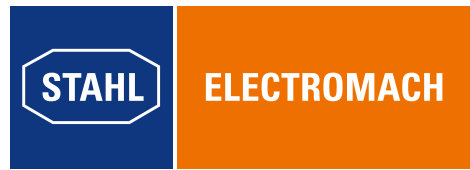




HVAC and pressurization

IECEx and ATEX





Heating Ventilation & Air Conditioners

Starting in the 1950s air conditioners have become standard features in residential and industrial applications. Although explosion protection started around 100 years ago, forced cooling in such an environment has always been a challenge. Demands as applicable in the oil and gas industry are quite different to a residential or standard industrial application.

For many years now air conditioners form a standard ingredient for the comfort of people around the world. Especially in the oil and gas industry it is essential to have a controlled and safe environment for the health and safety of people but also for equipment within shelters. Locations can be extreme hot and/or extreme cold during seasons which can lead to serious Health Safety Environment consequences (HSE) to employees and damage equipment leading to potential fire or loss of production. Increasing HSE regulations and support the obvious requirements.

The new ATEX industrial explosion protected HVAC systems are based on almost 40 years basic explosion protected (CSA/UL certified) HVAC-design. This new standard product range is unique for Zone 1 or Zone 2 and can also be used in other IECEx accepting countries, such as the Middle-East, Africa, Australia and New Zealand.

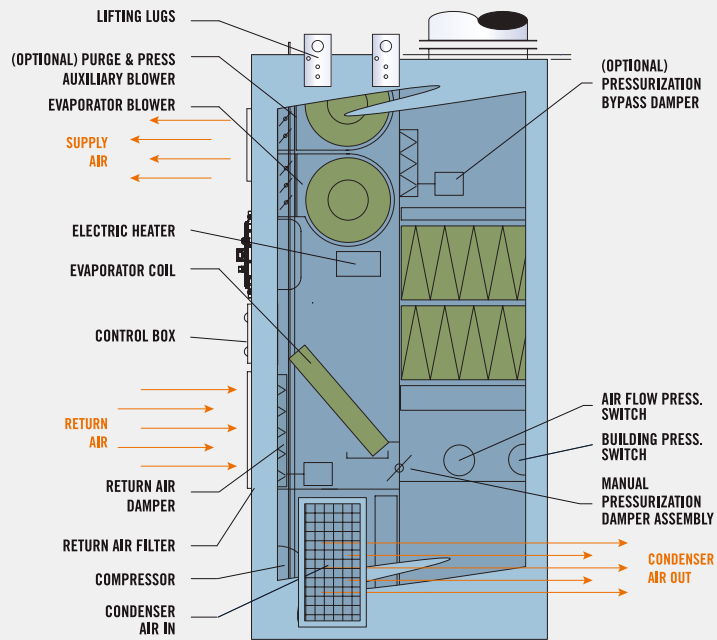
With this new standard design and numerous options the Electromach ATEX /IECEx air conditioners can be used both onshore as offshore ensuring a suitable safe environment for equipment and employees in the most extreme environments.



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InPac series

Optional features

- 304/316 stainless steel cabinet
- Multiplexer: capable of controlling many separate units
- Economizer (extending the life of the compressors and conserving power)
- 10 to 40kW electric heater
- Explosion protected crankcase heater
- (de)Humidifier
- Purge & pressurization add-on
- Two additional blowers (as a back-up) can assist in purging and pressurization
- Copper fin/copper tube coils with highly corrosion resistance
- Coil coatings: Esgard, TechniCoat, E-Coat, Heresite, and Thermoguard
- Extra corrosion protection
- Chemical filtration- Remotely mounted control system
- Special and high efficiency filtration (including HEPA)
- Air quality monitor
- Additional alarms
- UL certification

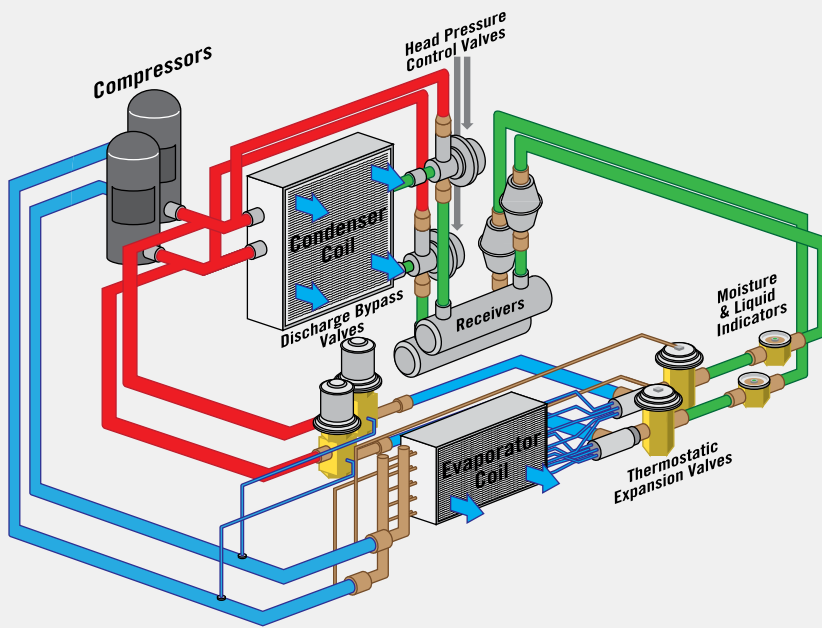
The complete self-containing HVAC units have been designed for special purpose environmental air conditioning, electrical heating and ventilating. All InPac systems include dual refrigeration circuits for redundancy to ensure availability of your system with minimal downtime. The modular design enables additional functions to the HVAC such as filtration and air quality monitoring on toxic or hazardous gases. The cooling range starts at 5kW up to 140kW depending on model type and climatic data.

One unique additional feature is the optional pressurization (ventilation) module which can reduce the hazardous classification of a container or shelter to general purpose. Standard unit cabinets are manufactured of 16-gauge galvanized steel with an all-welded construction, the cabinet is painted with a finish to help fight corrosion. Standard fan module consists of a motor and direct drive blowers.

All units have a fast and easy on-site repair and simplified parts replacement to minimize down-time. Certified on latest 60079 standards for application in Zone 1 or Zone 2 :

ATEX: Ex II 2 G Ex d e p T4 IIB + H2 Gb

IECEX: Ex de p T4 IIB + H2 Gb



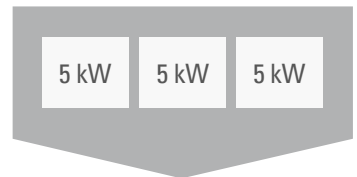
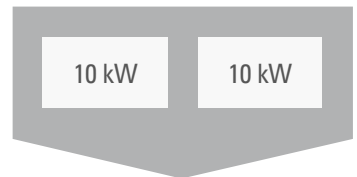
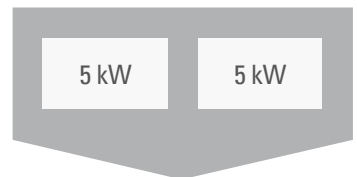
Redundancy



The cooling part of our HVAC has our unique standard redundancy design concept. Depending on the climatic data and type of application following redundancy features are possible. 10 kW Cooling capacity automatically includes a redundant design consisting of two independent 5kW air conditioning systems. If one system fails, the application can still run under most normal operational conditions.

Dual redundancy design is available enabling 100% backup power. This is applicable for high load equipment cooling and demanding highest ambient temperatures.

N+1 redundancy is also available with a triple redundant design of the system enabling 100% redundant backup cooling power. Suitable for most demanding applications e.g. in case of in-line process equipment or safety or UPS systems.





Purge & pressurization

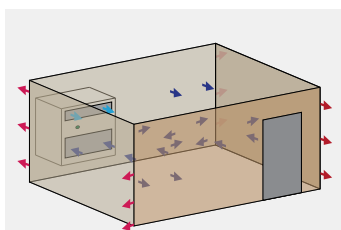


Figure 1. Typical use of Backup Blower for Purge/Pressurization. Under normal operation, one set of blowers is operating, taking air from the outside and circulating it through area.

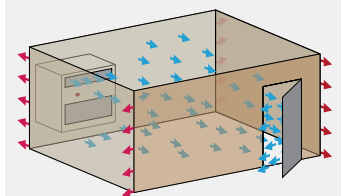


Figure 2. Typical use of Backup Blower for Purge/Pressurization. During purge, all blowers are active and the return air disengaged, which forces protective air into the area until repressurization is achieved.

The InPac HVAC system can provide ATEX certified pressurization to a building or other suitable shelters. The used protection method is also based on the latest EN and IEC standard and suitable for Zone 1 or Zone 2.

The pressurization principle is based on pressurization by means of ventilation. The system does not require an instrument air connection which is very common for traditional static Exp pressurization units.

The amount of overpressure is guaranteed by means of ventilation with fresh- non hazardous gases, generally outside air from 25 feet (7,62 mtr) or higher above grade. To ensure a reliable fresh air intake systems are usually combined with a project related air stack based on locally climatic data. Gas (LEL) detectors and pressure monitoring are optional features of the system.

According to applicable EN/IEC or NORSOK HSE regulations a 5 to 6 times air change per hour is guaranteed while maintaining the required overpressure and safe environment within the confinement. The pressurization system may also be executed without HVAC functionality in a standard InPac enclosure.



Safe atmosphere



ChemPac add-on can be used where the control of gaseous contaminations may be a concern. The ChemPac is an optional feature for the InPac series and is available in multiple sizes to match customer requirements. The ChemPac typically combines four stages of filtration for removal of airborne pollutants and corrosive gases when combined with one of our air conditioning units.

Along with pellet filtration media, we also offer adsorbent honeycomb media as a solution. The honeycomb modules provide increased rate of adsorption of gases and significantly lower pressure drop, a smaller footprint and less weight with equivalent gas removal, and energy savings as a result of reduced system static pressure demand. Additionally, the adsorbent honeycomb modules are much easier and less messy to replace than loose media pellets. This gives the added advantage of less waste and a reduction in potential environmental issues over other spent media.

We offer ...

... standard media to treat the following gases, and can design media to meet requirements for custom applications. A full list is available upon request.

- Alcohols
- Aldehydes
- Alkaloids
- Amines
- Aromatics
- Butyl/Ethyl/Methyl
- Esters
- Ketones
- Mercaptans
- Olefins
- Organic Acids
- Oxides, plus Sulfur Dioxide
- Phenols
- Sulfides, plus Hydrogen Sulfide



Solutions

Electromach B.V. situated in The Netherlands, has more than 50 years experience in manufacturing explosion protected systems for hazardous areas. Our system solutions department is specialized in developing custom made skids and container-based solutions. Our organisation is all-round certified for designing ATEX and IECEx systems. We are supported by a 13.000 m² electrical and mechanical workshop including specialized container workshop.

Our team is happy to support you in a 'ready for connection' solution enabling:

- Minimizing project costs
- Shortened turn around
- One stop shopping
- Simplified project management
- Energy efficient design
- Extended FAT
- Shortened SAT time

Our services include:

- Project planning & Management
- Engineering electrical and (3D) mechanical
- Software and programming
- Procurement of material
- Construction and services
- FAT Factory Acceptance Test
- System certification
- Documents services, transport and insurance
- Commissioning support (SAT)

Please contact our sales team for more information: info@electromach.nl



Selecting your HVAC unit



#1 Required Cooling Load Required cooling load is determined by the size of the area to be conditioned including total interior volume, number of occupants, total heat contribution of all electrical equipment contained in the area, thermal isolation values of wall, floor, and ceiling insulation system, as well as the final geographical destination of the unit/building. Our trained staff will be happy to assist you in preparing a very detailed computerized load study calculation for your unique application.

#2 Hazardous Location Depending on the types of hazardous materials and their likelihood of being in the atmosphere, your application may require gas alarms, chemical filtration, a purge & pressurization system, stack packages, and various explosion proof/spark proof application features dictated by the particular area classification. Our InPac series of industrial HVAC and pressurization systems are the only fully certified product line of their type in the industry. InPac series units are ATEX/IECEX certified for Zone 1 and Zone 2 applications.

#3 Likelihood of Corrosive Agents in the Environment From salt water to sulfur compounds, corrosive agents are present in many industrial and petrochemical facilities. Knowing the types of corrosion likely to occur in your application is helpful in determining the cabinet material (i.e. galvanized steel, stainless steel or aluminum), filtration (High Efficiency Particulate Air, chemical, etc.), and coil and copper coatings best suited to your application.

#4 Unit Configuration The most prevalent configuration ordered is the vertical wall-mounted packaged through-the-wall system. However, some applications require roof mounted, pad mounted, or split system configurations, often useful in buildings where wall space is limited.



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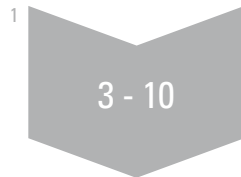
Zone 1 (EPL Gb) or Zone 2 (EPL Gc)

Cooling power (kW)

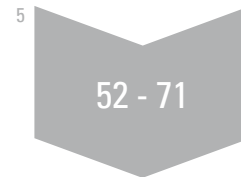
Model selection

Cooling power (kW)

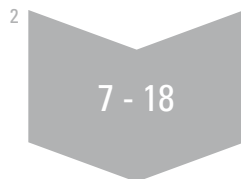
Model selection



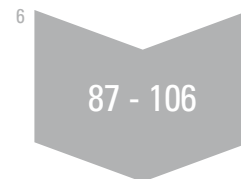
- 61 series
- 62 series
- 63 series



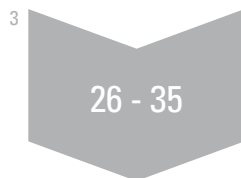
- 12180 series
- 12240 series



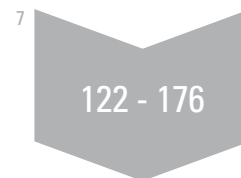
- 624 series
- 636 series
- 648 series
- 660 series



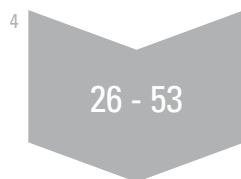
- 14300 series
- 14360 series



- 6090 series
- 6120 series



- 16420 series
- 16480 series
- 16540 series
- 16600 series



- 8090 series
- 8120 series
- 8180 series

HVAC Request Form

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 FAX: +31 (0)74 2 435 925



DATE	COMPANY NAME		PHONE
TO	Electromach B.V.	NAME	REF NR.
ATTN	SYS/CS	EMAIL	
PROJECT			

BUILDING DESCRIPTION			
BUILDING SIZE	H x	W x	L
INSULATION FACTOR	ROOF	WALLS	FLOOR
EQUIPMENT HEAT LOAD, SENSIBLE	KW/HR		
EQUIPMENT HEAT LOAD, LATENT	KW		
LIGHTING HEAD LOAD	KW/HR		
NUMBER OF BUILDING PERSONNEL			
LOCATION OF BUILDING			
AVG. DESIGN TEMP. OUTSIDE: DB/WB	WINTER	SUMMER	
AVG. DESIGN HUMIDITY	WINTER	SUMMER	
AVG. DESIGN TEMOP. INSIDE: DW/WB	WINTER	SUMMER	
VOLTAGE	V	PHASE	
NUMBER OF AIR CHANGES	BUILDING PRESSURE REQUIREMENT		

BUILDING SKETCH

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