BROAD CENTRAL AIR CONDITIONING (ABSORPTION LiBr+H_2O)

BROAD XII NON-ELECTRIC CHILLER

Function

Cooling, heating, hot water (dedicatedly or simultaneously)

Application

- Provide chilled/heating water for central air conditioning system
- Produce chilled water over 5℃ and heating water below 95℃

Cooling capacity

233~11,630kW
(66~3,307Rt)

Energy sources

- Natural gas, town gas, biogas
- Gas/oil dual fuel, gas & waste heat hybrid (multiple energy)
- Waste heat from power generation industrial waste streams (steam, hot water, exhaust, etc.)

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About BROAD

BROAD Group was established in 1988, headquartered in Changsha, China. The mission of BROAD Group is “For Humanity's Future ". BROAD is mainly engaged in developing products and services of central air conditioning, air quality, sustainable building and energy service industries. All BROAD technologies are at world's first level, and all BROAD products are essentially optimizing earth's environment and human life.

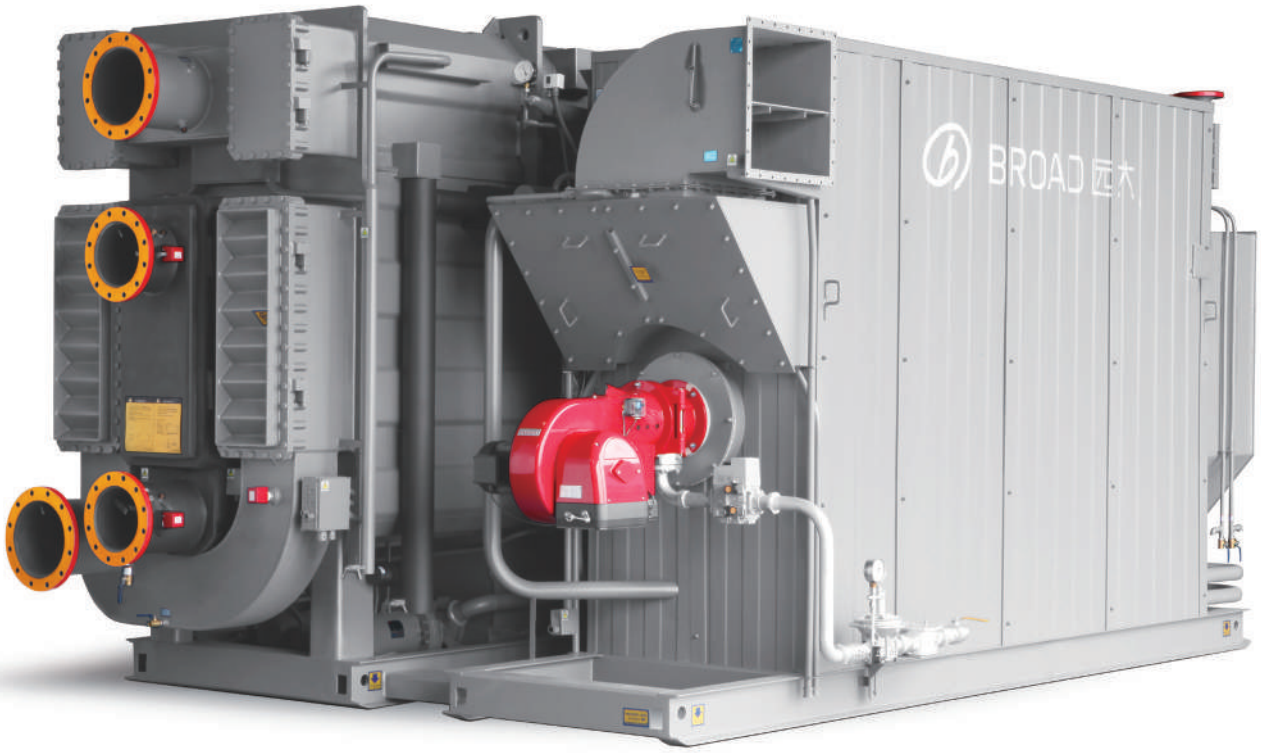
BROAD Air Conditioning Co. Ltd is mainly involved in the R&D, manufacturing and sales of non-electric central air conditioning (Absorption Chillers) powered by natural gas, fuel or waste heat, with packaged water distribution system. Since 1995, BROAD Air Conditioning has been a leader in the absorption chiller technology and is known world-wide is a pioneer in absorption chiller and energy saving technology, with more than 30,000 BROAD chillers units installed in 80+ countries & areas.

BROAD puts 5-7% of its total sales revenue into R&D projects every year, aiming to provide more world class products for customers from around the world. In 1992, BROAD developed the first direct-fired absorption chiller powered by light oil and natural gas in China. Compared with electric chiller, absorption chiller energy efficiency is 2 times higher and can reduce CO_2 emission by 4 times. BROAD developed the world's first exhaust fired absorption chiller in 1999 in a cooperative program with cooperated with DOE USA. In 2015, BROAD successfully developed high efficient maglev centrifugal chiller and up to 2016, BROAD has obtained 120+ patents.

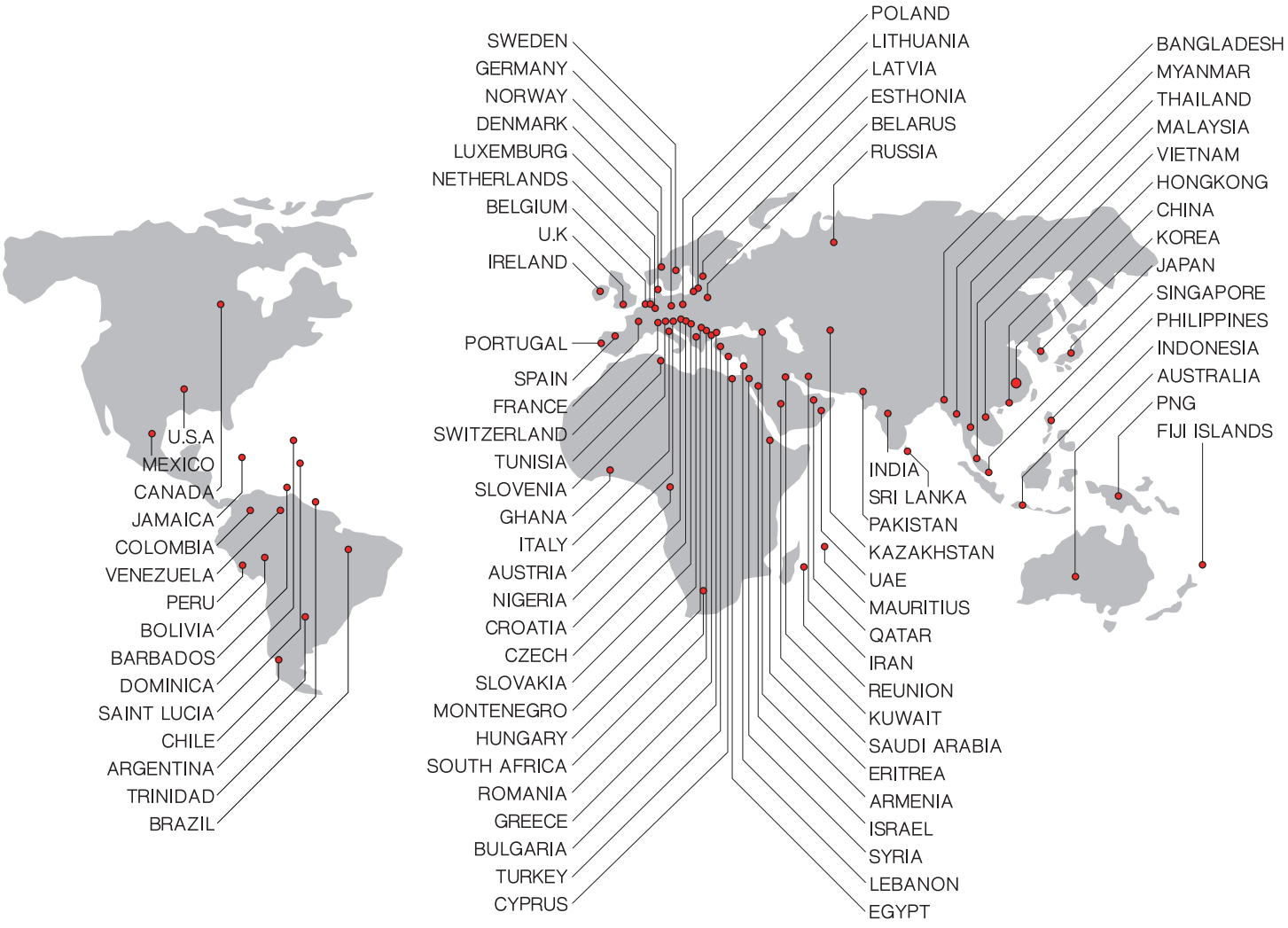
BROAD has established a mature global network in international markets. BROAD has 26 offices in China, and has sets up subsidiary companies, sales and service offices in the USA, France, Australia, India, Pakistan, and Indonesia. BROAD provides value-added professional services in the pre-sale stage, purchasing stage, and after-sale stage for every customer.

With world-class product quality and excellent service, BROAD products have been wildly used in global key projects, such as Shanghai World Expo 2010, USA Qualcomm HQ, South Korea Central Government, Australia Royal Children's Hospital, Russia YANDEX Data Centre, India DLF Cyber City, Pakistan Air Force Base, Saudi-Arabia Jeddah United Tower, amongst many others.

BROAD Headquarters, BROAD Town, China



Over 30,000 units in 80+ countries & areas



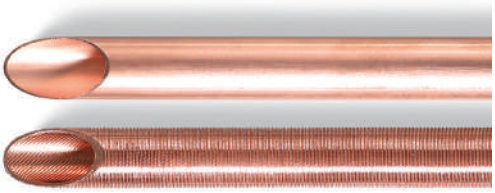
BROAD Chiller Values

Reliability Technology

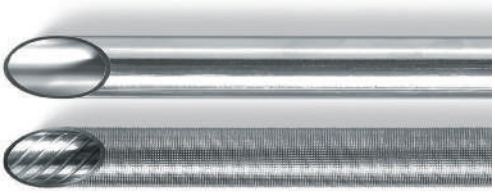
1. Titanium Tubes to Ensure 60 years life span

Known as the best corrossion-resistant metal, titanium was previously only used in aviation and aerospace, human dental implant and bone transplant. Central air conditioning is the heart of a building, and any corrosion or leakage on the thousands of heat-exchange tubes may cause a complete shutdown of the entire building's air conditioning system. To achieve "zero fault" and "the same lifespan as the building" for central air conditioning, BROAD have overcome challenges of high cost and complicated technology by developing titanium-tubed air conditioning, extending the designed lifespan of product to 60 years, and with a market price no more than 20% higher than that of copper-tubed or stainless steel-tubed products, thus providing unparalleled value to customers.

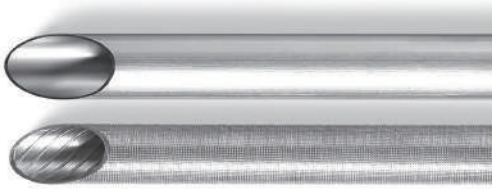
1992~2012 Copper Tube



2012~2016 SS316L Tube



Since 2017 Titanium Tube

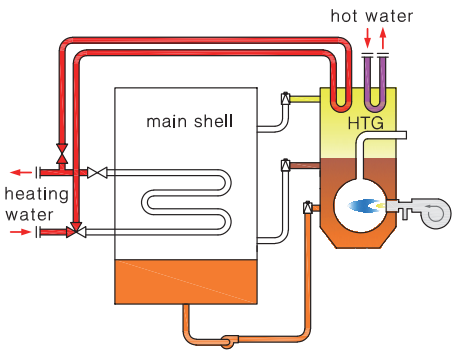


2. Auto decrystallization to prevent LiBr solution crystallization

Solution crystallization had puzzled this industry for many years. To overcome this problem, BROAD developed auto decrystallization technology, which takes simple and reliable measures like temperature difference detection to detect crystallization in time, and complete auto crystallization within just a few minutes, so operational reliability and stability can be improved significantly.

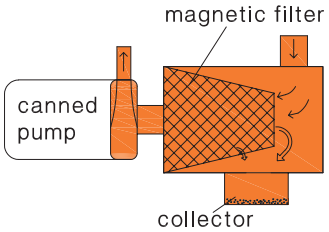
3. Separate Heating technology to ensure life span

BROAD Non-electric chillers can isolate the main shell from HTG completely. When in heating operation mode, the main shell side is disabled, with no rotary part in the HTG side; thus heat loss and abrasion are reduced. Evaporator scaling during heating season is avoided, and the extended life span of the chiller is ensured.



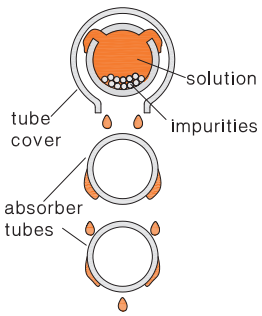
4. Whole chiller filtration to remove impurities

All canned pumps are fitted with a backwash filter, to keep the solution clean for the whole life span of the chiller. Mechanical +magnetic filters are applied to avoid blockage or abrasion of canned pumps completely, so ensuring the life span and stable operation of the chiller. Canned pumps are connected without flange, meaning no risk of leakage, and a maintenance cost saving.



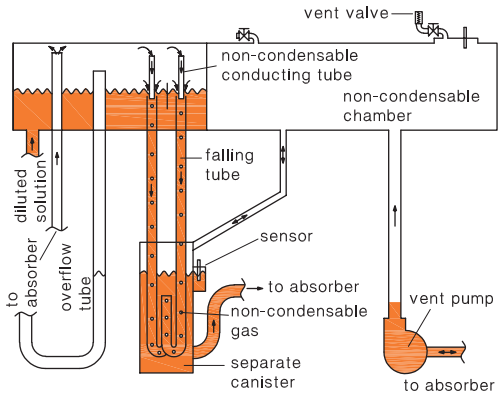
5. Upward spraying to eliminate cooling capacity decrease

Solution sprays upward to ensure no clogging permanently. Compared with conventional random spraying, BROAD chiller solution sprays upward to a baffle and then drops down to heat exchange tubes evenly, so achieving the best heat exchange efficiency.



6. Auto purge & vent system to maintain vacuum

To keep vacuum degree inside the chiller, inline auto purge & vent system is fitted, which can use solution level difference inside to purge non-condensable gas continuously and stably during operation, and vent out selectively, while keeping water vapor and other components inside. Vacuum condition is permanently guaranteed, and the solution will not become metamorphic, so there will be no cooling decrease or corrosion due to vacuum issue, and stable operation and life span of the chiller can be ensured.



7. Flow rate and temperature control to avoid frozen tubes

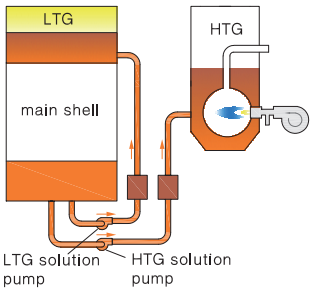
Frozen tubes in evaporator will cause severe damage to chillers: solution will run off, with severe consequences.. Frequent frozen tubes has troubled the central air conditioning industry for a long time, but we are making it history. BROAD chillers have multi flow switches and temperature sensors, which can detect off/low flow rate or low temperature conditions, and will stop cooling and implement protection program immediately, so as to ensure no frozen tubes by 100%.

8. Information Control System (ICS) for unmanned operation

BROAD ICS is designed for unmanned and continuous operation, using conventional automatic control and with fuzzy control programming, including sensors error signal analysis, tacit fault judgement, parts life time calculation and mis-operation correction. The system can realize self-resetting in a short time when faults happen, and distinguish potential faults automatically, to keep the chiller operatioal if there is no key part fault. Among hundreds of faults, only 7 will cause the chiller to shut down, with breakdown rate decreased by 95%, genuine highly automatic control can be realized.

9. Optimized parallel pump system

To control solution circulation of HTG and LTG accurately, parallel solution pump system is applied. In HTG, concentrated solution separate structure is designed to decrease HTG temperature, enhance generation effect and decrease corrosion, so energy is saved and life span can be ensured.



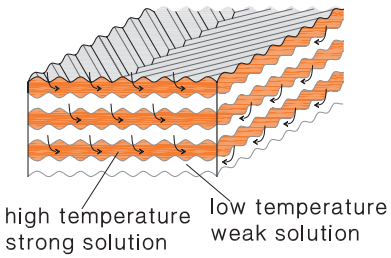
10 The best material to ensure life span

Approximately 90% of our raw material and components (e.g. burners, control parts) are supplied by world-class suppliers according to BROAD's standard, and are continuously improved based on BROAD's requirements. Enamel coating is applied in water box and sheet to resist corrosion, so life span is ensured. In this way, problems such as water quality decrease caused by system corrosion, tube erosion corrosion and filter clogging can be avoided.

Energy Saving Technology

1. Corrosion-resistant plate heat exchanger

In conventional tube-shell heat exchangers, temperature difference is 18~30℃ after heat exchange between the high and low temperature solution. BROAD uses corrosion-resistant 316L stainless steel to fabricate plate-type heat exchangers; with a temperature difference of only 3-6° C after heat exchange, more than 15% of energy can be saved.



2. Eliminating refrigerant overflow to avoid invisible energy waste

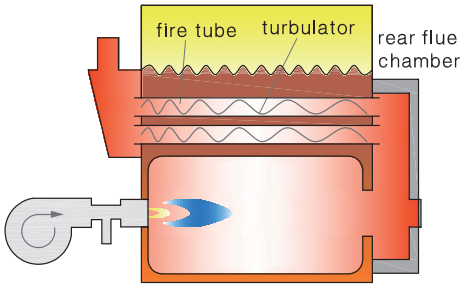
In the situation of excess heat input, cooling load decrease, excessively low chilled water temperature or poor vacuum condition, refrigerant water level will rise and overflow. Energy is wasted without awareness since overflow occurs internally at low cooling load. In BROAD chillers, refrigerant level controller is equipped to detect overflow. When it occurs, heat input will be reduced immediately to avoid invisible energy waste.

3. Quick start & stop technology to save energy

By significantly reducing start-up and dilution downtime to provide cooling/heating earlier, and by shortening the air-conditioning system pump and auxiliary equipment running time, thus saving water system power consumption, reducing operating costs and improving the overall operation efficiency.

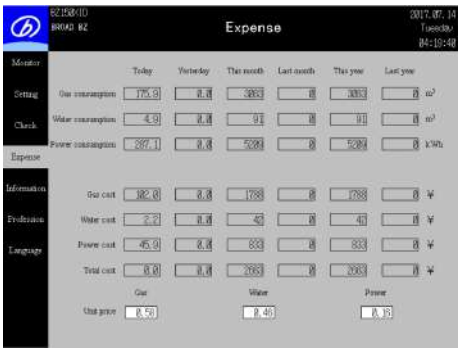
4. Clean combustion for soot-free exhaust

To ensure 100% thorough combustion of fuel by extra-long chamber structure and dry-back rear combustion chamber, fire tubes instead of solution tubes are used, and structure strength is enhanced to ensure life span. Though size of HTG and cost increase, carbon deposition can be cleaned easily to avoid heat exchange efficiency drop, so maintenance cost is also reduced.



5. Energy-saving operation mode and metering

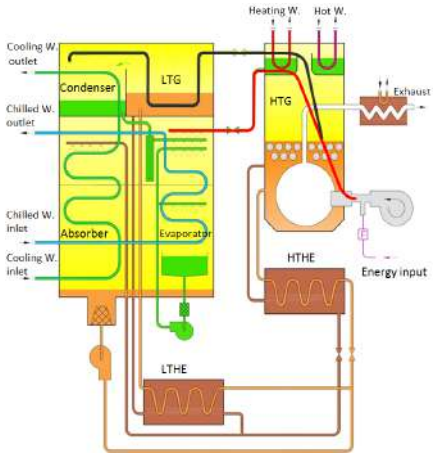
According to ambient temperature, auto adjustment of chilled water outlet temperature can be implemented to avoid energy waste while ensuring comfort. Online consumption of fuel, electricity, water and cost can be recorded and accumulated a wide range of timescales, providing flexible auditing options. High or low consumption can reflect chiller's performance. Repairing or maintenance instruction will be sent in advance.



Money-saving Technology

1. Condensate Heat Recovery benefits

BROAD invented Condensate Heat Recovery technology, which provides free cooling by using condensate from heater when heating is provided, while free heating can be obtained when cooling is provided, representing significant energy savings and reduced operation costs.



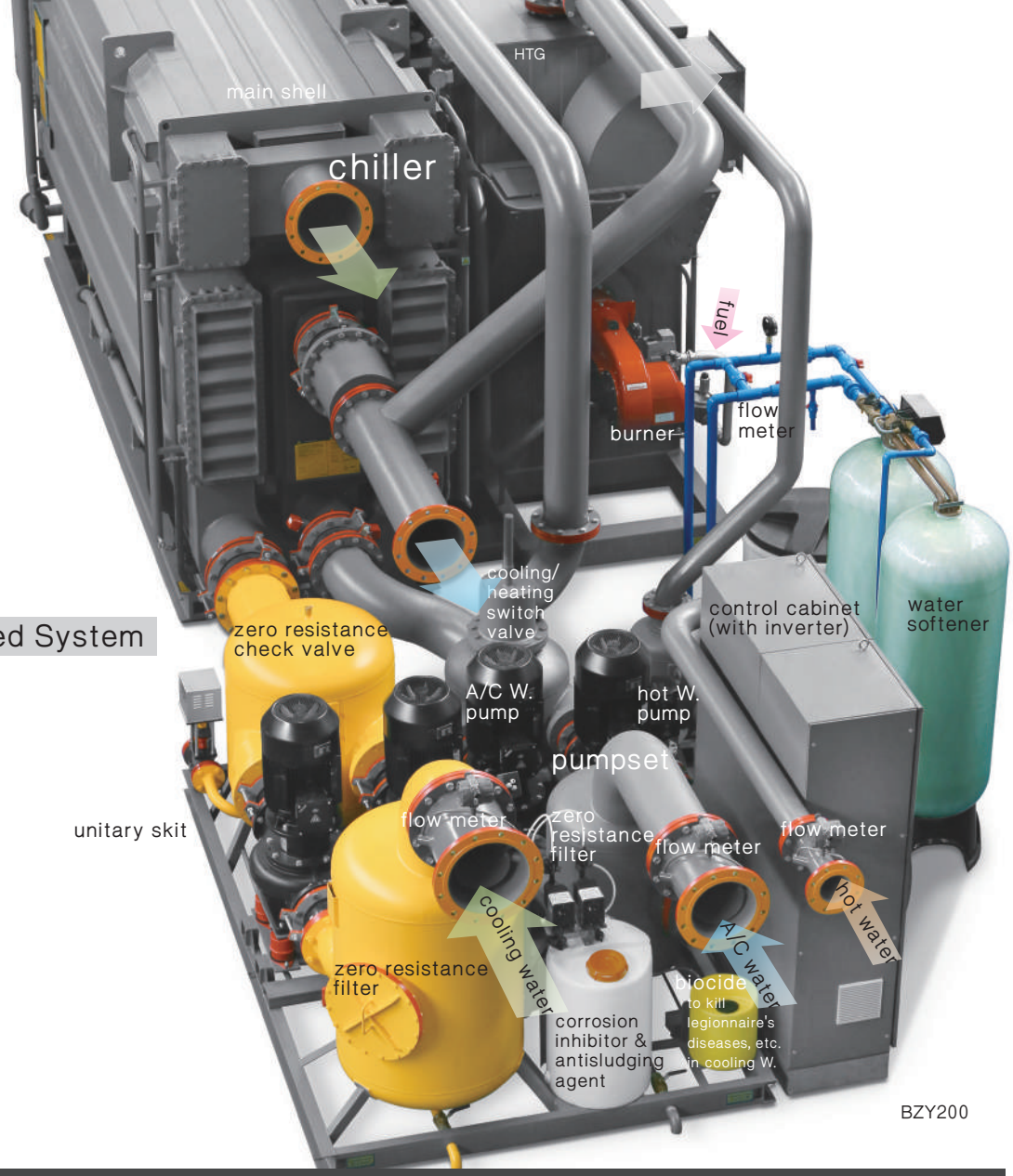
2. Three functions in one machine to save investment

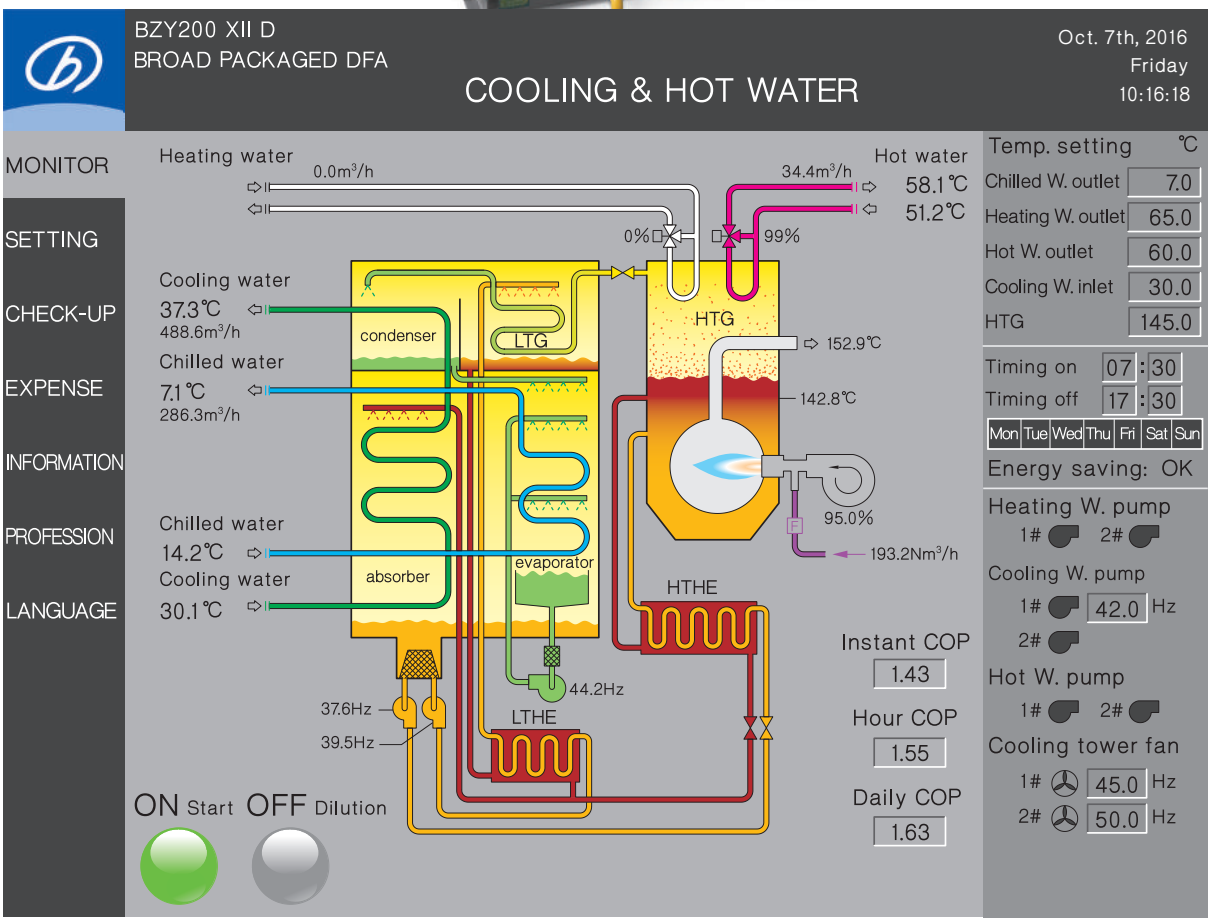
BROAD Non-electric Chiller can provide cooling, heating and sanitary hot water in one machine.Compared with electric chiller+boiler solution, customers do not need to invest in a boiler, separate boiler machine room or power facilities, thus saving management, operation and maintenance costs.

3. Prospective design to enable convenient further expansion

In new model design stage, future reformation and upgrade are fully considered, so after many years operation, control upgrade, function reform or energy shift can be conveniently realized. All easily worn and sealing parts are standard issue and will not be changed in new generation chillers. Old generation chillers can have enchanced performance after upgrade, so huge investment can be saved in replacement.

BROAD Packaged System





Energy Saving Comparison

Compared with conventional machine room arrangements, BROAD packaged pumpset system reduces the rated power demand by 50-70%, and the operating electricity consumption by 70-85% (the electricity for pumpset only amounts to 2-5% of the rated cooling capacity.)

Examples on power consumption comparison

· BY50 type (pumpset for 582kW/165Rt chillers)

Power consuming parts	Conventional machine room type power demand	Packaged pumpset	
		power demand	Operating power consumption
Cooling water pump	30 kW	7.5 kW	2~7.5 KW
Cooling tower fan	11 kW	11 kW	3~11 KW
Chilled/heating W pump	22 kW	7.5 kW	7.5 kW
Total electricity/cooling capacity	63 kW	26 kW	17 kW (annual)
	10.8%	4.47%	2.92%
Annual operating consumption	**190 MWh**	**52 MWh (power saving is 79%)**	

· BY300 type (pumpset for 3489kW/992Rt chillers)

Power consuming parts	Conventional machine room type power demand	Packaged pumpset	
		power demand	Operating power consumption
Cooling water pump	180 kW	44 kW	11~44 KW
Cooling tower fan	37 kW	37 kW	6~37 KW
Chilled/heating W pump	110 kW	60 kW	30~60 kW
Total electricity/cooling capacity	327 kW	141 kW	100 kW (annual)
	9.4 %	4.04 %	2.86%
Annual operating consumption	**1000 MWh**	**300 MWh (power saving is 76 %)**	

· BY1000 type (pumpset for 11630kW/3307Rt chillers)

Power consuming parts	Conventional machine room type power demand	Packaged pumpset	
		power demand	Operating power consumption
Cooling water pump	550 kW	180 kW	30~180 KW
Cooling tower fan	110 kW	110 kW	20~110 KW
Chilled/heating W pump	440 kW	180 kW	90~180 kW
Total electricity/cooling capacity	1100 kW	470 kW	250 kW (annual)
	9.5 %	4.04 %	2.15%
Annual operating consumption	**3300 MWh**	**750 MWh (power saving is 82 %)**	

Notes:
1. Calculation of annual operating power consumption is based upon cooling operation, 5 months per year and 20 hours per day.
2. Operating consumption is the result of using inverters and shifting between two pumps, while the power consumption of conventional pump system equals to the power demand.

Why electricity saving ?

· Saving from design:
1. Many innovations reduce the resistance from filters, valves and piping to almost zero.
2. Specially designed pumps optimize head and flow rate to system design.

· Saving from operation:
1. BROAD leads the world in inverter control system design and operation. Standard designs incorporate inverter-controlled cooling water pump(s) and cooling tower fan(s) which are automatically adjusted according to load and ambient temperature.
2. Two pumps combined or separate operation by software analyzer.
3. Actual power consumption during operation is 30-50% of the rated design.

International Certificates

BROAD is the only absorption manufacturer in the world who has obtained Quality Management System, Environmental Management System and safety certificates in Europe and USA for complete range of its products.

Certificate

Standard GB/T 19001-2008/ISO 9001:2008

Certificate Registr. No. 01 100 79240/01

Certificate Holder: BROAD AIR CONDITIONING 远大空调有限公司

BROAD Air Conditioning Co., Ltd.
Organization Code: 745922560
Registration Address: BROAD Town, Changsha City, Hunan Province 410138, P. R. China
Operation Address: same as above

Scope: Design, Manufacturing, Sales and Service of Non-electrical Air Conditioning Systems and Pumpset Systems

Proof has been furnished by means of an audit that the requirements of GB/T 19001-2008/ISO 9001:2008 are met.

Validity: The certificate is valid in conjunction with the main certificate from 2015-04-01 until 2018-03-31.

This certificate information can be searched on CNCA official website http://www.cnca.gov.cn

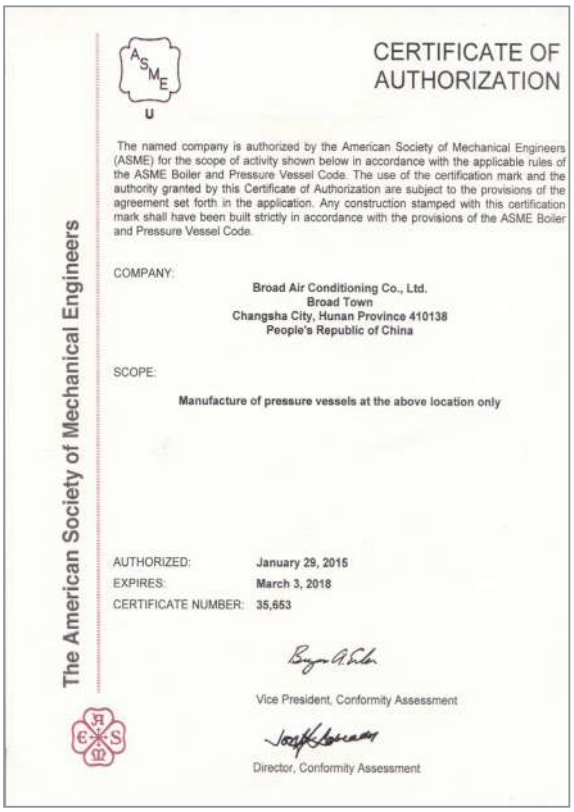
2015-03-26

TÜV Rheinland Cert GmbH
Am Grauen Stein 51105 Köln

DAkkS

www.tuv.com

TÜVRheinland®
Precisely Right.



CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

The American Society of Mechanical Engineers

COMPANY:

Broad Air Conditioning Co., Ltd.
Broad Town
Changsha City, Hunan Province 410138
People's Republic of China

SCOPE:

Manufacture of pressure vessels at the above location only

AUTHORIZED: **January 29, 2015**
EXPIRES: **March 3, 2018**
CERTIFICATE NUMBER: **35,653**

Vice President, Conformity Assessment

Director, Conformity Assessment

SGS

Certificate CN06/00089.02

BROAD Air Conditioning Co., Ltd.

Broad Town, Changsha City, Hunan Province, P.R. China

has been assessed and certified as meeting the requirements of

ISO 14001:2004

For the following activities

Design, Manufacturing, Sales of Packaged Power- Efficient Chiller, Non- electrical Air Conditioning Systems and Pumpset Systems

This certificate is valid from 15 September 2010 until 15 September 2018 and remains valid subject to satisfactory surveillance audits. Recertification audit due a minimum of 60 days before the expiration date. Issue 7. Certified since 18 September 2006

Multiple certificates have been issued for this scope. The main certificate is numbered CN06/00089.00

Authorised by

SGS United Kingdom Ltd
Rossmore Business Park Ellesmere Port Cheshire CH65 3EN UK
t +44 (0)151 350-6666 f +44 (0)151 350-6600 www.sgs.com

SGS EHS 04 0311

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SYSTEM CERTIFICATION ISO 14001 SGS

UKAS MANAGEMENT SYSTEMS 0005

SGS

THE NATIONAL BOARD OF BOILER & PRESSURE VESSEL INSPECTORS

Certificate of Authorization to Register

This is to certify that

Broad Air Conditioning Co., Ltd.
Broad Town
Changsha City, Hunan Province 410138
PEOPLES REP/CHINA

is authorized to apply the "NB" mark and register boilers, pressure vessels or other pressure retaining items with the National Board.

The scope of Authorization is limited to items manufactured in accordance with:

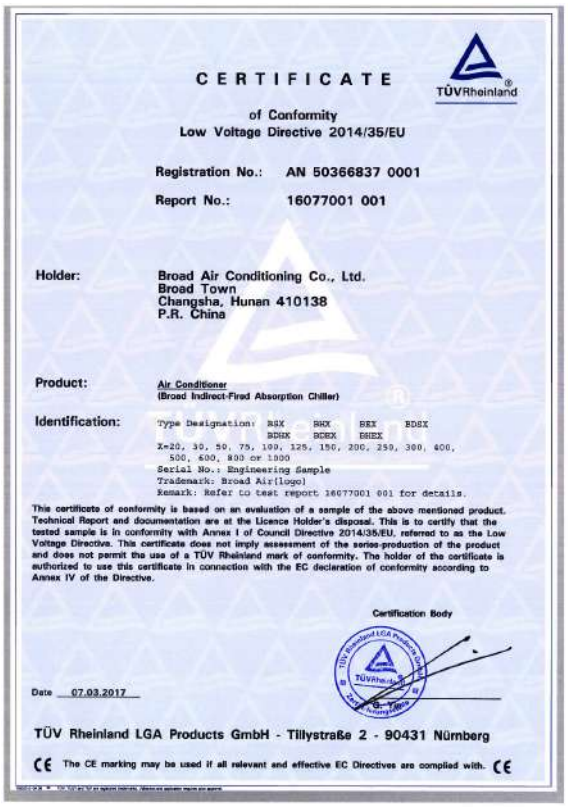
ASME Designator(s): *U*

ISSUE DATE: **February 24, 2015**

This Certificate of Authorization to Register will remain in effect as long as the manufacturing organization holds a valid Certificate of Authorization issued by the American Society of Mechanical Engineers.

Executive Director

NB-107 Rev. 9



CERTIFICATE

TÜVRheinland

of Conformity
Low Voltage Directive 2014/35/EU

Registration No.: AN 50366837 0001

Report No.: 16077001 001

Holder: Broad Air Conditioning Co., Ltd.
Broad Town
Changsha, Hunan 410138
P.R. China

Product: Air Conditioner
(Broad Indirect-Fired Absorption Chiller)

Identification: Type Designation: BSX BHX BEX BDSX
BDHX BCEX BSEX
X=20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400,
500, 600, 800 or 1000
Serial No.: Engineering Sample
Trademark: Broad Air(logo)
Remark: Refer to test report 16077001 001 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with Annex I of Council Directive 2014/35/EU, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex IV of the Directive.

Certification Body

Date 07.03.2017

G. Yin

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

CERTIFICATE

TÜVRheinland

of Conformity
Low Voltage Directive 2014/35/EU

Registration No.: AN 50367442 0001

Report No.: 16077002 001

Holder: Broad Air Conditioning Co., Ltd.
Broad Town
Changsha, Hunan 410138
P.R. China

Product: Air Conditioner
(Broad Direct-Fired Absorption Chiller/Heater)

Identification: Type Designation: BZX BZEX BZHX BZXX BZHEX
X=20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400,
500, 600, 800 or 1000
Serial No.: Engineering Sample
Trademark : Broad Air(logo)
Remark: Refer to test report 16077002 001 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with Annex I of Council Directive 2014/35/EU, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex IV of the Directive.

Certification Body

Date 07.03.2017

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

CERTIFICATE

TÜVRheinland

of Conformity
Low Voltage Directive 2014/35/EU

Registration No.: AN 50367663 0001

Report No.: 16077003 001

Holder: Broad Air Conditioning Co., Ltd.
Broad Town
Changsha, Hunan 410138
P.R. China

Product: Air Conditioner
(Broad Outdoor Packaged Absorption Chiller)

Identification: Type Designation: BZYX BGYX BSYX BHYX
X=20, 30, or 50
Serial No.: Engineering Sample
Trademark : Broad Air(logo)
Remark: Refer to test report 16077003 001 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with Annex I of Council Directive 2014/35/EU, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex IV of the Directive.

Certification Body

Date 07.03.2017

G. Yin

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

CERTIFICATE

TÜVRheinland

of Conformity
EC Council Directive 2006/42/EC
Machinery

Registration No.: AM 50366833 0001

Report No.: 16077001 001

Holder: Broad Air Conditioning Co., Ltd.
Broad Town
Changsha, Hunan 410138
P.R. China

Product: Air Conditioner
(Broad Indirect-Fired Absorption Chiller)

Identification: Type Designation: BSX BHX BEX BDSX
BDHX BCEX BSEX
X=20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400,
500, 600, 800 or 1000
Serial No.: Engineering Sample
Trademark: Broad Air(logo)
Remark: Refer to test report 16077001 001 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. This is to certify that the tested sample is in conformity with all provision of Annex I of Council Directive 2006/42/EC, referred to as the Machinery Directive. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex II of the Directive.

Certification Body

Date 07.03.2017

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

CERTIFICATE

TÜVRheinland

of Conformity
EC Council Directive 2006/42/EC
Machinery

Registration No.: AM 50367429 0001

Report No.: 16077002 001

Holder: Broad Air Conditioning Co., Ltd.
Broad Town
Changsha, Hunan 410138
P.R. China

Product: Air Conditioner
(Broad Direct-Fired Absorption Chiller/Heater)

Identification: Type Designation: BZX BZEX BZEX BZEX BZHEX
X=20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400, 500, 600, 800 or 1000
Serial No.: Engineering Sample
Trademark : Broad Air(logo)
Remark: Refer to test report 16077002 001 for details.

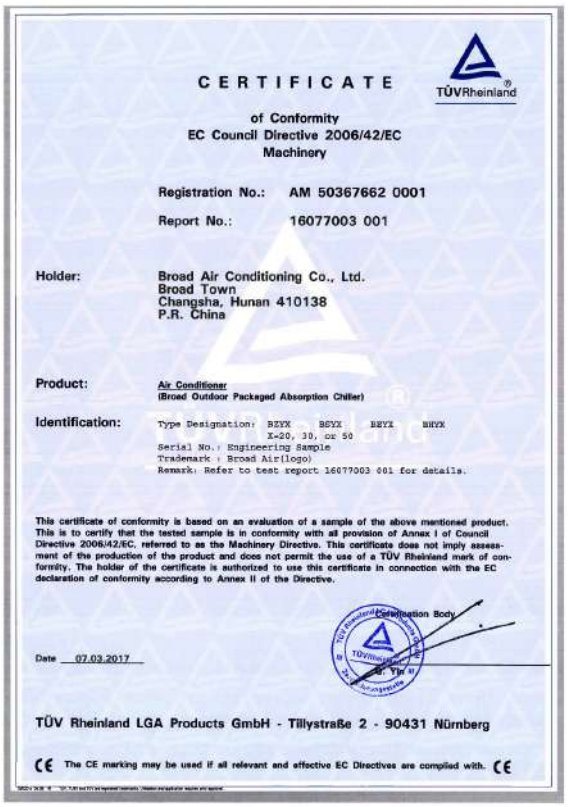
This certificate of conformity is based on an evaluation of a sample of the above mentioned product. This is to certify that the tested sample is in conformity with all provision of Annex I of Council Directive 2006/42/EC, referred to as the Machinery Directive. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex II of the Directive.

Certification Body

Date 07.03.2017

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE



CERTIFICATE

TÜVRheinland

of Conformity
EC Council Directive 2006/42/EC
Machinery

Registration No.: AM 50367662 0001

Report No.: 16077003 001

Holder: Broad Air Conditioning Co., Ltd.
Broad Town
Changsha, Hunan 410138
P.R. China

Product: Air Conditioner
(Broad Outdoor Packaged Absorption Chiller)

Identification: Type Designation: BZYX BEYX BEYX BHYX
X=20, 30, or 50
Serial No.: Engineering Sample
Trademark : Broad Air(logo)
Remark: Refer to test report 16077003 001 for details.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. This is to certify that the tested sample is in conformity with all provision of Annex I of Council Directive 2006/42/EC, referred to as the Machinery Directive. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex II of the Directive.

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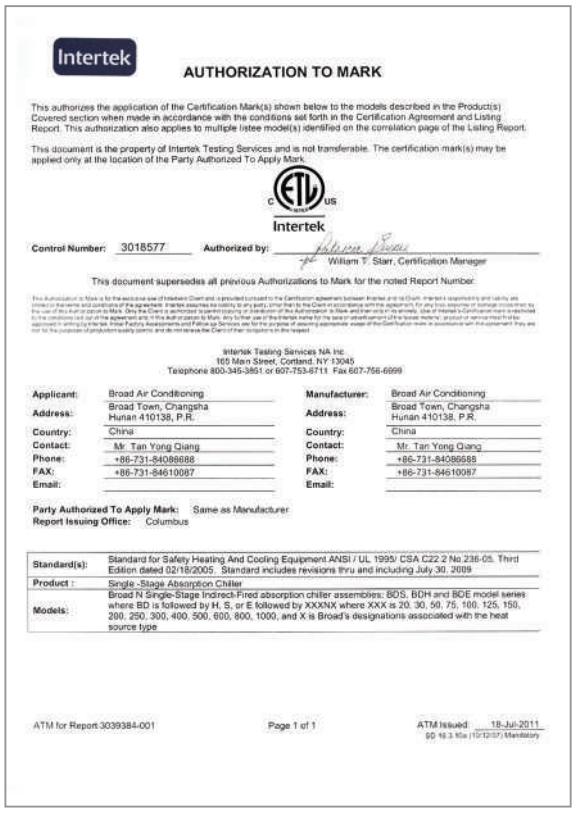

Intertek

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

c ETL us Intertek

Control Number: 3018577 Authorized by: William T. Starr, Certification Manager

This document supersedes all previous Authorizations to Mark for the noted Report Number

Intertek Testing Services NA Inc.
165 Main Street, Cortland, NY 13045
Telephone 800-345-3851 or 607-753-6711 Fax 607-756-6699

Applicant:	Broad Air Conditioning	Manufacturer:	Broad Air Conditioning
Address:	Broad Town, Changsha Hunan 410138, P.R.	Address:	Broad Town, Changsha Hunan 410138, P.R.
Country:	China	Country:	China
Contact:	Mr. Tan Yong Qiang	Contact:	Mr. Tan Yong Qiang
Phone:	+86-731-84086688	Phone:	+86-731-84086688
FAX:	+86-731-84610087	FAX:	+86-731-84610087
Email:		Email:	

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Columbus

Standard(s):	Standard for Safety Heating And Cooling Equipment ANSI / UL 1995/ CSA C22.2 No.236-05, Third Edition dated 02/18/2005. Standard includes revisions thru and including July 30, 2009
Product :	Single -Stage Absorption Chiller
Models:	Broad N Single-Stage Indirect-Fired absorption chiller assemblies: BDS, BDH and BDE model series where BD is followed by H, S, or E followed by XXXNX where XXX is 20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400, 500, 600, 800, 1000, and X is Broad's designations associated with the heat source type

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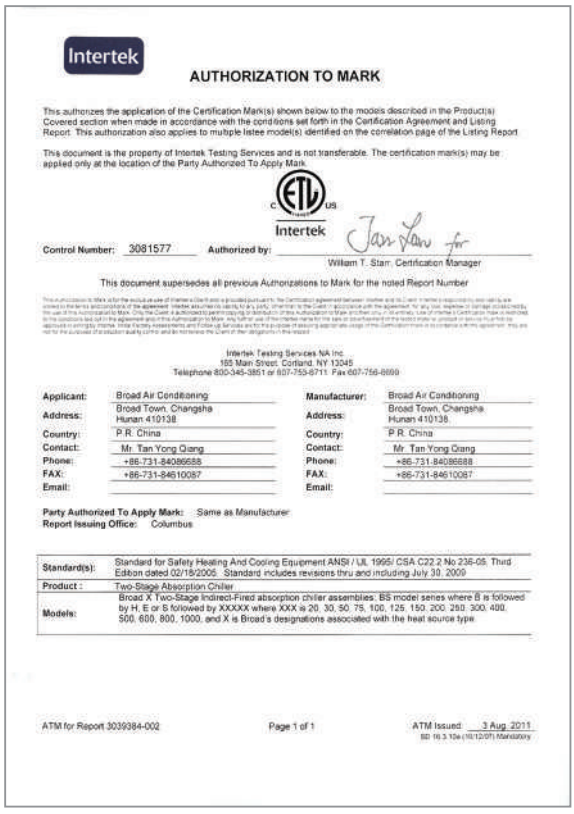

Intertek

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Control Number: 3081577 Authorized by: William T. Starr, Certification Manager

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165 Main Street, Cortland, NY 13045
Telephone 800-345-3851 or 607-753-6711 Fax 607-756-6699

Applicant:	Broad Air Conditioning	Manufacturer:	Broad Air Conditioning
Address:	Broad Town, Changsha Hunan 410138	Address:	Broad Town, Changsha Hunan 410138
Country:	P.R. China	Country:	P.R. China
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Phone:	+86-731-84086688	Phone:	+86-731-84086688
FAX:	+86-731-84610087	FAX:	+86-731-84610087
Email:		Email:	

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Columbus

Standard(s):	Standard for Safety Heating And Cooling Equipment ANSI / UL 1995/ CSA C22.2 No.236-05, Third Edition dated 02/18/2005. Standard includes revisions thru and including July 30, 2009
Product :	Two-Stage Absorption Chiller
Models:	Broad X Two-Stage Indirect-Fired absorption chiller assemblies: BS model series where S is followed by H, E or S followed by XXXXX where XXX is 20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400, 500, 600, 800, 1000, and X is Broad's designations associated with the heat source type

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For more information, please refer to brochure "BROAD International Certificates".

Application & Cases

Direct-fired Chiller

Direct Fired Chiller

Seoul Signature Tower

A twin-tower with construction area of 100,000 m2. Developed by Ascendas from Singapore upon LEED standard and it represents the top level in office building.

Location: Seoul, Korea

Cooling capacity: 6,700kW

Direct fired chiller * 2 units

Burj Rafal Hotel Kempinski

One of the highest towers in Saudi Arabia, the skyscraper has about 350 rooms , with 5 Star luxury hotel Burj Rafal Hotel Kempinski.

Location: Riyadh, K.S.A

Cooling capacity: 19,364kW

Direct fired chiller * 5 units

Hong Kong Theme Park

It is an incorporated company jointly owned by the most famous theme park company and the Government of Hong Kong, founded in 1999. It is the first theme park in China, as well as the second one in Asia from this company.

Location: Hong Kong, China

Cooling capacity: 22, 678kW

Direct fired chiller * 6 units

College of New Jersey

TCNJ was established in 1855 by an act of the New Jersey Legislature. It is a highly selective institution, with a stated mission to keep New Jersey's most talented students in-state for higher education.

Location: New Jersey, USA

Cooling capacity: 1,163kW

Direct fired chiller * 1 unit

Indirect-fired Chiller

Exhaust & Hot water type-CHP

Royal Children's Hospital

As a major specialist paediatric hospital in Victoria, the Royal Children's Hospital provides a full range of clinical services, tertiary care and health promotion and prevention programs for children and young people.

Location: Melbourne, Australia

Cooling capacity: 2,550kW

Exhaust & hot water type chiller * 2 units

Princeton University

A private Ivy League research university in Princeton. Founded in 1746 in Elizabeth as the College of New Jersey, Princeton is the fourth-oldest institution of higher education in the United States

Location: New Jersey, USA

Cooling capacity: 2,326kW

Exhaust & hot water type chiller * 2 units

Izmir Airport

Izmir Adnan Menderes Airport is an international airport serving Izmir and most of the surrounding province in Turkey. It is named after former Turkish prime minister Adnan Menderes.

Location: Izmir, Turkey

Cooling capacity: 10,816kW

Exhaust & hot water type chiller * 5 units

Treetops Executive Residences

A luxurious resort-style apartment in Singapore, which is also an eco-friendly Green Mark certified hotel awarded Green Building by the ASEAN in 2014.

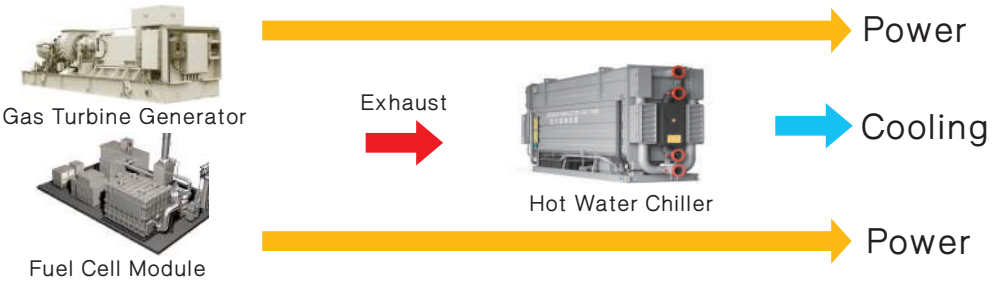
Location: Singapore

Cooling capacity: 977kW

Exhaust & hot water type chiller * 1 unit

Indirect-fired Chiller

Exhaust type



Colombo Shopping Mall

This is the largest shopping center in Lisbon in Portugal with high visibility. The building is the local landmark because of the luxurious and elegant architecture style.

Location: Lisbon, Portugal

Cooling capacity: 3,600kW

Exhaust type chiller * 2 units

University of California

This is a public university system in the U.S. state of California. It has 10 campuses, a combined student body of 251,700 students, 21,200 faculty members. They first used fuel cells to generate electriciy around the world.

Location: California, USA

Cooling capacity: 2,117kW

Exhaust type chiller * 2 units

Q Telecommunications Company

It is an American multinational semiconductor and telecommunications equipment company that designs and markets wireless telecommunications products and services.

Location: California, United States

Cooling capacity: 17,000kW

Exhaust type chiller * 3 units

Palma Hospital

Palma Hospital was opened in December 2001 and considered to be one of the most advanced hospitals in Spain in terms of technology.

Location: Baleares, Spain

Cooling capacity: 1,767kW

Exhaust type chiller * 1 unit

Indirect Fired Chiller

Hot water type

Industrial Plant

Jacket water of gas ingine

Hot Water

Hot Water Chiller

Cooling

University of Ulm, Baden-Wurttemberg

The university was founded in 1967 and focuses on natural sciences, medicine, engineering sciences, mathematics, economics and computer science. it is one of the youngest public universities in Germany.

Location: Baen-Wurttemberg, Germany

Cooling capacity: 4,700kW

Hot water type chiller * 1 unit

Melbourne International Airport

Known as Tullamarine Airport, it is the primary airport serving the city of Melbourne, and the second busiest airport in Australia.

Location: Melbourne, Australia

Cooling capacity: 6,384kW

Hot water type chiller * 2 units

BMZ Steel Work

This is a Belarusian company operating in the steel industry, centred in Zhlobin. At present the plant has a possibility to produce 1 100 000 mt of steel, 250 000 mt of structural rolled product and 500 000 mt of bars.

Location: Gomel, Belarus

Cooling capacity: 8,800kW

Hot water type chiller * 10 units

Korea Government Centre

This is a renovation for Korea central government buildings including energy department, financial department, Ministry of the Environment etc.

Location: Seoul, Korea

Cooling capacity: 11,780kW

Hot water type chiller * 5 units

Indirect Fired Chiller

Steam type

Power Plant

Steam Boiler

Steam

Steam Chiller

Cooling

Park Hyatt Busan Hotel

Located in the heart of the city's upscale shopping, cultural and beach destination Haeundae, Park Hyatt Busan is a luxurious and intimate and residential-style hotel.

Location: Busan, Korea

Cooling capacity: 3,512kW

steam type chiller * 2 units

Columbia University

It was established in 1754, and it is the oldest institution of higher learning in New York, the fifth oldest in the USA, and a private Ivy League research university.It is often cited as one of the world's most prestigious universities

Location: New York, USA

Cooling capacity: 6,676kW

steam type chiller * 2 units

Boehringer Ingelheim

It was founded in 1885 by Albert Boehringer in Ingelheim am Rhein, Germany. The Boehringer Ingelheim group is one of the world's 20 leading pharmaceutical companies.

Location: Warthausen, Germany

Cooling capacity: 4,650kW

steam type chiller * 1 unit

Hexsion Chemicals

Hexsion specialty chemicals in the world's largest producer of binder, adhesive, coating and ink resins for industrial applications.

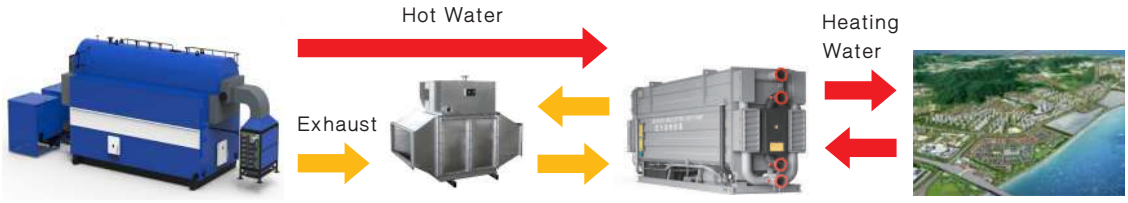
Location: SokoloV, Czech

Cooling capacity: 4,650kW

steam type chiller * 1 unit

Absorption Heat Pump

Hot water type



Grenaa Biomass Heating Plant

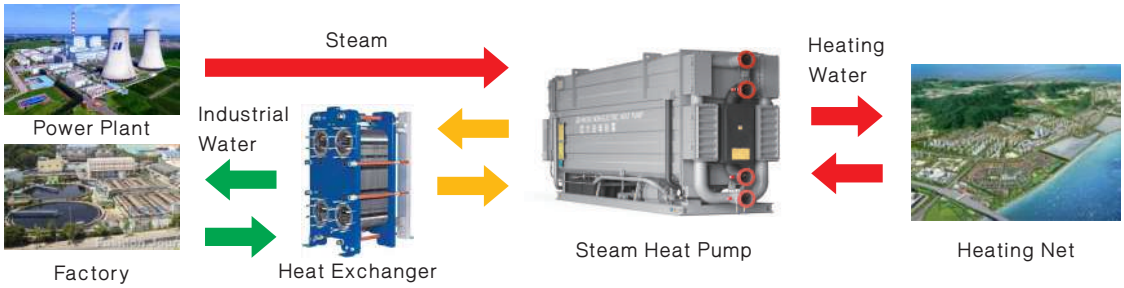
The Grenaa CHP plant was built in 1992 and supplies district heating to Grenaa heating plant as well as process steam to companies that use steam in production. The plant is a multi-fuel fired combined heat/power station.

Location: Grenaa City, Denmark

Heating capacity: 9,720kW

Hot water type heat pump * 2 units

Steam type



Banwol ECO Park

Banwol Industrial Park is a large-scale green industrial park planned by the Government of South Korea, which attracts more than 6,000 enterprises.

Location: Ansan, Korea

Heating capacity: 55,000kW

Steam type heat pump * 4 units

Bundang Power Plant

Located in Seongnam City, Kyeonggi Province, it is a gas-steam combined cycle cogeneration plant with total installed capacity 100 MW.

Location: Seongnam, Korea

Heating capacity: 31,068kW

Steam type heat pump * 2 units

Condensate Heat Recovery Chiller

Direct Fired Chiller-with How Water
Condensate Heat Recovery

PT Agrinesia Raya

This is the largest food producer and the primary user of taro flour in Bogor. In line with the vision of the company namely PT. Agrinesia Raya made the cake of world-class Pastry & with comfort, satisfaction and happiness.

Location: Bogor, Indonesia
Cooling capacity: 496kW
Hot water capacity: 140kW
Gas direct fired type chiller * 1 unit

Jiangling Motors

A national pilot innovative enterprise and national vehicle export base, this is a key player in China's automotive industry, with commercial vehicles its core competitive output.

Location: Nanchang, China
Cooling capacity: 5,000kW
Hot water capacity: 4,800kW
Gas direct fired type chiller * 1 unit

Luoshanhu Water Park

One of the most famous water parks in China,covering an area of nearly 400 acres, with 15 large facilities and a number of state-of-the-art aquatic amusement systems and equipment.

Location: Guilin, China
Cooling capacity: 2326kW
Hot water capacity: 2511kW
Multi-energy type chiller * 1 unit

Wuhu Conch Hospital

The hospital covers an area of 7.7 hectares, with a construction area of 170,000 square meters, and it has a total 1000 beds. Also it is the designated hospital for medical insurance.

Location: Nanchang, China
Cooling capacity: 9,324 kW
Hot water capacity: 3,200kW
Gas direct fired type chiller * 3 units

There are more than 600 service engineers with bachelor or higher degrees in BROAD, with over 100 of them are serving overseas. BROAD have set up service branches in all capital cities of every province in China, and overseas service agencies or resident service personnel take the service responsibility for international markets such as the United States, Europe, Russia, Singapore, Australia, South Korea, Indonesia, Thailand, Saudi Arabia, Iran, India, Pakistan, Mexico, Trinidad, etc. BROAD provides lifelong service for our products, energy-saving service of air conditioning system optimization and energy management contract (EMC) service for our customers.

Global Internet Monitoring

Internet gold monitoring system is installed on every BROAD chiller, giving our customers lifelong free Internet monitoring service. The Monitoring Center is located in BROAD headquarters; it has a set dedicated firewall, online monitoring the real-time running status of chillers 24/365.

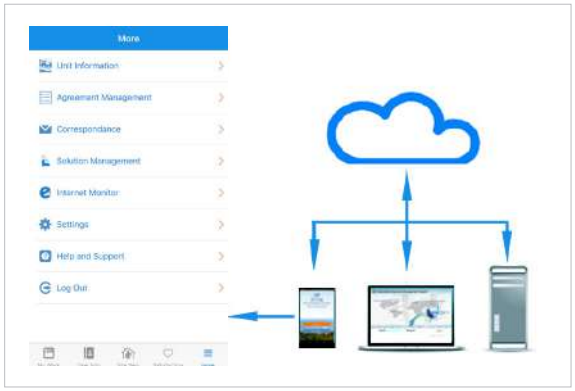
Any abnormal or alarm information will be sent to BROAD service engineers immediately so as to avoid the abnormality in the beginning.

Preventive Service

BROAD provides regular checking and maintenance service for chillers 2~4 times per year according to the chiller model and its operation.

BROAD replaces the expiring spare parts in advance to ensure 0 stop fault.

BROAD checks the solution every year and adjust the chiller health according to the test report from BROAD laboratory to make sure that the solution performance can meet BROAD requirements, which ensure the life-free replacement of the solution.



Cloud Management Platform

BROAD Cloud Management System is a after-sales service management system with PC version for computer and APP version for mobile terminals, which was independently designed and developed by BROAD. The main functions include: users' and units' information, service records, service supervision records and information related to service, such as solution test report, customer satisfaction survey, maintenance records and so on.

BROAD saves all the service records which are open to corresponding users and accept their supervision.

Service Training

Regular free service training for the user's operator and service engineers is provided by BROAD in BROAD factory every year.

BROAD engineers can provide free technical training after on-site service.

Regular Users' Summit is held globally to share BROAD new products, new technologies and management experience of energy-saving service, which creates unique value for our customers.

BROAD Non-electric Chillers and packaged water distribution system are ISO, CE, UL, ETL, ASME certified. Specific Centifications are available upon customer request.

BROAD AIR CONDITIONING
远大空调有限公司
BROAD Town, Changsha, China 410138 www.broad.com
Tel: +86-731-84086688 Email: international@broad.net

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