disan

Central Vacuum Systems

A clean/r & healthy business

Here at Disan we developed a trouble-free way for you *to install a central vacuum*

Central vacuum installations make good sense: they are an excellent way to supplement your business getting an **innovative and healthier system** for all kind of buildings.

Our goal is to provide you with complete **"turn-key"** solutions – no headaches, no confusion – only what you need to get a job done.

When we claim that we are creating "turn-key" commercial solutions we mean to say that we will supply all of the equipment and design support that you need to effectively approach **any type of central vacuum projects**.

We have engineered a line of equipment designed specifically for commercial central vacuum systems that we offer with **confidence and pride**.

We have successfully participated on prestigious commercial projects in over **40 countries around the world**.

The **owners and facility managers** where there is a central vacuum already installed are the ones who promotes our products with **most satisfaction and profit**.

We, **world leader** in commercial central vacuum systems, help you benefit not only from our service-oriented business model but also from the **Disan reputation for quality**.

No matter what type of application, *we can provide the correct technical solution for every building*

Range of Applications

Disan's commercial vacuum equipment has been used in a **wide variety of applications** including hotels, offices, schools, banks, theatres, churches, hospitals, retirement homes, cars' stations, yachts, sport complexes and superiors' villas.

Essentially any environment that requires thorough, quick, and frequent cleaning can benefit from the professional cleaning power, **efficiency, and reliability** of a commercial central vacuum system, which is virtually maintenance free.

We do not simply supply products – **we sell solutions.** No matter how unique the project we can help you specify the appropriate equipment, piping system and accessories.

Here is only a small part of our reference list, with a single object for each country:

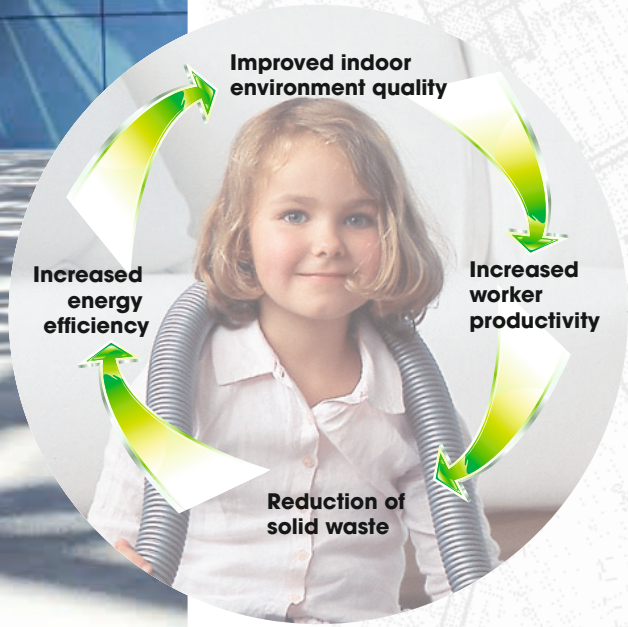
Armenia	Garun Hotel	Tsakhkadzor
Australia	Bendigo Bank	Melbourne
Austria	Trofana Royal Hotel	Ischgl
Belarus	State Museum of Art	Minsk
Belgium	Le Bon Pain	Brussels
Bosnia	Croatia Osiguranje Building	Ljubuski
Brazil	Cambuci Convention Hotel	Bahia
Bulgaria	Hotel Odisei SPA	Chiflik
China	Hotel Chang Fu Gong	Beijing
Croatia	Hotel Tamaris	Tučepi
Cyprus	Merit Hotel	Lefkosia
Czech Rep.	Carlsbad Plaza Hotel	Karlovy Vary
Egypt	Pyramid Hills Village	El-Giza
Estonia	Baptist Churche Betaania	Mustvee
France	Théâtre Scéne Nationale	Maçon
Germany	BMW Welt	Munich
Greece	Hotel Armonia	Vouliagmeni
Iran	Morvarid Khalij (Dolphin) hotel	Kish Island
Ireland	Herbert Park Hotel	Dublin
Italy	Grand'Hotel Savoia	Cortina
Korea	Agricultural Rural Corporation	Seoul
Lithuania	National Opera Theatre	Vilnius
Macedonia	Ramstore Shopping Mall	Skopje
Malaysia	IMAX Movie Theatre	Kuala Lumpur
Montenegro	Hotel Queen of Montenegro	Bečici
Netherland	University of Technology TU/e	Eindhoven
Oman	Arabi Holding Group Building	Muscat
Philippines	Dexterton Corporation	Quezon City
Poland	Centrum Sportowo-Biznesowego	Elbląg
Portugal	Royal Garden Hotel	Ponta Delgada
Romania	Turist Hotel	Bucharest
Russia	International House of Music	Moscow
Serbia	Control tower at Tesla Airport	Belgrade
Singapore	Changi Village	Singapore
Slovakia	Smurfit Kappa plants	Štúrovo
Slovenia	Municipal Senior home	Ptuj
Spain	Hotel Resort Princesa Yaiza	Lanzarote
Switzerland	Roche Forum	Buonas
Taiwan	Chi Yi Plant	Nan Ya
Turkey	By-o-tell	Istanbul
UAE	Ismaili Centre Dubai	Dubai
UK	Gospel Hall	Guildford
Ukraine	Beskid Center	Kiev
USA	Bank of America	Seattle

Disan products' range is an ideal cleaning solution *when indoor environmental quality and energy efficiency are top priorities.*

As a proud member of the **Casa-Clima / Klima Haus** association, which is the leading organisation in Italy for the sustainable energy building and member of the **Sustainable Energy Europe**, we are committed to ensuring that all our products are environmentally responsible and will contribute to sustainable building practices.

Disan's commercial central vacuums are an environmentally and socially responsible alternative to traditional cleaning systems and can contribute to **a healthy and prosperous indoor environment**.

The Leadership in Energy and Environmental Design Green Building Rating SystemTM is an internationally accepted standard for green building design, construction, and operation. The **LEED rating systems** take into account five primary categories when evaluating buildings for environmental impact: site planning, water management, energy efficiency, material use, and indoor environmental quality.
A **Disan central vacuum system** can help contribute to LEED certification by offering a **number of distinct advantages** over traditional portable vacuum cleaners.



KlimaHaus
CasaClima

Building green:
an opportunity for central vacuums to achieve their deserved position in the modern building

How to achieve energy savings?

The power consumption of both average portable vacuum and central unit is about 1200 watts for each users, but the savings is achieved:

1) with a central vacuum cleaner you will have to **vacuum less often**: Since dust and dirt are captured in the central power unit located in a machinery room in the basement, none blows through the filter and back into the living rooms.

2) most central vacuums have two to **three times the cleaning power** of portable vacuums. This deep down cleaning accompanied with the versatility to reach areas more quickly actually reduces operating time to clean the room.

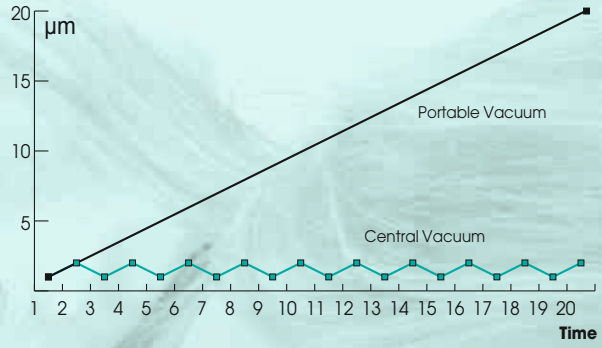
3) the central vacuum **evacuates all germ-laden air** and dust from the room. The portable vacuum is forced to redeposit the air back into the same room and microscopic particles have passed through the filtration system. You can see this in a ray of sunlight or in the accumulated dust that settles on the drapery or furniture. This requires additional cleaning time and more electrical energy consumption.

4) the central vacuum motor are far **more efficient motors**. Where typical motors in portable vacuum have an efficiency rating of 30%, the hard-industrial induction motors are now achieving up to 50% and working toward a target of 70 % if coupled with an electronic frequency converter.

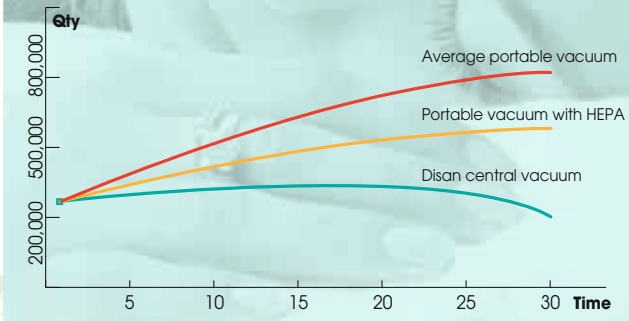
Central vacuums **clearly have a major advantage** when it comes to the health aspect of the building green, as indoor air pollution is one of the top environmental health risks identified by the sanitarian. One of the major means of reducing chronic illnesses is to keep the house clean. House dust mites, pollens, animal dander, and other allergy-causing agents can be strongly reduced through regular central vacuum cleaning.

In 2002 the **Division of Allergy and Immunology** at the University of California, Davis, conducted a clinical study that proved a link between central vacuum systems and allergy relief. The study found that patients experienced a 40% to 61% improvement in their symptoms when they switch from using a portable vacuum to a built-in central vacuum system!

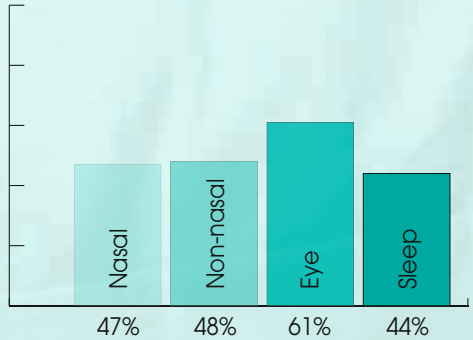
Fine particles inside the building in the middle run



Harmful dust particles (< 0.5µm) per litre of air in a room during the vaccum cleaning process



Percent Improvement in symtoms and allergy relief with central vacuum (University of California 2002)



An economic *choise*

The real benefits of a CVS in commercial property are in the cost-savings they provide: the **improvements in "building" hygiene, shorter cleaning times, and the ability to amortize the system** over the life of the building.

Facility Management

They will tell you that the total costs of cleaning a commercial building are 90% labor and 10% for all supplies, tools and equipment. Therefore, if one is to really try to lower the total cost of cleaning, you must attack the labor cost. To do so, you need to make the labor force more productive. **There is no faster way than to give workers the correct equipment and tools**.

Hygiene

Our **health is a priceless** commodity that depends, in large measure, on the health of the buildings in which we live, sleep and work. Improve staff productivity by cutting down on allergy related sickness.

Cleaning time

The savings gained from cleaning efficiencies and staff, more than justifies the investment in

with conventional vacuum systems

with a central vacuum

total cost saving

ECONOMIC BENEFITS OF CENTRAL VACUUM SYSTEMS

In our long experience and after several case studies, we can demonstrate that the savings gained from cleaning efficiencies and staff more than justifies the investment in equipment.

YOU CAN REDUCE UP TO 38% OF YOUR OPERATING COST?

Deep cleaning of 30 rooms in only one hour: What do you need?
Thanks to the improved efficiency of the CVS, 38 % less time (or 38% less people) is needed to get the same result.
Cleaning with a whisper... a real investment !!!

equipment. How can you reduce up to 38% of your operating costs?

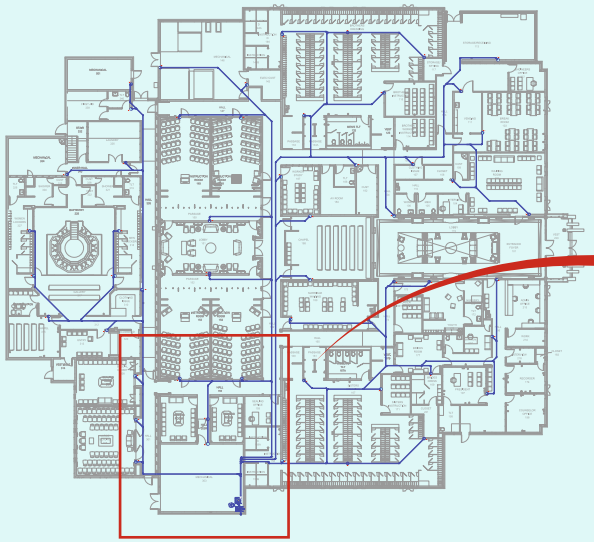
- **Greater efficiency.** By eliminating the "down times" - no plugging and unplugging of power cords, cables and accessories. Simply plug the hose into an inlet, and with our handy cleaning trolley in tow, you're ready to begin vacuuming.
- **Powerful.** Central vacuums are 4 times more powerful than conventional methods. Just a single pass of a central vacuum removes the same quantity of dirt and debris as 2-3 passes using a traditional cleaner.
- **Maintenance.** Central vacuums are virtually maintenance free, just empty the large bin once or twice a year.
- **Tools.** The wider and special tools available for central vacuums make it easy to find the right tool for the job.
- **Silent.** Central vacuums are quiet, cleaning can take place without disturbing clientele, without interruption of schedules even during working hours—they won't know you're even there!

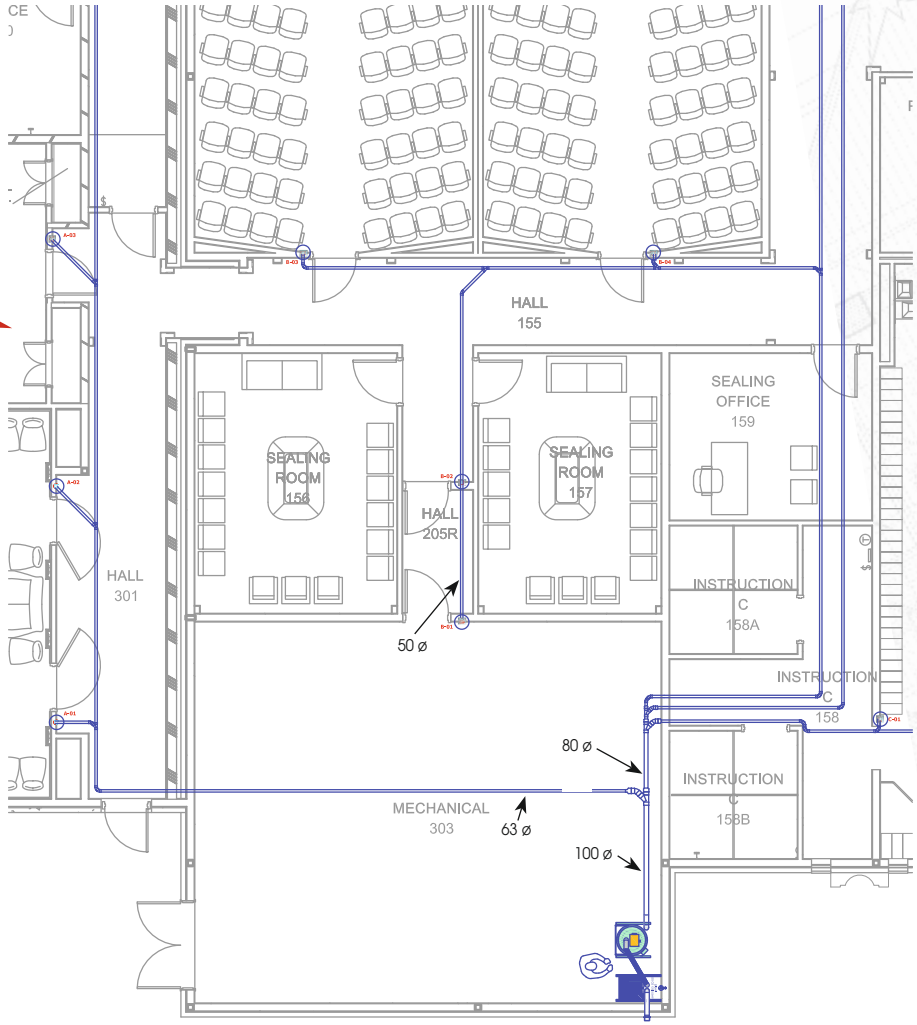
System amortization

As with all commercial systems, Disan's three-phase turbine engines are ruggedly built, designed for industrial applications with durability and reliability in mind, and manufactured to withstand the stress of operating all day, everyday. **Central vacuums is practically maintenance-free**, always efficient and increases the building's worth, re-paying itself just in a few years.

FACTS

- Keeps your building healthy by maintaining the indoor air quality.
- Improves staff productivity by cutting down on allergy related sickness.
- Allows the cleaning process to be checked and monitored by the Building Management System*.
- Allows for cleaning to be done any time of day only with a whisper.
- Carpets get cleaned down to deeper levels with the high airflow.
- Add prestige and style to your building.





piping network
installation support

Because most commercial central vacuum applications will require multiple simultaneous operators you will have to specify piping networks that can support the demands of these systems. The **diameter of piping** you need **depends on the number of simultaneous operators** and is especially important in optimizing the airflow characteristics of these commercial systems.
We offer to completely design the pipe layout and help you source the appropriate material needed for these jobs. Since the **piping network is a fundamental part of the central vacuum system**, we consider it our responsibility to help you deliver a complete solution to meet specific building codes and application requirements.

Disan *all range ...*

Disan since 1991 has been involved exclusively in the development, production and trading of Central Vacuum Systems and connected components for both **domestic and commercial applications**. As specialist for the household dust ridding, the Disan domestic range can have solution for all kind of buildings:

The power *units*

Drawing on years of experience designing commercial central vacuum systems, we have engineered a line of equipment that is unmatched. These products are more reliable, easy to use, and energy efficient than anything available on the market. In other words, these equipments are extremely flexible and safe to install right out of the box.

A **SIEMENS** induction turbines have neither parts in connection nor transmissions. The motors involved are three-phase induction with side-channel blowing engine. The average rotation speed is 2,850 rpm (revolutions per minute), in contrast to 20,000+ rpm of traditional single-phase motors. This difference means that there is much lower stress for the shafts and bearings. The motor is powered by induction: there are no carbon brushes, sparks, or other components in friction. These motors do not need maintenance, they were developed for professional use and they are routinely used by industries for continuous duty (24 hours, every day) with reliable characteristics. These motors cannot be compared with a traditional vacuum system and they are the highest technology on the market.

B **STAR FILTER** made of special polyester cloth with high withholding properties is one of the most highly appreciated components of the system. All the industrial vacuum units use this type of filter. It combines a high withholding of micro-dust with easy-cleaning. Cleaning can be accomplished by shaking or machine washing. Different filter media are available to meet specific filtration requirements. The optional and

recommended self-cleaning system always maintains the maximum
efficiency. This system automatically cleans the filter at pre-programmed intervals (typically once per day).

C **CONNECTION ELEMENTS** and mounting elements are always included. Our central units are always furnished complete to be installed without the necessity to buy collectors, couplings, or other installation materials. The great advantage of central units with electronic controls is that they are always ready simply by connecting the plug at the current network. All the connection couplings at the solid piping line are anti-vibration and adjustable.

D **OPEN FRAME** steel motor mounts are for maximum dissipation of heat. The opened frame does not imply a higher sound level as 90% of the sound is from the exhaust (discharge). The system is provided with a exhaust silencer to minimize sound level. The largest advantage of the open frame is the increase in thermal dissipation, the increase in performance efficiency, and cancellation of the risk of motor fusion.

E In 1997 Disan first introduced **motors with electronic frequency control** coupled with a digital depression meter to maintain a constant value of operative depression. The motor can automatically adapt the power (and the consumption) according to the number of simultaneous operators and the filtering surface efficiency. An electronic transducer for vacuum measurement located in the central unit maintains the optimal operative vacuum level (Default 140mbar).When the vacuum is too high the system lowers the motor rpm and as a result the power consumption is reduced. When the vacuum is too low the system increases the motor rpm and increases the vacuum level and airflow. Electromagnetic shielding type B (for private applications) and is provided with certificate to avoid electromagnetic interference issues. The prime advantage of the inverter is an economical way to proportion electric power consumption to the ever changing system needs.

F **DUST CONTAINER** with cushioned fasteners for an airtight and easy closure. High capacity dust container only needs to be emptied out once or twice a year. The collection and elimination of the dust can be done without any contact. A compensation pressure feature at the dust container is also available to eliminate the need for bag stretchers or other annoying parts.

The Compact range combines the advantages of commercial design and technology in adding a new dimension to the domestic sector. In a limited space all the advantages of a professional system are included: the reliability of the induction motors, self-cleaning filtration system, electronic motor controls, economic power consumption. Frontal control panel and incorporated inlet valve are very handy for control and for cleaning the area where the motor is installed.

Inlet *valves*

We know that inlet valves are the only component of a central vacuum always in sight and they need to **match with the interior design, furniture and style of the building**. For this reason we look after trends and settings from the electric industries, paying close attention to shape and colours. After all, as an Italian manufacturer, we have always paid close attention to this aspect of design.

These excellent designs do not exclude that we have another top-priority: **Durability, reliability, and safety** are all major concerns in commercial environments. Because commercial central vacuum equipment is designed to handle frequent use you should consider how well other system elements, like inlet valves, will hold up to these same challenges.

Many advantages are demonstrated in our valve designs. For example, in this small part from the larger back side we have developed a feature for easy cabling, reduced deepness for thin walls, wider technical curve to reduce air loss, tight testing caps, etc.

Ending the concrete installation with a Disan back-up box is the best guarantee that a state-of-the-art installation will be realized and that very likely the job will be fulfilled with Disan inlets, central units and accessories.

Certain applications might warrant metal valves, floor valves, or even locking valves.

We can help you choose the right inlet valves for any situation.

Elegance White
(SD515)

Elegance Anthracite
(SD540)

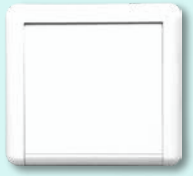
Olympia Silver
(SD531OS)

Royal Gold
(SD521RG)

Metall INOX
(SD911)

Modell Free
(SD720)

Floor inlet
(SD915)



Majestic White
(SD512)

Majestic Nickel
(SD512MN)

Majestic Gold
(SD512MG)

Flip-Vac White
(SD620)

Amiris
(SD888)

Modell Hobby
(SD723)

Floor inlet
(SD921M)

NewLine black (SD110)
for bTicino/Vimar/Gewiss

NewLine white (SD113)
for bTicino/Vimar/Gewiss

NewLine titan (SD111)
for bTicino/Vimar/Gewiss

NewLine (SD114)
for the Tech series

NewLine (SD118)
for bTicino living NOW

InTheWall *NEW*

The new retractable hose system makes central vacuum systems even more comfortable.

InTheWall consists of an inlet valve (attached to the wall) and a pipeline that lies behind the valve, which stores the flexible hose. When the hose is needed it can be pulled out. After cleaning, it goes back into the pipe just as easily. It is only visible when someone is actually using it.

Accessories

Accessories packages are a vital part of delivering a quality central vacuum solution, and no one has more **experience with professional central vacuum accessories** than Disan. We can help you develop a solution for even the most unique application, and can help ensure a positive end-user experience. A deep catalogue of custom parts and years of experience in delivering engineered solutions that match the needs of all customers.

Disan offers only the highest quality, most innovative floor care products available on the market. These products have demonstrated the reliability and functionality that is expected in a commercial environment.

Our deep catalogue of cleaning accessories supported by our engineering, tooling, and manufacturing capabilities permit customer focused solutions.

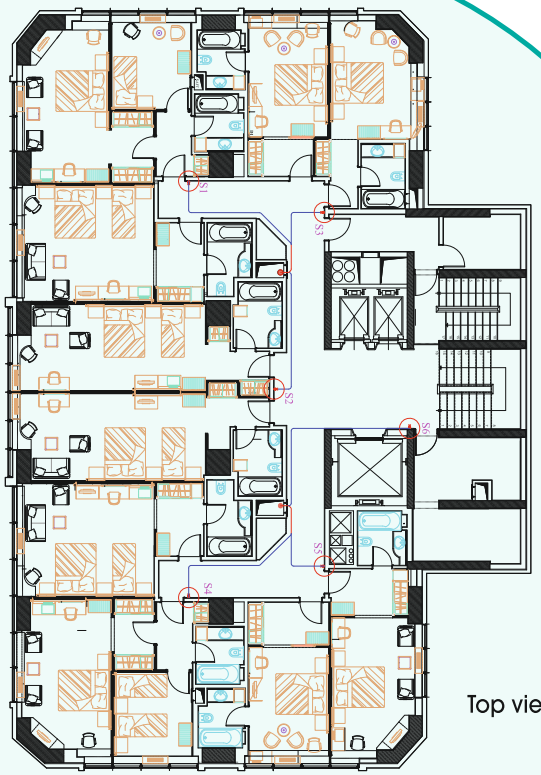
Case study I

Application: 5 hotel with 214 rooms*

No. of floors: 20+3

-3	Service technical floor (Machinery room)
-2,-1	Conference rooms and services
0	Reception
1	Restaurants (3)
2-18	Standard rooms (204)
19	Suites (6)
20	Suites Royales (4)

No. vacuum inlets 168
Central vacuum units 2 x HK175i
Simultaneous vacuum operators: 18



Top view

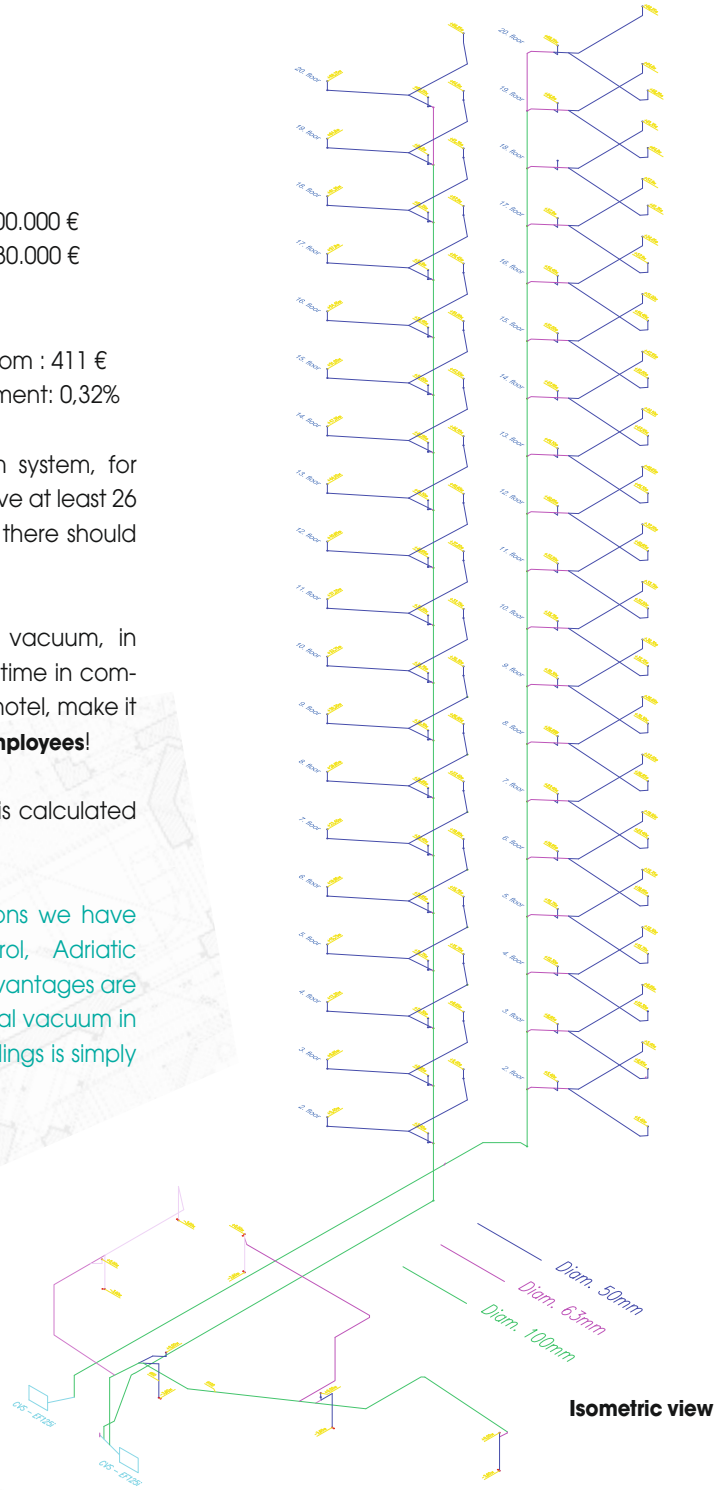
- Total investment for this hotel: 28.000.000 €
- Total investment for each room: 130.000 €
- Total investment for the central vacuum system: 88.000 €
- Investment for the CVS for each room : 411 €
- Percentage of CVS on total investment: 0,32%

With a traditional portable vacuum system, for the daily cleaning, it necessary to have at least 26 chambermaids, as in a 5 stars hotel there should be 1 chambermaid / 7,5 rooms.

The **economic benefit** of a central vacuum, in particular the reduction of cleaning time in comparison to traditional vacuum in this hotel, make it possible to **save with a CVS about 6 employees**!

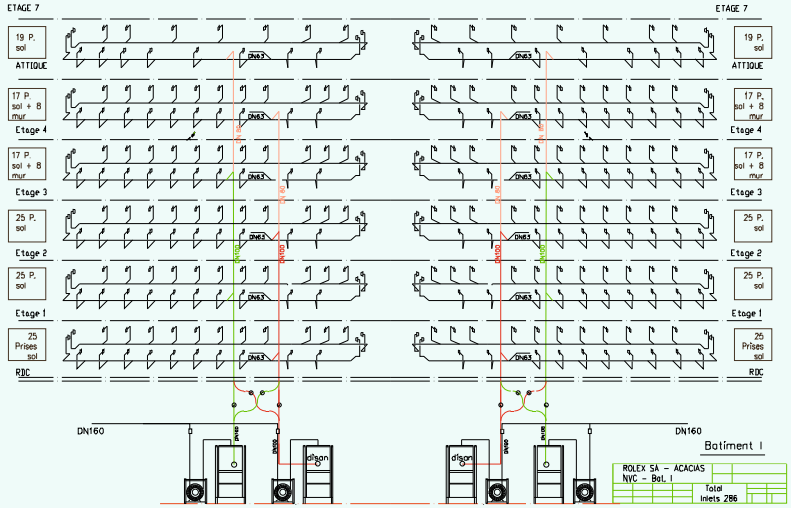
The amortization of this systems is calculated in 3 years.

For these economic reasons we have some region (South-Tyrol, Adriatic Coast), where these advantages are well known, than central vacuum in hotels and office buildings is simply standard.

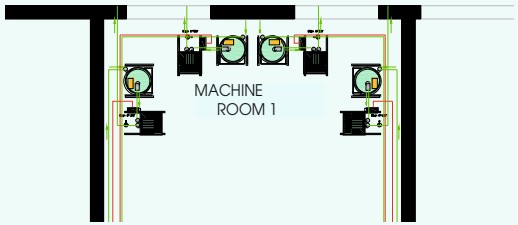


Isometric view

Case study II
Application: Large Company's Headquarter



Schematic view



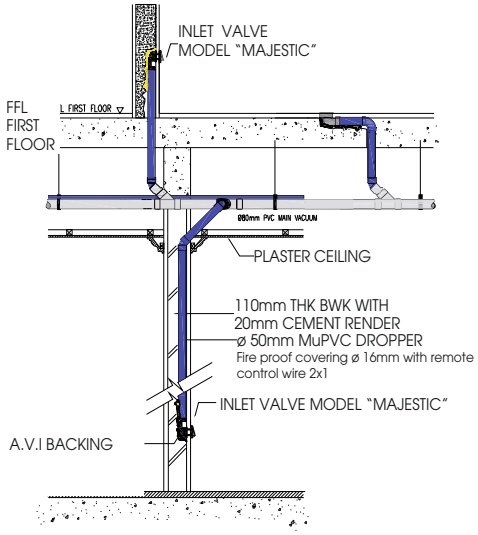
This new building is made by **2 towers with 12 floors each** (5 underground and 7 over). The surface to clean is 41.000 square meters and further there are 23.000 square meters left in the garage and in the technical floors.

The length of the pipeline, **running in the drop ceiling** in alternate floor, is in different diameters:
Pipe 50mm: 1.440 ml; Pipe 63mm: 3.800 ml
Pipe 80mm: 160 ml; Pipe 100mm 600 ml
Inlet valves are located both in the floor and on central walls.

There are **8 central units EF125i** located in the technical gallery (-5). Each motor can be by-passed in case of one failure (never happened in last 3 years).

For the particularity of production, the building has to be **cleaned up** every working day within a time of **only 20 minutes**.

The turnkey cost of the CVS was 350.000 Euro.



Where *to Start?*

How do you quote these projects, specify the right equipment, calculate laborcosts, and approach commercial contractors? As always, we are here to help. If you get an inquiry regarding a commercial project by answering a few basic questions about the property we can help you generate a rough estimate and provide equipment recommendations. These questions help us estimate the type and quantity of pipe needed, appropriate power unit, and potential accessories packages.

Making the Sale

If you receive a positive response from the contractor based on these initial estimates we can help you generate a more detailed quote including **CAD drawings of the piping network**. At this point you can include power unit performance cut sheets, and an outline of the system's capabilities. We will be with you every step of the way in developing a quote for these projects to ensure you won't come away losing money. Our role in this process is to make sure that both you and your customer have a positive experience.

Consider the following information when approaching any type of commercial project:

- Type of application (hotel, office, lab, etc..)
- Number of simultaneous operators (if stated)
- Square meters of building: space and areas to be cleaned
- Number of floors
- Running of the pipes (false ceiling, poured in the concrete floor, etc)
- Special pipe or inlet requirements (metal, floor inlet, water suction, etc)
- Length of flexible hose (9 mt standard or special length requested)

Sealing the Deal

CHECK LIST

- ✔ Definition of the understood objectives for the central vacuum system
- ✔ Bill of materials – quotation
- ✔ Layout of the system
- ✔ Specifications of the system, graphics showing key design elements like the valve system, and performance expectations.
- ✔ Installation support and manuals .
- ✔ Economic justification for the system, payback timing
- ✔ On going service support for the system

Subscribe with your customer a maintenance contract. The present contract includes the following services:

I. Check and half-yearly maintenance of the system
II. Prompt intervention in case of damages
III. Extension of the parts in guarantee to 10 years

By our experience this is an excellent way to maximise fidelity with your customer, sharing the positive feedback with him, learning by the long term usage and finally expand your business through positive references.

A company from
SÜDTIROL

KlimaHaus
CasaClima

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