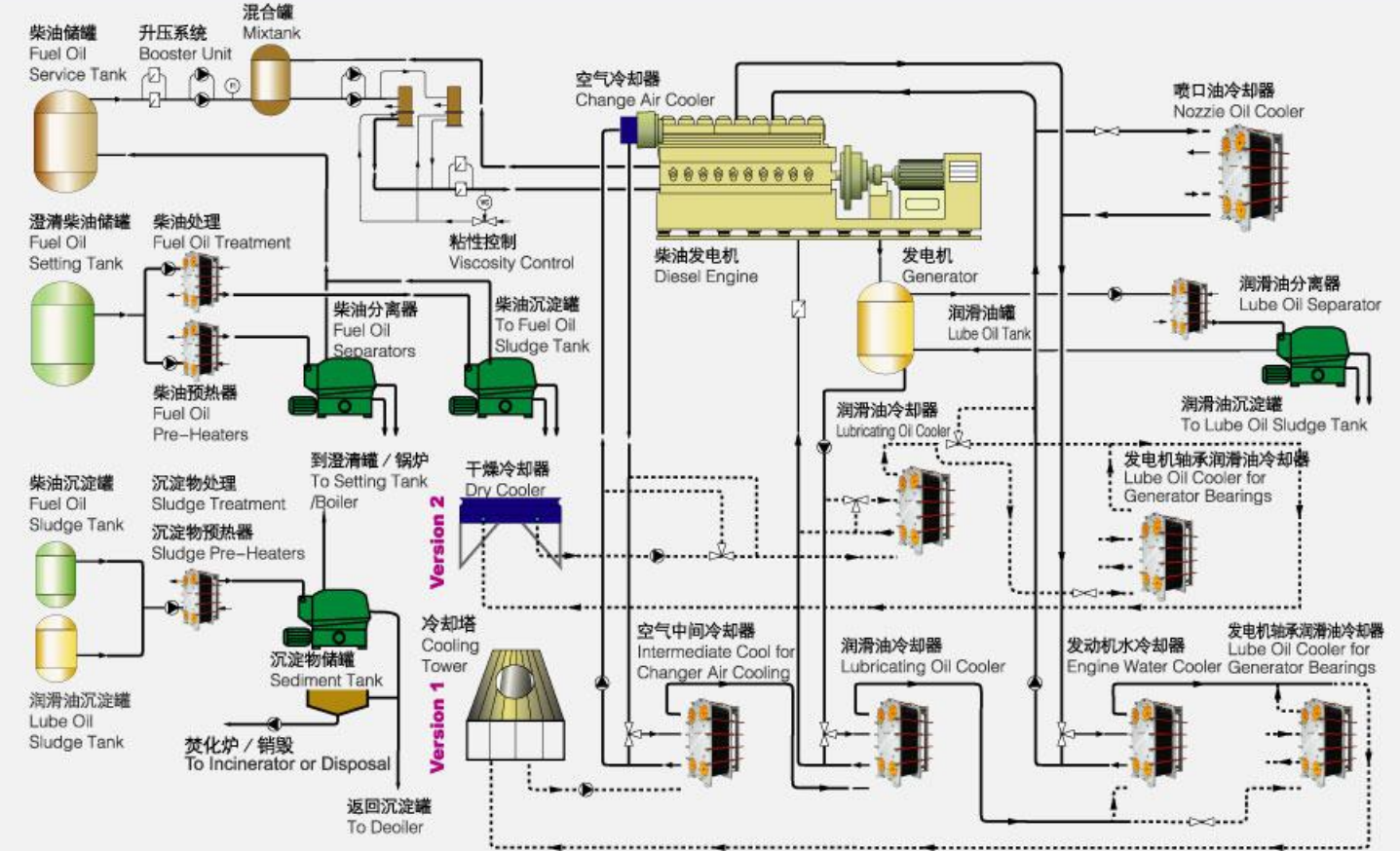
板式换热器与传统的壳管式设备相比,具有购置的优势,尤其是设备新旧更替过程中。占地面积上可节约1/3--1/5的空间,同时缩短了安装时间,能够降低维护时间、简化维护工作,从而可以减少停机时间。现在板式换热器扮演了一个日益重要的任务,帮助调节电厂生产过程中遇到的水源及能源问题。

Compared with shell and tube heat exchangers, plate heat exchangers have unique advantages, particularly during the replacement of the old equipment. First of all, they can save space and installation time because their sizes are smaller. And they can also lower the maintenance time and require less maintenance for reduced downtime. Nowadays plate heat exchangers are playing more and more important roles in helping control water source and energy problems that power plants encountered in the process of producing electricity.

板式换热器在火电厂的冷却应用 (原理图)  
Plate Heat Exchangers Used in Power Plants for Cooling (Schematic Diagram)



板式换热器在电厂柴油机冷却系统的应用 (原理图)  
Plate Heat Exchangers Used in Cooling System of Diesel Engines in Power Plants (Schematic Diagram)



火电厂应用  
Application in  
Coal-fired Power Plant  
and Gas Power Station

- |  |  |
|--|--|
| 1、中央冷却系统 (闭式循环水)<br>Central Cooling System       | 9、透平机润滑油冷却<br>Cooling of Turbine Lubricant                   |
| 2、冷凝水清洁系统<br>Condensate Purifying System         | 10、排水冷却<br>Cooling of Drainage                               |
| 3、给水泵系统<br>Water Pump System                     | 11、夹套、阀门用水的冷却<br>Cooling of Water Used in Jackets and Valves |
| 4、紧急柴油机冷却<br>Emergency Cooling of Diesel Engines | 12、变压器油的冷却<br>Cooling of Transformer Oil                     |
| 5、汽机润滑油冷却<br>Cooling of Steamer Lubricant        | 13、密封管油冷却<br>Cooling of Sealed-pipe Oil                      |
| 6、真空泵冷却<br>Cooling of Vacuum Pump                | 14、锅炉给水预热和热回收<br>Pre-heating and Recycling of Boiler Water   |
| 7、发电机冷却<br>Cooling of Generator                  | 15、厂房采暖<br>Workshop Heating                                  |
| 8、闭路水冷却<br>Cooling of Closed Water Circuit       | 16、厂房生活热水<br>plant living water consumption                  |



核电站应用  
Application in  
Nuclear Power Plant

- 1 减速剂冷却器  
Cooling equipment for the decelerating material
- 2 燃料电池冷却和净化系统  
Fuel cell cooling and purification system
- 3 外壳及冷凝池冷却  
Cooling of shell and condensation tank
- 4 堆芯紧急冷却  
Emergency cooling of the reactor core
- 5 废料处理系统  
Waste disposal system
- 6 事故备用冷却  
Accident backup cooling system



水电站应用  
Application in  
Hydro-Electric Plants

- 1、液底控制系统的冷却器  
Cooler for Liquid Bottom Control System
- 2、透平润滑油冷却  
Cooling of Turbine Lubricant

## 电力行业板式换热器的特点

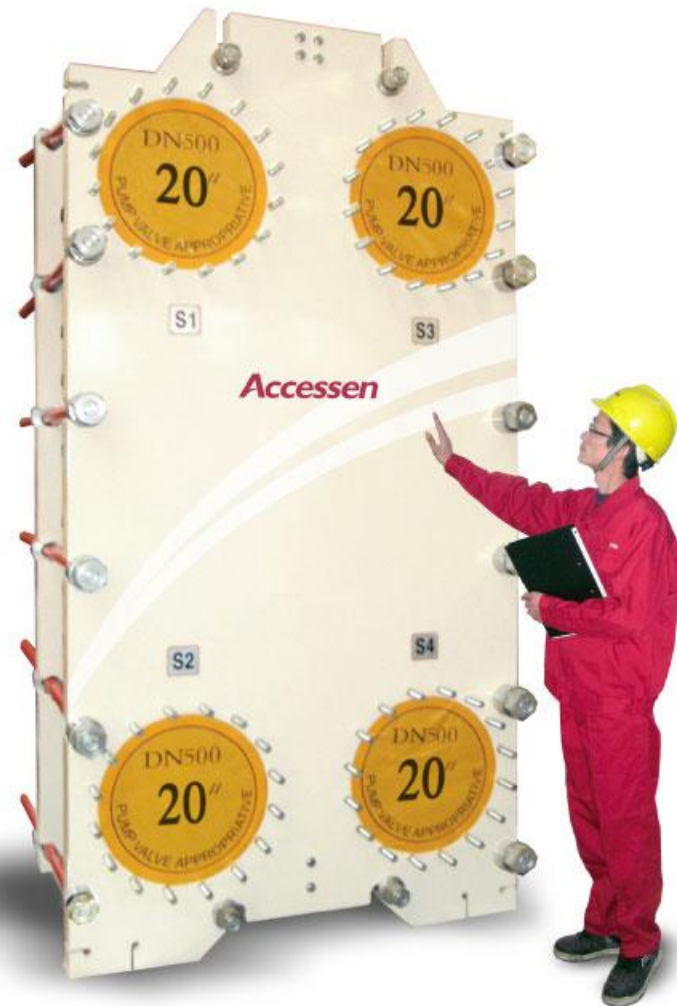
### Characteristic of Accessen plate heat exchanger in electrical power industry

上海艾克森"A系列"板式换热器的主要部件包括换热板片、密封垫片、框架等基本元素构成。换热板片做为一台换热器的主导元件，决定了换热器所适用的介质、使用寿命、传热效率、设备阻力等。而密封胶垫决定了换热器的维修周期、适用介质以及耐压性能。上海艾克森公司的"A系列"闭式循环换热器的特点：

Accessen "A series" plate heat exchanger is assembled by heat transfer plate, gasket and frame etc.. Plate is the most important parts which determine the medium, service life of plate heat exchanger, heat transfer efficiency as well as pressure drop. Gasket determines the maintain period, available medium and pressure.

- 1: 结合国内电力行业实际工况并在板型设计、热工水力及生产加工工艺上完全引进美国先进技术所制造生产的优质产品。
- 2: 设计为连续工况，其接口和法兰与板式换热本体具有相同的设计条件。
- 3: 提供有关传热和压降的计算书，与国内外权威部门出具的热工测试报告相符。
- 4: 换热面积在理论计算的基础上增加了富裕度，保证换热器在启动、低负荷运行期间和任何一瞬态下都有良好的水力和热力学性能。
- 5: 角孔尺寸最大可做到DN500mm，单台处理能力达到4500m<sup>3</sup>/h，最大装机面积为2000m<sup>2</sup>。

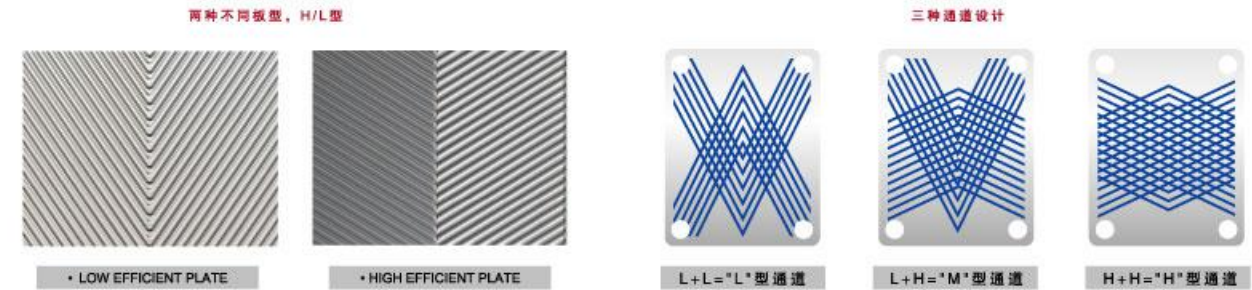
1. Shanghai Accessen "A series" closed circulation heat exchanger, which refer the working condition of local and worldwide power plant, and introduce America technology for plate design and manufacture process, is excellent products.
2. Closed circulation heat exchanger is available with continuous working condition, the connection, flange and plate heat exchanger shall be accordance with the same design code.
3. Accessen shall provide specification about thermodynamics calculation which shall meet inspection report authorized by local and worldwide inspection department.
4. Meanwhile, Accessen "A series" plate heat exchanger shall be added design margin for heat transfer area to guarantee the hydraulics and thermodynamics performance at any time including start, low load operation.
5. Accessen "A series" plate heat exchanger's connection size can be maximum to DN500mm, and per set flow load can be maximum to 4500 m<sup>3</sup>/h and service heat area maximum to 2000m<sup>2</sup>.



## 卓越的板型设计 / Excellent Plate Design

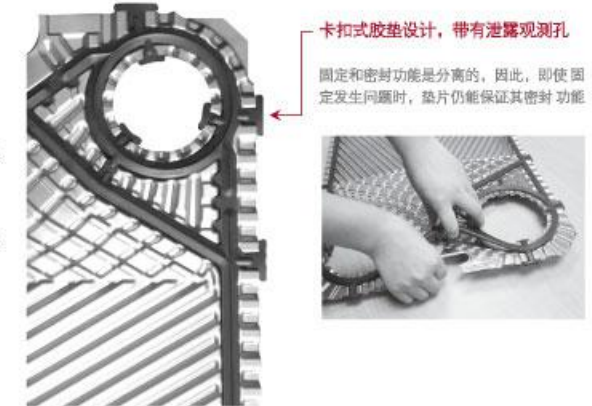
艾克森结合中国市场开发的新产品能够很好的解决水质的问题，目前为止艾克森"A系列"板式换热器共了5大系列，近百种板型，为客户提供更多灵活选择。并且同一板型的板片还可以采用HH板、LL板或HL板(H板是高传热系数高阻力损失的板片，L板是低传热系数低阻力损失的板片)等多种流道排列组合方式，对每一个实际工况都可达到用最小的换热面积实现最高的传热效率、最合理的阻力降、最大的处理量。

Accessen technical group devotes more energy to products so we will develop new plate model every year. As far as now, Accessen can provide 5 series plate including about 100 plate shape. For the same plate, it can be assembled with different arrangement such as HH, HL, LL (H means high coefficient, L means low coefficient). For every condition, Accessen can achieve excellent performance with minimum area and lowest pressure drop, highest coefficient as well as maximum capacity.



## 免粘贴式垫片 / Snap on Gasket without Adhesive

ACCESSEN全系列板式换热器均采用国际上最先进的卡扣式CLIP-ON免粘式垫片，垫片能够嵌在板片的凹槽内并通过垫片爪固定在换热板片上，在装配时不易掉落，装配时无须特殊工具。垫片采用很好的线性密封，最高耐压达到40Bar。垫片设计了很多防止流体混合的检漏措施，当密封垫片失效时，能及时发现并加以改进。同时在换热器停机维护的时候，将垫片取下清洗换热板片即可，避免密封胶条遇到清洗液或其它溶液膨胀而影响使用寿命，重新安装时不需要其它任何特殊工具就可以完成，大大延长了垫片使用时间并降低了维护成本。



The without using adhesive material gasket is the most common sealing gasket currently used around the world. ACCESSEN plate heat exchanger adopts Clip-On gasket and a lot of improvements are made on its original design. The gasket is embedded in the groove of plate and fastened on the plate through the plate claw so that it is not easy to drop and requires no special tools during installation. The gasket has an excellent tightness and longer useful life due to application of roof type structure. The plate heat exchanger that adopts such gasket can withstand the pressure of 40Bar. This gasket also is designed with many leak detection measures to avoid fluids combination. The failure will be detected immediately and be corrected once the gasket fails. During maintenance and service of the heat exchanger, the plate can be cleaned just after removing the gasket. The useful life of sealing rubber will not be affected because of contact with cleaning fluid or other solutions. The washer can be reassembled without requiring any other special tools.

## 先进的结构设计 / Advanced Structural Design

ACCESSEN品牌板式换热器先进的结构设计，具有传热效率高、流通能力强的特点。在实现精确定位结构，维护检修方便的同时，保证了在不拆卸其它的情况下更换冷却器内的任何一张板片。

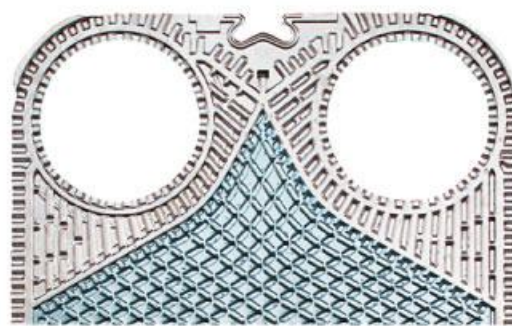
ACCESSEN闭式水冷却器先进的导流结构设计，保证介质均匀分布于整张换热板片，避免了因死区造成的污垢堆积腐蚀后的板片穿孔现象，同时提高传热系数和介质在板片上的流速，产生自冲洗的效果。

The advanced structural design of ACCESSEN closed water cooler, with high heat transfer efficiency, strong flow capacity. Accurate positioning structure, easy maintenance and overhaul, meanwhile, without dismantling when to replace any of the heat exchanger plate the cooler internal.

The advanced structural design of ACCESSEN closed water cooler, to ensure medium uniform distribution in the entire heat transfer plate and avoid perforation, meanwhile to guarantee the operation of flowing.



定位结构  
Positioning structure



导流渠结构  
Diversion channel structure

## 板片的材质和厚度 / Plate Material and Thickness

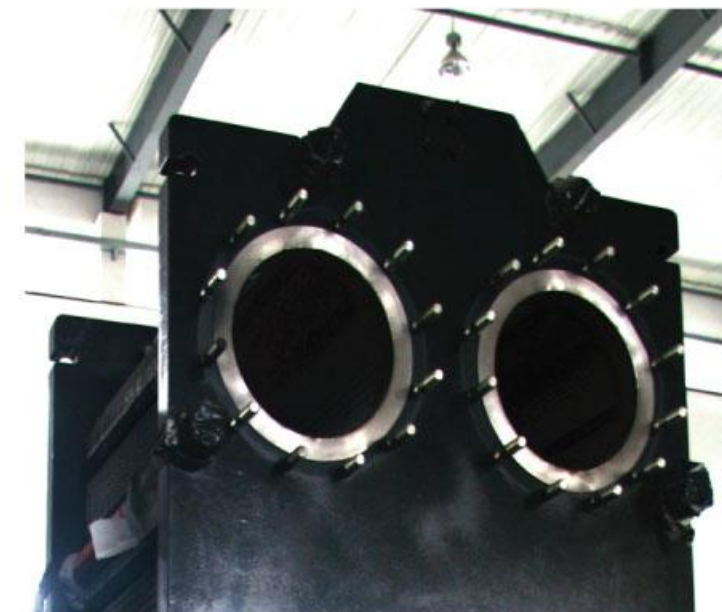
ACCESSEN公司做为国际上能够提供最小温差为1℃的换热设备供应商之一，闭式水冷却器材料均采用国际最知名供应商提供的进口产品，板片整体一次成型，保证了0.5mm厚的换热板片实现两侧压差16Kg时安全运行，达到提高闭式水冷却器传热效率、节约设备投资成本的目的，特别是在免费冷源（河、湖、江、海、废水等）的应用中，具有重要意义。

ACCESSEN as one of the suppliers who have ability to meet the minimum differential temperature of 1°C, the material of closed water cooler are adopting import products from famous international suppliers. High quality raw materials via processing, the whole forming the whole model, to ensure a 0.5mm thick plate, realization safe operation of 16Kg pressure on both sides, improving heat transfer efficiency and saving cost of equipment investment.

## 合金衬套 / Alloy liner

艾克森板式换热器标准接口采用合金衬套，与传统橡胶衬套及其它类型相比，合金衬套能使得换热器内形成一个闭式的不锈钢流体通道，避免其它材质的接口对换热介质的污染，发生腐蚀等，大大延长了其使用寿命。这对于一些高端的应用中保护换热介质是非常重要的，例如水处理、制药、食品、暖通制冷等领域。

All ACCESSEN plate heat exchangers adopt stainless steel sleeve to form an enclosed stainless steel flow passage in the heat exchanger. This will avoid contaminant in the heat exchanging medium which are caused by connections made of other material and erosion. Such measure is very important for heat exchanging medium protection in some high end applications, for example, water treatment, pharmaceutical industry, food industry, HVAC, refrigerating industry, etc.



## 整体式循环水冷却系统集装装置

### Cooling Unit of Open/Closed Circulating Water System

整体式循环水冷却集装装置通常是以膨胀水箱一套、开、闭式给水泵各两台、两台电动滤水器、两台板式换热器为主体，电动阀门、手动阀门、就地温度、压力仪表、传感器和管道按一定的技术规范和合理的工艺流程组装在一起，所形成的独立完整的系统装置。

整体式循环水冷却集装装置由单一设备的现场组装变为由工厂预组装后到现场组合，其特点是最优化专业设计；现场安装方便快捷；结构紧凑；整体布局合理，管道走向及排列简洁美观，设备、管道、阀门布置充分考虑到方便现场安装、运行操作和检修维护的需要，系统运行更为安全，同时艾克森品牌拥有完善的终生保修和全国联保服务网络，让客户无后顾之忧。

整体式循环水冷却系统集装装置依据系统的用途，设计成若干个组件组（模块）或独立系统，分别布置在各自的公共底座上，合成一个系统装置，系统安装完善，主要设备有一备一用的开、闭式水冷却给水泵，一台运行，一台备用，由MCC中心控制，当运行泵故障时，备用泵自动投入运行，在两泵的出口分别装有电动阀门配合转换控制；当膨胀水箱充满水后方能启动泵，膨胀水箱水位由安装在其中的液位计反馈至DCS，膨胀水箱安装在高位层面上，并配有梯型通道和维护平台，膨胀水箱内通常为防腐衬胶处理，或采用不锈钢材质，整体式给水泵流通部分，分别为适合相应水质的金属材料。

在开式水系统的开式水泵的进口前通常装有反冲洗电动滤水器，当安装在电动滤水器上的差压开关检测滤网上的杂质堵塞影响出口流量（压力）要求时，电动滤水器控制装置将向DCS报警。同时启动反冲洗装置和排污阀进行排污；在闭式水系统中，闭式水给水泵的前端通常也安装有反折流式T型或Y型过滤器防止固体杂物进入水泵流道损坏水泵和换热器，在闭式水水质较优的情况下，也可设置冲管、调试用的临时滤网，待调试完毕后拆除，确保给水泵和换热器高效率长寿命工作。

反冲洗电动滤水器也可设置一台，并配以滤水器旁路，以保证在滤水器故障的情况下，整个系统仍能正常运行。

反冲洗电动滤水器配带就地的电控箱，该电控箱能实行就地自动控制，也留有接口，能将信号远传至DCS。

板式换热器一台运行，一台备用，在板式换热器的闭式水和开式水的进出口管道上分别装有温度计、压力表、温度传感器、压力变送器，实时显示温度、压力，同时相关温度、压力信号远传反馈至DCS，实行远程监控和远程操作。同时在板式换热器的闭式水和开式水的进出口管道上分别装有检修用的放水阀门和启动用的放气阀门。

The Cooling Unit of Open/Closed Circulating Water System has following main parts: one expansion tank, two supplying pumps, two electric water filters, and two plate heat exchangers. Besides there are also electric valves, manual valves, temperature meters, pressure meters, transmitter and pipes. They are assembled together according to technical standards and processes, and then come out a whole Cooling Unit of Open/Closed Circulating Water System.

Compared to assemble every part on site, assemble all the parts in factory has following advantages: better design, better assemble, better structure, better layout, better appearance. And engineer can consider the site installation, PHEU operation and maintenance when arrange the layout of equipments, pipes and valves etc.

The Cooling Unit of Open/Closed Circulating Water System can be divided into several groups according to technical standards and processes for different flow rate requirements. The different groups will be installed on their own ground bases and constitute a whole system. For a whole Cooling Unit of Open/Closed Circulating Water System, there should be two supplying pump. One is running, one is stand-by. They are controlled by MCC center. When the running one met problems, the stand-by one will run automatically. The equipped electric valves should be installed on both outlets of the two pumps for interchanging control. When the expansion tank is fulfilled with water, then the pump can be started. The water level of the expansion tank will be sent to DCS by the water level meter installed inside the expansion tank. The expansion tank should be installed in relative high place. And it should be equipped with trapezoid lift and maintenance flat. The inside of the expansion should be lining with anti-rust rubber, or apply material of Stainless steel. The passage of the supplying pump should be made of suitable stainless steel.

In the Cooling Unit of Open Circulating Water System, there should install an electric counter-flushing filter before the supplying pump. When there is too much leavings on the filter, the outlet flow rate or pressure will be affected. Then the pressure drop meter installed on the by-pass of the electric counter-flushing filter will give an alarm signal to DCS. At the same time, the electric counter-flushing filter and blow-down valve will be opened for leavings discharge. In the Cooling Unit of Closed Circulating Water System,

there usually also install a T or Y type counter-flushing filter. It is used to stop the solid objects to enter into and damage pump or heat exchanger. If the water quality is really good, then only a flushing or a temporary filter can be installed. When the commissioning is finished, they can be dismantled.

If there is only one electric counter-flushing filter installed on the Cooling Unit. Then there must be a by-pass. In case there is problem on electric counter-flushing filter, the Cooling Unit of Open Circulating Water System can still work well.

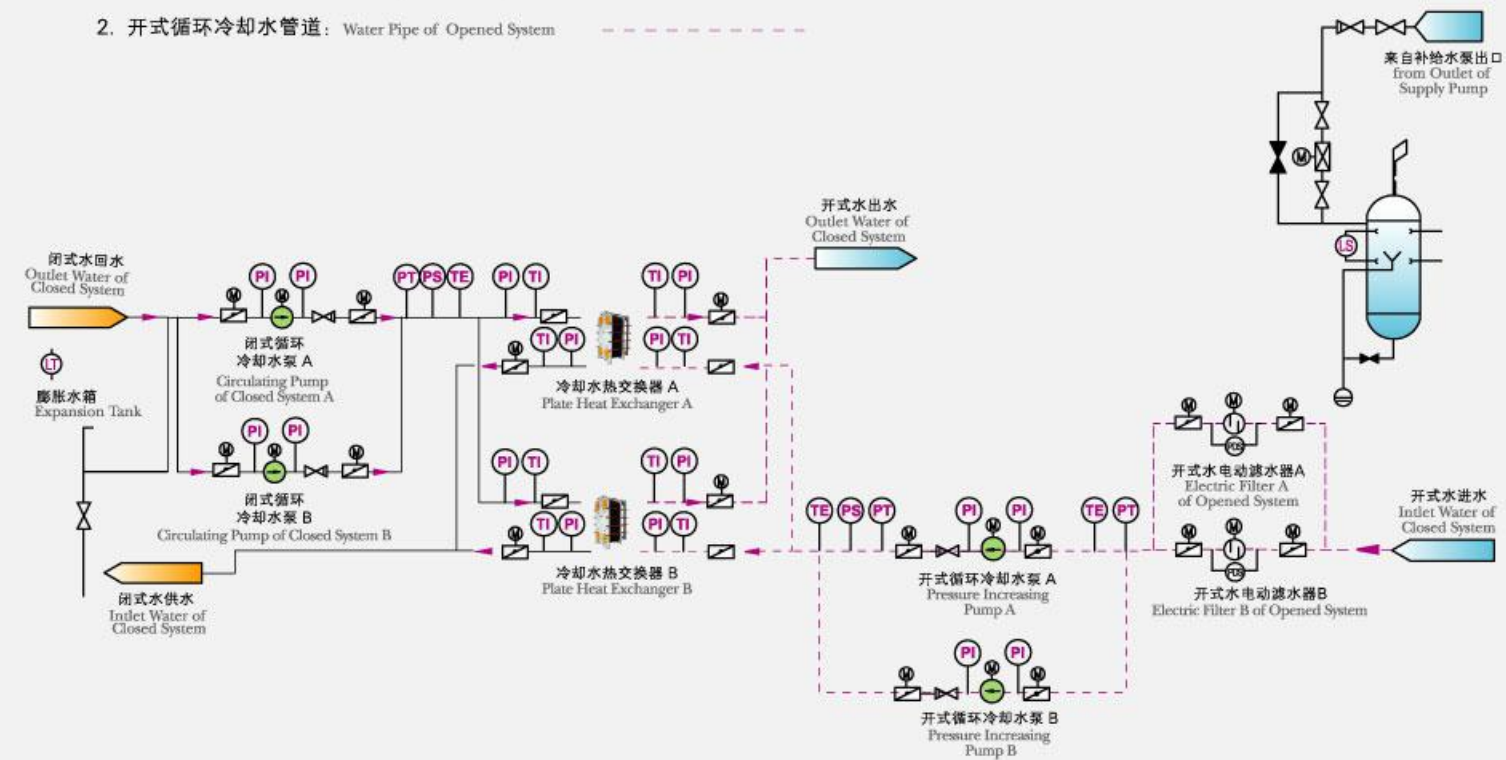
The electric counter-flushing filter should be equipped with on-site control box. And there also should be a connection post to send signals to remote DCS.

The two plate heat exchangers, one is running, the other one is stand-by. On both inlets and outlets of the system, the temperature meters, pressure meters, heat resistances, transmitters, and pressure transducers should be installed. They can show the real-time temperature, pressure and at the same time send the temperature and pressure signals to DCS for remote control. Besides, there also should install the vent valve for starting and bleeder valve for maintenance on the system inlet and outlet.

### 整体开、闭式循环冷却水系统集装装置 Cooling Unit of Open/Closed Circulating Water System Schematic Drawing

说明 (Note):

1. 闭式循环冷却水管道: Water Pipe of Closed System
2. 开式循环冷却水管道: Water Pipe of Opened System



典型业绩 / Advanced Structural Design



内蒙古酸刺沟电厂/闭式水冷却器/AN40L3  
Inner Mongolia Suan-ci-gou electricity generating station



新疆中泰电厂/闭式水冷却器/AN40L3  
Xinjiang Zhongtai electricity generating station



西安灞桥电厂/闭式水集装装置  
Xi'an Ba Qiao electricity generating station



山东烟台海阳核电  
Shandong Yantai Haiyang Nuclear Power Plant

大唐/灞桥电厂 2X300MW  
大唐/马鞍山当涂电厂 2X660MW  
大唐/信阳发电厂 2X660MW  
大唐/辽宁调兵山电厂 2X300MW  
大唐/渭河电厂 2X300MW  
大唐/同煤塔山电厂 2X600MW  
大唐/三峡发电厂 2X600MW  
大唐/洛阳热电厂 3X300MW

华能/河南中原燃气电力 2X350MW  
华能/乌海热电厂 2X300MW  
华能/长春热电厂 2X350MW  
华能/白山煤矸石电厂 2X330MW  
华能/营口电厂 2X330MW

华电/印尼拉法基 2X16.5MW  
华电/新疆哈密热电厂 2X135MW  
华电/丹东金山电厂 2X300MW

国电/延吉热电厂 2X200MW  
国电/菏泽发电厂 2X300MW  
国电/津能滨海热电厂 2X350MW

中电投/南阳热电厂 2X210MW  
中电投/白城电厂 2X600MW

鲁能/山东莱芜电厂 2X330MW  
鲁能/鸳鸯湖电厂 2X660MW

中国技术/印度苏娜拉亚电厂 2X30MW  
中国电工/泰国余热电厂 2X18MW  
中国重型/越南农山电厂 1X30MW  
中国水电/甘肃崇信电厂 2X600MW

华实/天津大港电厂 1X30MW  
华润/唐山曹妃甸电厂 2X300MW  
玖龙纸业/东莞 3X60MW  
玖龙纸业/太仓 3X60MW

山东电力/印度WPLC 6X600MW  
山东魏桥创业/铝电厂 4X330MW  
内蒙古/鄂尔多斯双欣电厂 2X300MW

内蒙古京泰/酸刺沟电厂 2X300MW  
济南钢铁/燃气发电厂  
闸北发电厂 2X600MW

湖北能源/湖北鄂州电厂 2X600MW  
河北建投/宣化热电厂 2X300MW  
河南豫联电厂 2X300MW

投粤电/云南威信发电厂 2X600MW  
浙能/舟山发电厂2期 1X300MW