





# PP4CE International

Brecon Cleanroom Systems B.V. is the initiator of the PP4C concept, which is a success in the Netherlands. Creating a strategic alliance of specialised companies in a specific market segment is quite innovative. Together the PP4C partners design, build and maintain working-areas for the different industrial sectors in which contamination control is required. As there are departments like R&D, production, testing and packaging whith in different market segments like semi-conductor, pharmacy, medical devices or the food sector. The customer only has contact with one person, who supervises and manages the entire design and construction process. No loss in time, communicating with different people and a clear agreement what is required and to be delivered.



## What does PP4CE International stand for?

A partnership between Brecon International B.V. a specialized company, with over 25 years of experience in the cleanroom construction industry, and Stulz GmbH, an international German organisation, represented in over 160 countries in the world. Stulz is one of the world's market leaders in HVAC technology and provides innovative solutions for Data Centres, clean and contamination-controllable areas in laboratories, cleanrooms and other specific work areas. Together with a number of well known companies, which - individually - play an important role in designing, constructing, furnishing and maintaining clean and air-conditioned rooms, where specific requirements are imposed for the quality of the overall working environment, PP4CE International offers turnkey solutions. This might include laboratories and/or cleanrooms for the pharmaceutical and semi-conductor market, or 'High Care' production areas in the food or feed industry. PP4CE is capable of translating production and other processes into logistics concepts within a spatial concept where a controlled environment is considered necessary. The requirements are then translated into the most effective and sustainable technical realisation.

Our PP4C customers are very satisfied with this rational way of working and our list of successfully completed reference projects is growing steadily. More and more globally operating customers are becoming acquainted with our unique way of working and are asking about the possibilities for this concept to be introduced internationally. In response to this market demand, Brecon International B.V. has found a number of companies interested in a similar strategic alliance for the introduction of an international concept. Whereas in the Netherlands the 'C' in PP4C stands for Cleanroom Technology, we have expanded our operations and talk of supplying a 'Controlled Environment', which then becomes PP4CE!! When your work environment has to be dust-free and/or germ-free, as professional partners we offer you a turnkey solution!

**'Flexibility, quality, reliability and honesty are our success factors'**

## All PP4CE partners differentiate themselves through:

- 1 Professionalism**

Partners have references at the highest level in various market segments such as the semiconductor sector at ASML, as well as the food and pharmaceutical sectors, for example at MJN, Danone, Patheon or MSD. (GMP cleanroom technology).
- 2 Trust**

Our selected partners have all been active in the industry for more than 25 years and have certified quality systems. In addition to the assurance of quality, safety and environmental monitoring during the construction process, the materials and HVAC system equipment we use have been tested against international standards and meet the most stringent requirements.
- 3 Customer focus**

Process management is available from the architectural or engineering design stage through to the entire engineering of the building. Also support in the preparation of a 'Programme of Requirements' (URS) and the complete design qualification process up to and including commissioning and the final classification, PP4CE offers you a complete package of services including advice regarding clothing- and cleaning-regime and sound advice for a proper maintenance plan.
- 4 Certainty**

Whether it concerns an ISO 14644, EHEDG or GMP classified workspace in northern or southern Europe, in the USA or Asia, PP4CE applies globally identical Fraunhofer certified product systems and guarantees uniform quality results and an identical maintenance plan with universal spare parts. No need for interpretation at local level regarding the quality of HVAC conditions or architectural matters, but internationally comparable quality levels, comparable cost and other parameters! Additionally: whether it concerns the warranty terms or international tax regulations or safety in the workplace... PP4CE Partners operate in conformity with internationally accepted and correct compliance rules.



## Knowledge of technically complex construction processes is required

The top management of companies is increasingly interested in commanding and controlling risk management. Specifically in the 'controlled environment' setting, processes take place of great commercial or technical importance. Differences or deviations are to be avoided. Especially in international companies, it is extremely important that similar work procedures and equal working environments are available in different countries to avoid additional risks, in any form. A globally matched 'controlled environment' technology also provides better insight and a more efficient implementation of modern asset management. This includes management of spare-part management and shortening of shutdown time in calamities.

As a customer, it is essential that you have your laboratory or cleanroom designed and constructed by parties with extensive knowledge and skills relevant to these technically complex workspaces. Because if the workspace constructed fails to meet your requirements and expectations, the most expensive m<sup>2</sup>s in your property will become a daily recurring source of irritation and 'cheap' becomes 'expensive' after all. You might think this is logical...

But, how often, in fact, during construction projects in general and during the construction of special controlled environment workplaces in particular, is too little attention given to Design Qualification and commissioning! Many disciplines are involved in developing and building of ISO 14644 or GMP classified cleanrooms or a (Medium or High Care) production facility in the food sector. This means there are always several companies involved in the design and construction process.

## A single contact person for all disciplines

A space in which a clean working climate has to be created is technically extremely complex in both the design and construction phases. When many disciplines and specialists are involved, attention to communication and good collegial cooperation, between the parties

## Cleanrooms: what are they?

More and more cleanrooms are being created in many industries for contamination control. A cleanroom is an especially clean work environment, designed to limit and where possible exclude contamination of the production process or the research being conducted in the room. The construction of a cleanroom is based on a 'box in a box' construction concept. A sealed area is constructed in an existing space, limiting external (air pressure) influences. Purifying the air through high-quality filter technology, controlling the relative humidity and temperature, a good layout to avoid cross-contamination, the use of the right wall, floor and ceiling finishing materials, proper ventilation and pressure hierarchy, a proper air ducts plan...

These are just some disciplines that are combined to create a properly functioning cleanroom. So there are always several professional companies involved in the design and construction of a cleanroom. The training of personnel, a proper clothing and cleaning regime and the continuous monitoring of various technical parameters are aspects that are very important for the purpose of being able to guarantee continuous quality.

involved, is essential. It's unavoidable: the team will be large and complex... But as a customer you don't want to have to contact 10 parties to discuss the construction process!

PP4CE International provides a single contact person and a professional and reliable team of specialists to take on all responsibility and which together form a centre of competence ready to assist you. A well-synchronised team operating as a single unit.

Do you want quality assurance through contamination management when you need to invest in cleanrooms? If so, choose the right partner with adequate knowledge and experience and a proven track record... Choose PP4CE International.

## Working with PP4CE means:

There are many factors determining success during the construction of a room with contamination control. Our strategic partnership enables us to perfectly coordinate these factors, to better manage the process and guarantee the required quality. In summary the advantages of working with PP4CE:

- 1 A single contact person for all disciplines**
  - Advice, design, construction, cleaning, layout, validation, management and maintenance.
  - Short communication lines save time and therefore money.
  - PP4CE constructs small laboratories through to large complex GMP projects.
- 2 Excellent price/quality ratio**
  - Shorter lead times made possible by correct process strategy to save costs.
  - Fewer failure costs because partners are attuned to each other.
- 3 Integration of (GMP) knowledge from different disciplines**
  - Architectural, E and W, HVAC and layout.
  - Partners are specialised in construction of cleanrooms and/or laboratories.
  - Efficient exchange of information made possible by perfectly matched partners.
- 4 Innovative and sustainable solutions for complex problems**
  - Combining knowledge creates a large knowledge platform.
  - Innovative production development from the start in full cooperation.



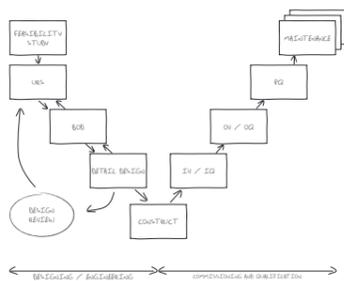
The Brecon Group can attribute a large proportion of its excellent reputation as a constructor of cleanrooms to continuity in the delivery of quality products within the semiconductor industry, with ASML as our most important associate in the past decades. However, we are also active in a significantly higher number of market segments. We regularly complete successful clean environment projects in all other industrial and pharmaceutical sectors, as well as within the healthcare and medical devices sector!

For us, the right design, based on your programme of requirements (URS) and the qualitative delivery, construction and layout of a conditioned room is the basis for a correct and pleasant (GMP) work environment. Walls, ceilings, windows and doors... we always aim for the highest level of customer satisfaction, during the design phase, the construction process and during the period of the project. Several top-quality product systems are available for the various disciplines and quality requirements; developed and produced by our own production company.

The Brecon Group is initiator of the PP4C concept, now a success in the Netherlands. A strategic alliance of specialised companies in the cleanroom sector. Together they design, construct and maintain cleanrooms for various industrial sectors. The customer, however, only has contact with one person, who supervises and manages the entire design and construction process.

Whereas in the Netherlands the 'C' in PP4C stands for Cleanroom Technology, we have expanded our operations for the international market and refer to 'Professional Partners for a Controlled Environment', which then becomes PP4CE. Together with our PP4CE partners we offer a **turnkey solution** for all your germ-free and/or dust-free rooms.

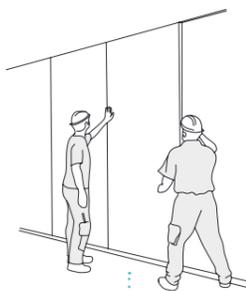
Do you have plans to build or refurbish a cleanroom or laboratory, or do you need a new layout? Are you looking for a good partner for the design and construction of a high care area at your business site? Are you looking for support in determining the correct clothing regime or a periodic maintenance plan? Then contact us for further introduction to our all-in-one service package and experience how it can work with a business where **flexibility, quality, reliability and honesty** are and have been at the forefront for more than 27 years.



**1. Defining URS**  
The client is leading when determining the User Requirement Specification.



**2. Design Qualification**  
Based on the URS the Qualification Process is executed including engineering and specifying.

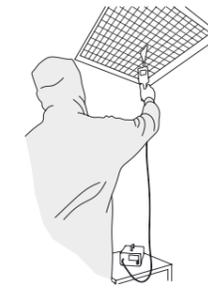


**3. Construct**  
After a possible Design Review the construction starts including the commissioning process (IQ / OQ).

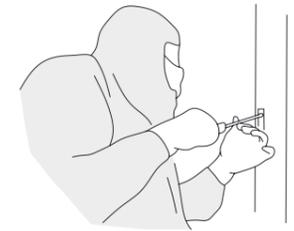
**4. Cleaning**  
For the qualification a special cleaning process has to be executed.



**5. Verification and acceptance**  
Implementing the qualification follow the Master Validation Plan (OQ).



**6. Maintenance**  
Set-up and implementation of preventive and possibly corrective maintenance.





**STULZ – Air conditioning solutions you can rely on for dependable applications**

Backed by over 40 years of experience, STULZ is one of the foremost pioneers in the field of air conditioning solutions for dependable applications and Data Centers. STULZ equipment is developed and manufactured to the very highest standards of quality and in line with exceptionally stringent testing criteria. We are specialists in our field and are equipped with a level of technical expertise in Data Centers that stretches far beyond simply our core business. The STULZ product range includes traditional room cooling, high-density cooling, chillers, container modules and air handling units with adiabatic cooling. All systems are available with Indirect Free Cooling. STULZ offers Direct Free Cooling for CRAC systems, air handling units and modular Data Centers.

Together with its various sizes, extensive additional options and modularity, STULZ therefore boasts a product range that is unique in the world and can make optimum climate for practically every project. The specific experience and knowledge, built up in developing and producing our range of HVAC units for over 40 years, is also given us the opportunity to focus on new markets where stringent parameters are highly demanded. For that reason Stulz is focussing on “controlled environment” in buildings. This can be

laboratory or cleanrooms areas within the semi-conductor industry, healthcare or pharmaceutical production facilities. Wherever technical expertise in HVAC is demanded, STULZ is your partner.

**At home all over the world**

Since it was founded in 1947, the STULZ company has evolved into one of the world’s leading system suppliers of air-conditioning technology. With the manufacture of precision air-conditioning units and chillers, the sale and service and object management, this division of the STULZ Group achieved a turnover of around 420 million euros in 2016. Since 1974 the group has seen continual international expansion of its air conditioning technology business, specializing in A/C for data centres, offices, hospitals and telecommunications installations. STULZ employs 2,300 workers in Germany and nineteen subsidiaries (in Germany, France, Italy, United Kingdom, Belgium, Brazil, the Netherlands, New Zealand, Mexico, Austria, Poland, Spain, Singapore, China, India, Indonesia, South Africa, Australia and the USA). The company also co-operates with sales and service partners in over 135 other countries, and therefore boasts an international network of specialists. It has production plants in Germany, Italy, the USA, United Kingdom, Spain, 2 in China, Brazil and India. The STULZ Group employs around 6,700 people worldwide.



**Bolidt Kunststofopassing BV** develops, produces and installs high-quality synthetic floor and wall systems for clients in industrial construction, utilities construction and marine engineering. As well as offering excellent functional characteristics, these systems are aesthetically superior. Bolidt’s systems are seamless, resistant to chemicals and can be supplied with any level of electrical conductivity as required. They are sustainable by virtue of their long service life, simple maintenance and scope for layering, as well as their use of ‘green’ raw materials such as plant-based biopolymers. The range of Bolidt floor and wall finishings in cleanrooms has a unique feature: resistance to bacteria and fungi. Diverse types of hazardous bacteria and fungi found in the food sector, the pharmaceutical industry, and the healthcare sector have no chance of survival: upon coming into contact with the synthetic surface they are killed, mechanically and chemically.



**Cleanroom Cranes designed & engineered by Mennens** is part of the Mennens Group. As a specialist in cleanroom cranes we are active worldwide. Together with our partners in America and Asia we are involved in the design, production, distribution and installation of cleanroom cranes. Every crane that we supply is custom made. We offer a wide range of possibilities. From a lifting capacity ranging from 50 kg to 20 metric tons, from one to several cranes, anything is possible. Our A-quality cranes are non-contaminating, leave no particulate matter, are accurate, silent and fit seamlessly in a cleanroom environment. In addition, all our cranes carry international quality labels. Our products are extremely suitable for the semi-conductor industry, pharma, aerospace engineering, and the food sector.

**Not only cranes.** The specific experience and know-how of lifting products gave us new opportunities. We can offer a wide range of lifting tools, fall arrest, climbing tools, equipment and safety products. The tools and products we offer are specifically designed for use inside laboratory, cleanroom and other conditioned areas within the semiconductor industry, food, healthcare, aerospace or pharmaceutical production facilities. With our knowledge of these products we also have the opportunity to offer it custom made. This is making us your partner for the total concept of lifting and working on height in conditioned environments.



## Deerns

Deerns has extensive expertise in the planning, design and delivery of contamination-controlled research and production facilities and laboratories that comply with international standards (ISO, VDI, GMP, BSL, FDA). Our experienced specialists have the necessary knowledge of all the necessary installations for ultra-clean production rooms and laboratories. This knowledge is based on years of experience of techniques for sophisticated air treatment, cleanroom materials and fixtures, lighting, air and liquid filtration, access monitoring and exhaust air systems. Our expertise is based on the experience gained from completed projects at the sites of Phillips, TNO, RIVM, ASML, Danone, Amolf, DSM and Delft University of Technology and others.

Deerns is an international engineering consultancy specialising in installation engineering, energy and building physics. A staff of 600 works in offices all over the world. Deerns' expertise includes advice and designs for installations, building physics, sustainable energy provision and the design of airports, cleanrooms, laboratories, data centres, hospitals, offices, hotels and museums.

## VAN AKEN

CONCEPTS | ARCHITECTURE | ENGINEERING

**VAN AKEN Concepts, Architecture & Engineering**, founded in 1979, is a European company based in Eindhoven (The Netherlands). VAN AKEN is active in architecture, urbanism and interior architecture with an emphasis on high tech projects. All employees are highly educated, versatile and very well familiar with the latest BIM developments. Clients love to come back to VAN AKEN because of their almost forty years of innovative ideas and clever solutions.

VAN AKEN has significant experience in building on an enormous scale and understands the importance of precision engineering. For example, VAN AKEN has engineered cleanrooms and datacenters with vibration-free floors, floors with a level tolerance of as little as 1 mm or resistant to earthquakes with force 9 on the Richter scale. Combining precision engineering with fire safety, FM-Global regulation, LEED, interior functional design, detailing, BREEAM, building physics and architecture is VAN AKEN's forte.

All our designs are developed in a BIM (Building Information Model). BIM is a virtual prototype of any project. It allows us to create a complete 3-dimensional model to simulate and assess any aspect of design performance before, during and after it is built. VAN AKEN has been working with BIM since 2008 and is currently leading in Revit software knowledge. VAN AKEN's BIM coordinator is active as member in Revit Users Platforms.

## ASSA ABLOY

### We open doors to your business ASSA ABLOY Entrance Systems

Smoothly functioning entrances are a prerequisite for any successful business. When you need to keep your entrances functioning at optimal levels, ASSA ABLOY Entrance Systems provide exceptional products, innovative solutions, and incomparable service for the front, back and interior of your building on a global scale.

### Protect against drafts, humidity, dust and dirt with the Albany cleanroom doors

Cleanroom doors feature an almost airtight seal, which minimizes pressure drop and protects your environment against drafts, humidity, dust and dirt. The airtight doors comply with international cleanroom standards and are certified by the Fraunhofer Institute. They are ideal for cleanroom applications in pharmaceutical, chemical, electronics and micro-mechanics industries. Fast opening- and closing-speed helps control air exchange and reduces contaminants. A break-away system ensures maximum safety for personnel and equipment.



### Breathing air is essential for life. It is the very first thing we do when we are born. Camfil filters protect people & process safety.

Camfil are the clean air solution leaders in protecting people, processes and the environment across all industries. We do this by defining, developing and delivering filter solutions that combine clean air with the best energy efficiency.

Camfil are doing this for over 50 years in a sustainable and profitable way. Our core values of reliability, commitment, customer satisfaction, teamwork and our globally important local presence have made us the first choice in filtration solutions. We have supplied every global manufacturer somewhere in the world with filter products. We design our products to safely filter supply and exhaust air in clean rooms and containment facility applications in Healthcare, Microelectronics, Pharma, Biosafety Laboratory & Nuclear facilities.

Camfil supply Hepa and Ulpa Filters to the highest industry standards and filter housings, grids and frames for all your cleanroom needs.



## DENIOS.

With more than 30 years of experience, **DENIOS** is the world leader by offering the most comprehensive range of products related to all aspects of hazardous storage, environmental protection and health and safety at work.

Since 1997, DENIOS has been manufacturing and installing clean air systems, such as laminar downflow booth units, Crossflow booth units and LAF systems for the pharmaceutical, fine chemical and food industry. The aim of using laminar downflow booth units is to improve the occupational hygienic conditions in the open processing of chemicals, so that employees are optimally protected against exposure to harmful (active, hazardous) substances. Working can take place under the best conditions according to the latest state-of-the-art technique, in order to prevent cross contamination. The degree of personal protection and protection of the environment is extremely high. In addition to maximum protection for the operator and his environment, also for product protection a guaranteed clean air class under GMP conditions can be realized. The combination of both product protection and operator protection makes DENIOS unique in the market. DENIOS offers usage-specific solutions, which provide maximum protection for operators and their environment, as well as low-dust (aseptic) manufacturing, preparation, processing, sampling and filling of products".





**Gulf Computer Support Systems (LLC.)**



**Gulf Computer Support Systems LLC (GCSS) was established in the United Arab Emirates (U.A.E) in the year 1988, with offices in Dubai, Abu Dhabi. GCSS has a presence throughout the neighboring Gulf Countries with offices in Oman and Qatar and a planned office in Kuwait.**

GCSS began its business operation in the field of Computer Room Site preparation and subsequently expanded into DC Power Supply, high-tech building technology products - mainly Raised Access Flooring, Close Control Airconditioning systems, Leak Detection, Computer Room Fire Extinguishing System etc. Today, GCSS has firmly established itself as leading Datacenter and Building technology solution provider serving almost every major customer in the U.A.E.

**One of the leading brands that GCSS represents is: STULZ Precision Air-conditioning Systems, Germany.**

Stulz has initiated a strategic alliance with Brecon Cleanroom International and some other International suppliers within the Controlled Environment markets. as cleanrooms, laboratoria etc. The PP4CE organization is working on an international scale. GCSS is the PP4CE representative in the countries where we have the representation of Stulz Germany.

GCSS has the following three divisions to effectively manage the design, supply, installation, testing, commissioning and servicing of:

- Data Center Environment
- Building Technology Platform
- Telecom/Power Station Equipment

The PP4CE activity is managed from the division GCSS.

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