

SAIVER

INTEGRATED  
AIR HANDLING SYSTEM

A1-Series





*Handling air to SAIVER,  
is as natural as breathing.*

SAIVER has been manufacturing high quality Air Handling Units for almost half of a century. The Series A1 Air Handling System is the culmination of experience over the years together with continuing improvement through Research and Development.

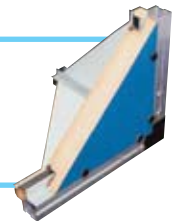
The superior quality of the Series A1 have also been recognized by the world, including the certification of EUROVENT.

SAIVER AHU test result

Panel Thickness	Casing Strength	Casing Air Leakage Under -400Pa	Casing Air Leakage Under +700Pa	Filter Bypass Leakage	Thermal Transmittance	Thermal Bridging Factor
88mm	2A	B	B	F9	T1	TB1
60mm	2A	B	B	F9	T2	TB2



# COMPANY PROFILE



SAIVER Air Handling Units incorporate the finely tuned, value engineered cost effective design aided by computer coupled with human ingenuity.

SAIVER team comprises of highly experienced Engineers and Technicians totally committed to produce one of the finest Double Skinned Air Handling Units range in the World to meet the requirements of most demanding Cost and Quality conscious customer.

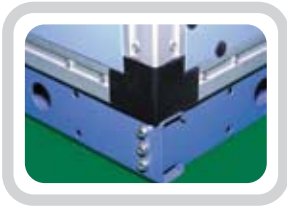
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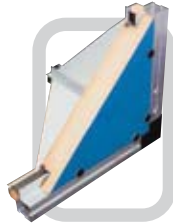
**S**AIVER has kept pace with the time and has always been ahead of its competitors. With automated production (directly from selection program), SAIVER manufactures CUSTOM-MADE units economically, efficiently and quality assuringly.

SAIVER units incorporate the finest corrosion resistant materials, such as Stainless Steel, Marine Aluminium Alloy and Copper to ensure long years of trouble free operation in the most adverse conditions.



### The Frame

SAIVER unique frame design has inherent strength stability. The modular framework utilises a corrosion resistant, extruded marine aluminium alloy, patented twin box section with True Thermal Break Construction. The entire module is subsequently mounted on a heavy sectional aluminium alloy or galvanized steel channel base.



### Infill Panels

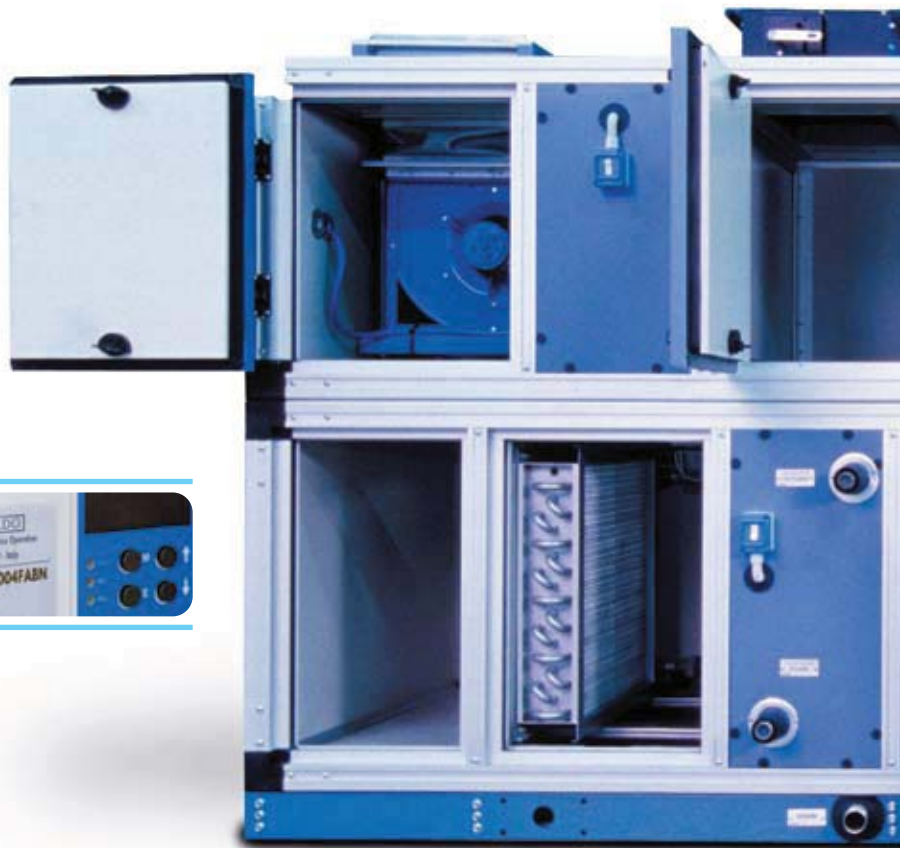
Standard 30mm or 60mm thick infill panels are of double skinned construction from pressure injected polyurethane foam insulation with 'K' value of 0.02Watts/m°C and density 40kg/m<sup>3</sup>, sandwiched between galvanized steel with optional preplasticised or pre-painted finish, PERALLUMAN and stainless steel sheet is also available.



### Accessibility

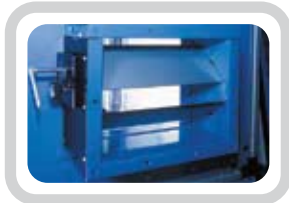
Filter, Coils, Air Washers and Fan Sections requiring regular maintenance and inspection, have hinged or fully removable access panels. These are fitted to the frame with easy release, half-turn nylon handles and cam locks. Handles can be operated internally for additional safety.

Hinges are of heavy duty, load-bearing design with stainless steel pivot. Other panels can be detached, if necessary for access by removing screws with simple hand tools.



### Inlet Section / Mixing Box

Plenum completed with dampers are specifically designed to minimize the stratification of entering air streams for maximum efficiency. Dampers are assembled within a rigid extruded aluminium frame, flanged and pre-drilled for easy fitting to connecting ductwork. Dampers are opposed blade type and available in both flat and double skinned aerofoil sections. Blades are formed from extruded aluminium with edge interlocks. Gaskets are provided to minimize leakage of air.



### Coil Section

Coils are computer selected to obtain optimum psychometric efficiency with low air and water pressure drops. Chilled water, direct expansion, hot water and steam coils are constructed from copper tubes, mechanically bonded to aluminium fins as standard. Other fin materials are available including vinyl coated aluminium, copper, tinned copper and galvanised steel. For corrosive flow media, stainless steel tubes and fins are available as an option. The coil assembly completed with carbon steel, copper or stainless steel headers is located within the coil section on aluminium support for easy withdrawal from either side.





### On Site Assembly

The lightweight construction material and modular nature of the units make them particularly suitable for lifting and maneuvering in difficult or confined locations.

Modules can be easily aligned on site and locked together by sturdy stainless steel bolts, located in factory pre-drilled assembly holes. Continuous gaskets between each section ensure an airtight seal and thermal insulated. All fixings and gaskets are concealed within the unit.



lamp switch



bulkhead lamp

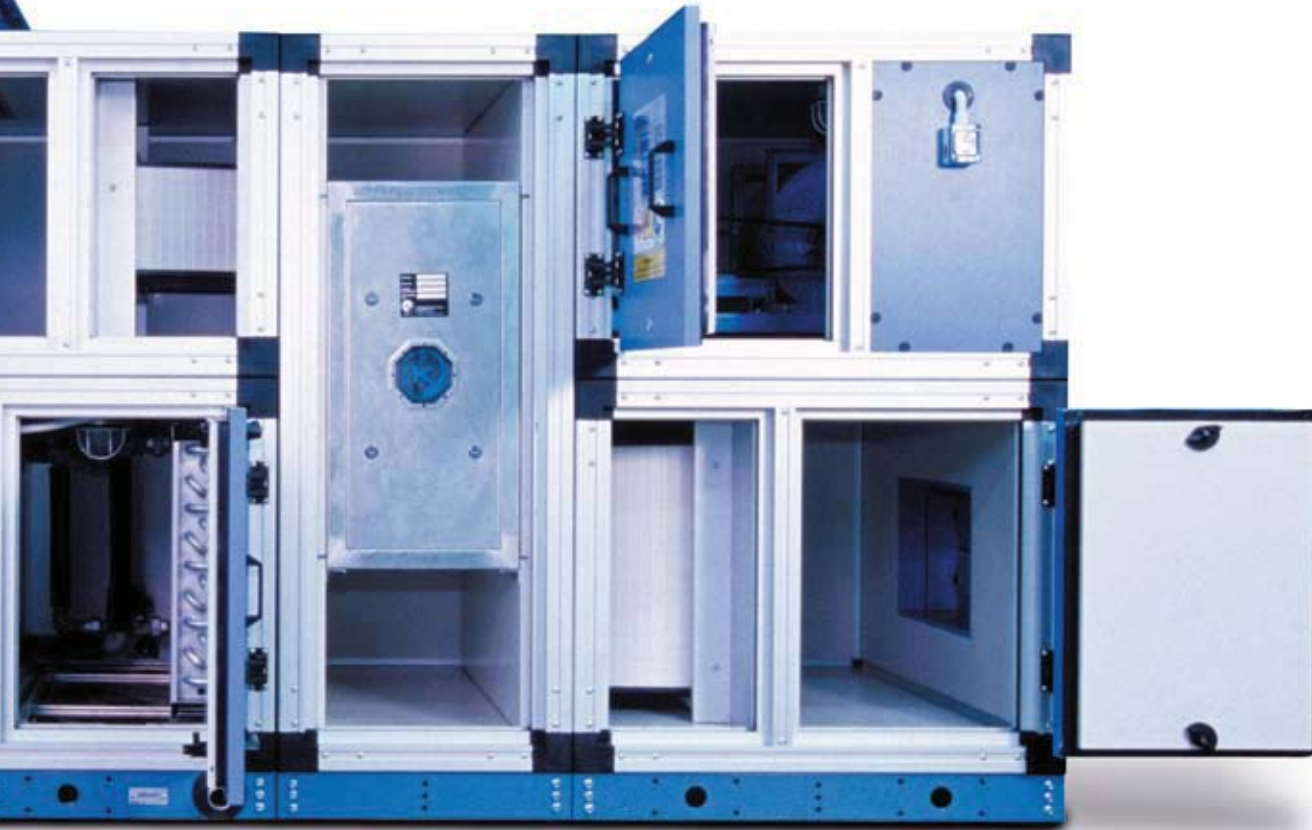


inspection window

### Accessories



### Outdoor Type Design



### Filter Sections

Fully sealed filter sections are designed for easy withdrawal and renewal of filter cells and, are constructed to house any type of primary or secondary filters of different media with varies efficiencies. In areas of particular importance, such as hospitals and clean rooms, absolute filters can be provided to ensure safe human and machine environments.



### Fan and Motor Section

SAIVER manufactured fans form the heart of all systems. Forward curved or backward curved non-overloading aerofoil centrifugal fans are available with various outlet configurations. All fan wheels and pulleys are individually tested and precision balanced, statically and dynamically, and keyed to the shaft. Motors, mounted on slide rails with provision for easy belt tensioning, drive the fan with heavy duty V-belts. Combination spring and rubber vibration isolators are selected to match the power/weight ration of each fan for maximum isolation.





# INTEGRATED PACKAGED



## **Intelligent Motor Control Center**

SAIVER Integrated Air Handling System equips with various operative and control devices to optimize unit running conditions.

Motor control panel (MCP module) and direct digital controller (DDC module) can be integrated into our SAIVER Integrated Air Handling System.

All-in-one modular control center results a fast and simple installation as well as a flexible and reliable operations. A unit mounted feature means space and cost saving.

## **MCP modules**

- Inverter completed with EMC Filters to comply with EN regulations
- Auto-bypass starting in case of inverter failure
- Marshalling box for other services interfacing/connection, e.g. Fire Services/BMS/M&E.

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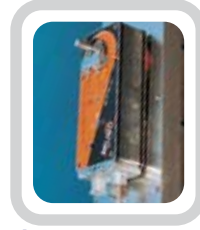




control valve



water pressure sensor



damper actuator



air pressure sensor



micro switch



emergency stop



control panel



temperature sensor



smoke detector



air flow sensor



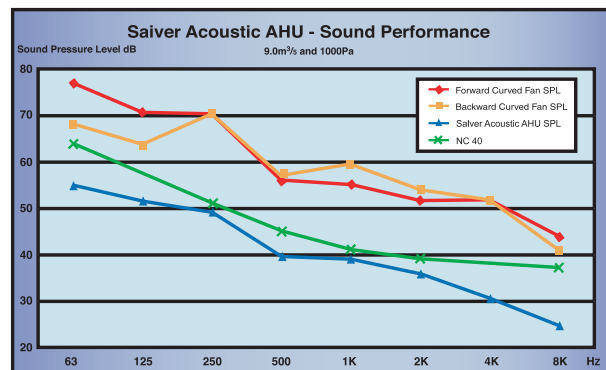
carbon dioxide sensor

### DDC modules

- DDC controller for local/ remote controlling/monitoring
- Chilled water valve completed with electronic control actuator
- Water/ Air differential pressure sensor
- Water/ Air temperature sensor
- Micro switch adjacent to access door
- Damper actuator at supply section
- Probe type smoke detector at return air section
- Carbon dioxide sensor at return air section
- Filter differential pressure sensor.

### Super Quiet Operation

Through continuous Research and Development, SAIVER is capable to design and manufacture Acoustic AHU with much lower noise level. For VAV application, with the combination of plug fan and SAIVER Acoustic Panel, we are able to meet NC39 at 9.0m<sup>3</sup>/s and 1000Pa without supply silencer.

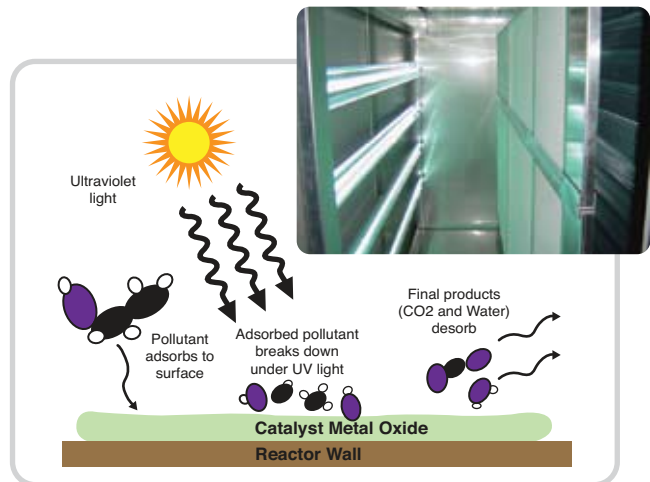


measured 1.5m from return and supply outlet



## Photo Catalytic Oxidation (PCO)

The photo catalytic oxidation (PCO) technology utilizes ultraviolet light (UV-C) focused on a catalyst in the presence of water vapor can generate an energy field equals to 10,000 times of nature sunlight which destroy microbes and oxides volatile organic compounds (VOC) in the air.

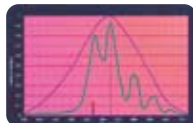


# IAQ PACKAGE



## UV Sterilizing Light

An UV system intends to "capture and kill" airborne pathogens, improve IAQ and worker safety. The germicidal UV lamps in our SAIVER air handler disinfect the air by irradiation and provide full coverage of the target surfaces. Installation sights include coils, drain pans, filters, exhaust systems, or anywhere mold, bacteria and pathogens can breed.



## Ionizer

Ionizer ultimately destroys airborne and living micro organisms by electrolysis process. The generator produces both positive and negative ions as they would occur under natural condition and the microbial control is performed by electrolysis (corona discharge) inside the Bi-polar unit. Single cell organisms are shocked/killed by the polar difference as negatively charged organisms collide with a positively charged particle.





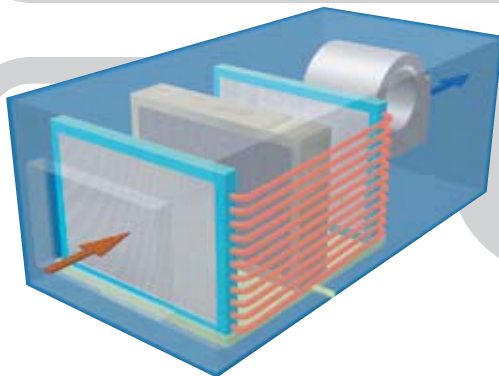
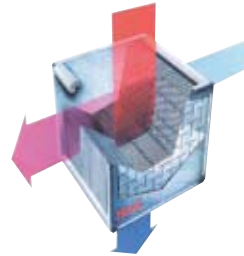


## Heat Recovery Unit

To improve Indoor Air Quality (IAQ), one of the best solutions is to increase the fresh air quantity. However, fresh air is always expensive no matter in winter & summer condition. A rotary heat recovery unit allows energy exchange between supply and exhaust air streams. This high efficient heat exchanger can reduce the annual energy consumption in AHU by as much as 90%. (Latent and Sensible Heat Recovery)



Alternatively, Heat Plate is also one of the best heat recovery device which totally eliminates the potential problem of cross contamination.



## Heat Pipes

Besides the heat recovery application, heat pipes are now widely used in dehumidification. Heat pipes can increase an air handler moisture removal capability by 50% to 100%. The heat pipes not only reduced the chiller load by free pre-cooling but also provide free re-heating to lower the relative

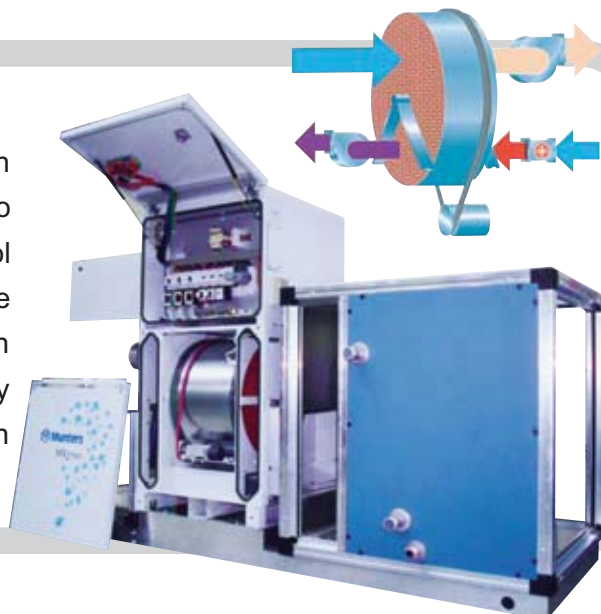
humidity of supply air. As most today's primary indoor air quality concerns are humidity related, the health benefits of heat pipes are noticeable.

Run-around-coil is also an alternative solution to reduce dehumidification load on HVAC application.



## Desiccant Package

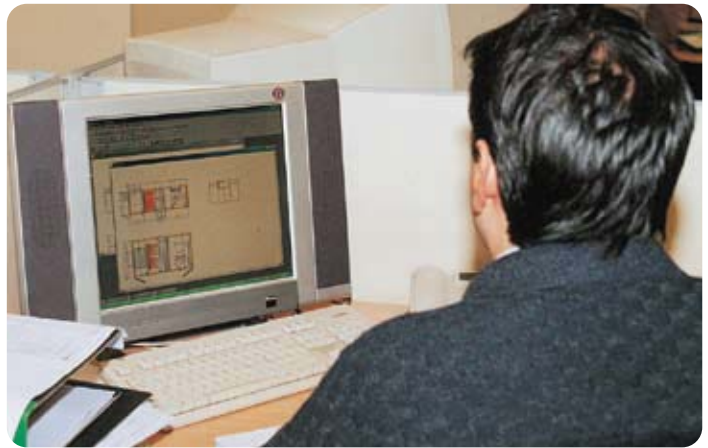
SAIVER is working closely with desiccant wheel manufacturers in order to provide All-in-one dehumidification control system (able to reach below 10% relative humidity). Desiccant dehumidification ensures a hygienic and healthy environment by preventing the formation of moulds and fungi inside airstream.



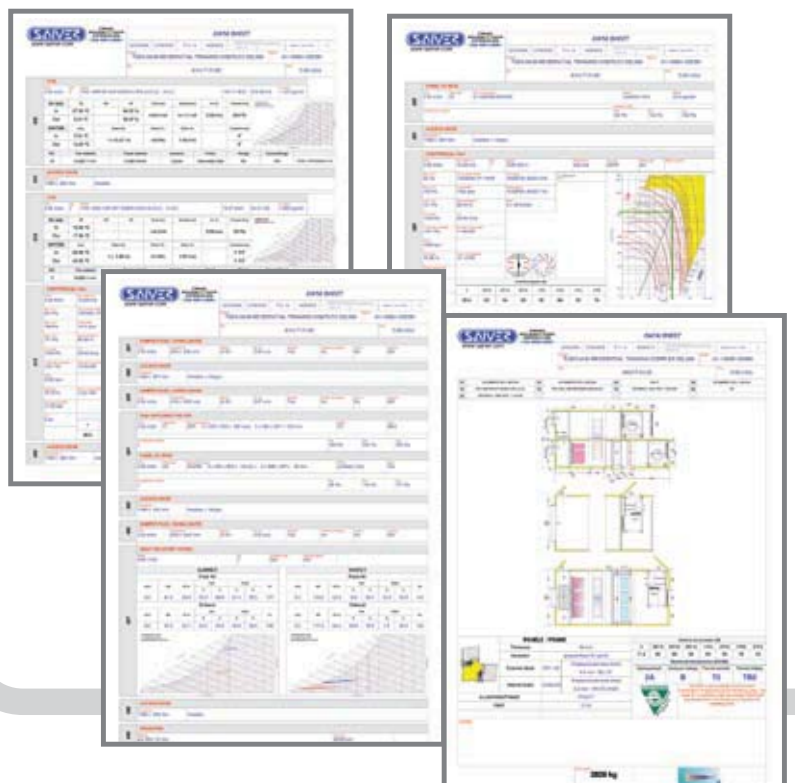


## Computer Selection Program

SAIVER use their own developed software program to make optimum equipment selection and submit quotation together with full technical information and drawings. Any variables such as local climatic conditions, unusual psychometric and physical parameters, are taken into account automatically. Clients are presented with computer generated, certified drawings for approval prior to equipment manufacturing.

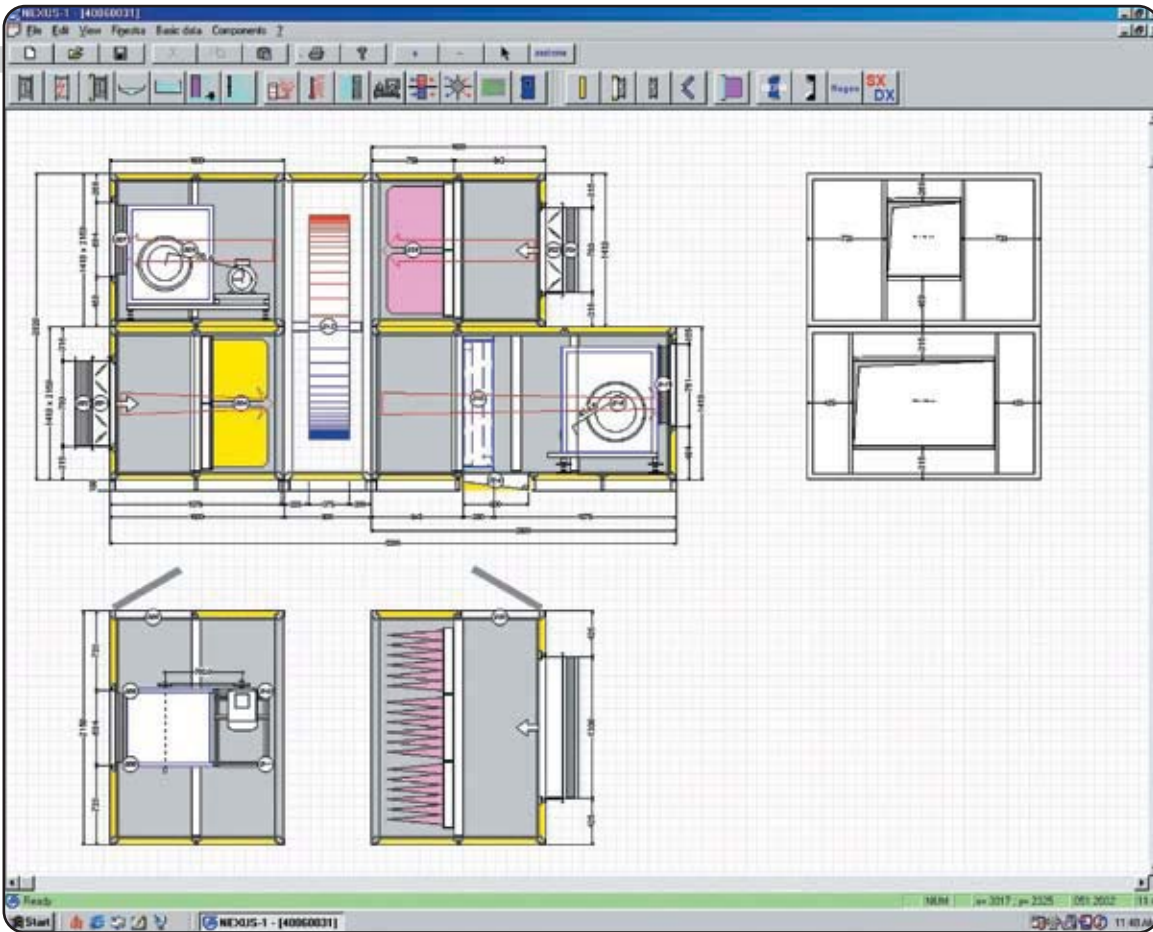


# COMPUTER SELECTION

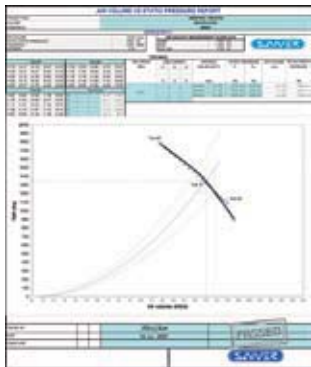


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# PROGRAM



## Testing and Inspection

Saiver's reputation for consistent high standard is rigorously maintained by a strict quality control program ( ISO9001 Quality System Certified ).

Continuous monitoring is carried out at all the manufacturing stages. Besides, on request, we can also do the variable speed dynamic fan test, sampling digital pressure test, sound performance test and coil performance test.

A full range of test instrumentation to check every aspect of performance offer further guarantees of reliability.





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