



It is the night of 6th April. A trail of 60 trucks snakes along the streets of Naples. Festive faces look on from the windows. This is not a victory parade for some winning sports team but the arrival of 120 intensive care beds, made available thanks to the modules designed by MED and the use of P3ductal air ducts.

We explore the events of this historical operation through the words of Engineer Enrico Venturato, Owner of MED, and Engineer Antonio Temporin, P3 Technical Director.

Pre-insulated air ducts

Help in the fight against Covid-19 arrives in trucks: intensive care unit containers for the Italian region of Campania.

by Federico Rossi

Even if dating back to April, the images of the long queue of trucks departing from Padua to haul intensive care modules to bolster the hospitals in Naples, Caserta and Salerno are still vivid in everyone's minds.

These images have been viewed around the world, shown by the news programmes and amplified by social media networks.

Images of a Naples celebrating as if it were New Year's Eve, welcoming into the city a caravan that brings hope and concrete help during an extremely complex time for our country.

These modules made by MED represent a history of absolute excellence that combines technology, design and production capabilities along with the perfect handling of the entire supply chain.

Engineer Venturato, what can you tell us about the history of these containers?

Our company has long worked in the health technology sector, with an integrated approach to complex projects able to blend structural skills, specific professionalism in system and hospital engineering as well as vertical professionalism in terms of project management.

We provide turnkey solutions and, indeed, we are much more than a general contractor.

At the peak of the emergency resulting from the first wave of Covid-19, intensive care beds were scarce everywhere.

During that time, we were studying ad-hoc ways to handle this pandemic for the hospitals in Schiavonia (Padua) and Parma. We were seeking solutions that combine operational efficiency, speed of installation and respect of

expenditure limits, designed to be installed in a temporary and modular way in the hospital forecourts.

In mid-March, the tender called by the Campania Region was published and overseen by the regional purchasing office.

Solutions for intensive care were needed immediately. The challenge seemed impossible but precisely for this reason, it must be taken on.

The tender lasted pretty much one day. The peak of an emergency does not permit bureaucratic “time-wasting” – you must be immediately operational with solutions that can ensure the highest standard of functionality and service.

We succeeded in the miracle. Project documentation was submitted within 24 hours and we were awarded the tender. Then, we delivered 120 intensive care units (72 in Naples, 24 in Caserta, 24 in Salerno) in a very short time – 18 days for 60% of the supply, 25 days for 20% and 35 days to complete the provision.

A superhuman operation. How did you in MED proceed?

Effectively, the timeframes were definitely contingent. Italy was in lockdown so working was far from simple.

We were called to complete a non-stop operation which was accomplished in just over two weeks of planning, development of the executive designs, procurement of materials and equipment, assembly and delivery of 160 modules ready to be put into operation.

The choice of the prefabricated modular solution proved successful. Yet, this solution should not give the wrong impression – within these monoblocks, there is the utmost level of technology and hygiene.

In fact, those provided to the Campania region offer the latest-generation intensive care units with

all of the most modern technologies for monitoring vital signs, providing patient care also with special lung ventilators (which were still practically unavailable worldwide at that point), the erogation of medical gases, absolute air filtration and the maximum hygiene of the premises.

This solution lends itself very well to emergency situations, since it does not require significant predisposition works and allows the greatest speed in commissioning, optimising the space in the surrounds of the existing hospital facilities.

We are now extending this solution to areas that may not seem as important as intensive care but are just as delicate in preventing the spread of contagions and ensuring the proper management of access to care – the pre-triage zones (being the entrances before accessing the emergency room).

When talking about hospitals, the first aspect that springs to mind is

air hygiene. How much impact can air ducts have? And what solutions have you chosen for the modules provided to the Campania region?

Certainly, the level of hygiene and air quality absolutely depends on the filter segments but the choice of the right air duct is certainly not to be underestimated. At the end of the day, it is the ductwork network that is responsible for the air distribution within the environments.

For the Campania region, we have selected the P3ductal careplus ducts – the top of the P3 range, able to ensure both an antimicrobial and self-cleaning effect.

What factors prompted you to go with the P3ductal careplus solution?

As already noted, this special technology with self-cleaning and antimicrobial effect in the P3ductal careplus ducts has been a key aspect for an installation solution servicing an area as delicate as an intensive



care unit.

But in addition to this technical aspect, there were three somewhat more “practical” facets that guided our choice: the speed of supply, the possibility of carrying out small operations directly on the worksite, and the lightness.

Time was extremely tight and the ability to rely on a structured and professional partner such as P3 was a fundamental assurance for us to ensure there would be no problems in a roadmap that allowed no hitches.

The company's commercial organisation and broad distribution network allowed the firms that followed us in the construction of the ducts to operate immediately, without any issues.

At the same time, P3 was a great help in finding a partner in Campania for all of the installation activities involved in the works and operations on the worksite.

The possibility of working on the ducts on-site was fundamental in order to be able to adapt the duct network to the actual onsite conditions with the utmost precision. This would have been impossible with traditional sheet metal solutions.

Finally, the lightness facilitated our work in the delicate phases of handling the segments of duct.

In general, our prefabricated modular solutions are characterised by high seismic performance. Pre-insulated aluminium ducting is a perfect solution thanks to its lightness, rigidity and great damping capacity.

The availability of dedicated anti-seismic bracketing systems makes the P3ductal line the best possible choice on this front.

Engineer Temporin, the P3ductal careplus solution has been a strong technological breakaway for the duct world and an innovative response for all applications

requiring high standards of hygiene. This is particularly in demand today in facing the Covid-19 emergency. What can you tell us about this?

Air quality and hygiene have always been two key technical aspects in the development and innovation of P3 products.

We started exploring and producing antibacterial solutions as early as

them, also the demands of designers, system developers and contractors.

Hence, our P3ductal care line quickly became one of the most appreciated solutions, even if studies showed that the antimicrobial treatment was not entirely sufficient.

The bacterial charge found fertile soil in the dust deposits within the duct itself and, analysing the extents both



2000 in order to meet the precise needs emerging from certain international markets.

Over time, we refined this technology up until around 15 years ago, achieving the development of the P3ductal care solution characterised by an antimicrobial finish applied to the inside of the duct that comes into contact with the air.

It was a time when there started to be talk of “sick building syndrome”, or the symptomatological problem, which mainly affects the respiratory tract and is linked to time spent within buildings that do not ensure adequate air quality.

International standards and regulations were evolving and with

on the worksite and in operation, we found that cleanliness was not always guaranteed.

Hence, we had to find a solution that would be able to allow accumulations of particulate matter to simply “slip away” by moving the duct on the worksite or with a standard flush-out operation during the initiation phase, as covered by the international LEED and BREEAM protocols.

Our studies focused on the coatings that were becoming more widespread to reduce the maintenance of large glazed surfaces (buildings, solar power modules, and so on).

Thanks to a meticulous operation that lasted over three years and was carried out in collaboration with the most

authoritative research institutions, including the University of Padua, we adapted the technology then about eight years ago, we launched P3ductal careplus.

The great innovation of this line is encapsulated in the side intended for the passage of air, where we have applied a revolutionary nano-coating structured with “lotus effect” that ensures a reduction in any accumulations of dust and solid particulate matter.

Today, P3ductal careplus is the only solution available on the market able to ensure this dual self-cleaning and antimicrobial effect. Of course, this is all duly certified by laboratory tests and trials.

In particular, on the cleaning front, a specific large-scale test carried out with the use of an experimental system for simulating an air ductwork network allowed us to characterise its advantages on the basis of the methodologies described in the UNI EN 15780 standard.

These tests showed a 50% reduction in solid particulate matter offered by the P3ductal careplus solution compared to standard pre-insulated solutions and 90% compared to those in galvanised sheet metal.

On the hygiene front, the tests had largely positive results, confirming a broad-spectrum antimicrobial activity that persists even after accelerated ageing tests, carried out by simulating 20 cleaning cycles with brushes, as required by UNI EN 13403.

Amongst the many certifications obtained, particularly significant is the approval according to the VDI 6022-1 standard.

It is precisely the self-cleaning effect that today represents the key to the problems related to Coronavirus, not so much because the treatment can offer a direct and resolute antiviral effect, which is not yet available on the medical front, but because specifically eliminating the accumulations of particulate matter eliminates those “environmental” fundamentals in which viruses can proliferate.

Contrary to what could initially be read in the newspapers, HVAC systems do not represent a problem in the spread of the virus indoors. Confirmation of this came in unison from the leading global associations of reference such as ASHARE, REHVA and AICARR, as well as the Italian National Institute of Health.

Indeed, it is precisely the proper management of air flow renewal and

more generally in the exchange of air that positively contributes to the reduction in elementary viral loads.

In this context, the role of air ducts – especially if made with technologies able to ensure the best hygiene and quality conditions as P3ductal careplus is able to do – is evident.

This aspect has been recognised by experts in the thermotechnical world who have chosen our solution for numerous operations in the Covid-19 health facilities, amongst which – in addition to the containers for Campania – are the Fiera Milano Hospital, the Cattinara Hospital in Trieste, the Hospital of Rimini, the Hospital of Pescara, the Polyclinic in Modena, the Covid-19 pavilion at the G. Di Cristina Hospital in Palermo and the Covid-19 department.

This is a great satisfaction for us at P3 who have always put Research and Development at the centre.

The self-cleaning solution is one of the most significant results of this *modus operandi* but nevertheless, we want to remain at the forefront in trying to raise the quality of our products even more, with the aim of being able to deliver the highest performance standards in the world of air ducts.

