CD4 AIR CONDITIONING HEATING REFRIGERATION

LE AZIENDE SI RACCONTANO

Storytelling

SINTRA
SISTEMI INNOVATIVI DI TRATTAMENTO ARIA

MIXIND TECHNOLOGY

25TH SINTRA ANNIVERSARY

Cutting-edge technologies in drive and in air treatment

In 25 years of activity, SINTRA has never ceased to innovate to offer its customers an assisted design offer that is based on technical solutions oriented in the direction of effectiveness and energy efficiency.

The Company is currently the first manufacturer in Europe of perforated metal ducts capable of combining ambient air drive and supply air diffusion, for all types of applications

Meeting Marco Zambolin means getting to know someone who more than anyone else has contributed in a decisive way to the development of ambient air drive technologies, an exploratory and experimental frontier that has its origins in more than 40 years ago. His professional career has led him to the development of new theoretical assumptions relating to aeraulic design. SINTRA, in the image of its founder, preserves constant research and continuous improvement in its DNA.

CDA REFRIGERATION Storytelling

In 2020, for the **25th anniversary of its establishment**, the company is proud to add a new milestone to its history, with the opening of the **new Mix-Ind® Pilota research and production center**.
It is a real

integrated design, capable of combining innovation, technology and productivity without waste together with the maximum comfort of the working environment.
This plant represents the ultimate in innovation and is a prototype of the world's most advanced processes in the field of air treatment, applied to large surfaces, as well as the concrete demonstration of what can be achieved

The origin of MIX-IND® technology

It all began in 1981.
After several experiences in the

when research is pushed beyond pre-established schemes, ideas and theories.

In the design and installation of technological systems for heat recovery on industrial plants, Marco Zambolin, current president of SINTRA, files the first patent for what will become the MIX-IND® technology of **Ambient Air Pulsion**.
The idea was born by analyzing the problems of heat stratification and de-pressure in a large volume building (more than 10,000 m^2) at the

Pirelli Cavi di Milano Bicocca.
Between 1982 and 1983, experiments were carried out with the contribution of the National Committee for Research and Development of Nuclear Energy and Alternative Energies (CNR – ENEA)

in the context of the project "Civil, industrial uses, energy and territory".
In the following 12 years, the experimentation continued in the form of "applied research" both in Italy and in France, creating turnkey plants in large-scale buildings, thus allowing the validation of design and calculation techniques.

The birth of SINTRA

SINTRA was founded in 1995 to

a precise strategic choice by Marco Zambolin, who, after having gained more than 25 years of experience in innovative air handling systems for large-volume civil and industrial environments, realizes the enormous potential of MIX-IND ® in the creation of innovative air handling systems

easily reduce the residual ground velocity at any time;
- **energy saving** through the TWIN-VARIBOOST® variable flow technology;
- **Acceleration of time to Fully operational** with the removal of night-time attenuation;
- **energy optimization** of all installed powers.

The company was established precisely to be able to ensure the production and marketing of these devices.
SINTRA significantly implements its knowledge in a short time

New MIX-INDR® Pilota research and production center (construction site nearing

that allow to achieve performance results that are far more effective than the traditional solutions used up to that moment.
The final result translates into:
- **homogeneity of vertical and horizontal temperatures** of ±1°C regardless of the height of the building;
- **Maximum comfort** thanks to the possibility of choosing and modifying
- **possibility of diffusing very cold air** (down to -15°C) in overheated buildings without condensation problems;
- **very precise control of the relative humidity** of the environment without the use of a post-heating coil;
- **great ease in getting around obstacles** in the room;
- **total energy requalification** of obsolete installations;

implementing extreme applications of the technology, providing turnkey plants for important industrial process infrastructures throughout Europe.

The application of MIX-IND®

"The MIX-IND® technology was born by mainly analyzing the problems of stratification and depression of large-volume industrial buildings, in particular those

to specific pollution", Marco Zambolin points out.
"In fact, this technology was initially used in the automotive industry in Italy and France (PSA Group, FCA, Iveco, etc.). Thanks to a specific design, this technology makes it possible to solve complex problems of temperature homogeneity, while maintaining **perfect control of residual air velocities** in buildings with very different environmental requirements (ultra-clean environments, with specific pollution, with high endogenous heat, of great height, of small volume...)".
For this type of implant, SINTRA uses **perforated channels called "PULSORS".®**

Eco-sustainable innovation

Between 2009 and 2012, SINTRA created **SPIROPACK™**, the green technology for the manufacture of open-circumference metal pulsors® , and inaugurated for the same occasion its new factory-laboratory which houses a very powerful production line (1,000 m/day and up to Ø 3,000mm), fully automated. "SPIROPACK™ revolutionizes the world of circular metal channels by producing them open, with programmed deformation of the diameter," says Marco Zambolin.

SINTRA's patents

In the field of technological excellence, SINTRA is the depository of about **20 international patents**, but these numbers are constantly being updated, since each product or technological solution, although completely adequate in terms of performance, can receive further implementations

The new MIX-IND® Pilota research and production center

The **MIX-IND® Pilot** project is a production unit built in a building of highly innovative design, equipped for the continuous research of new systems for the treatment of ambient air, applied to large volume buildings. It will be intended not only to meet SINTRA's production needs, but will above all be dedicated to experimentation and

continuous research for the **development of NEW GENERATION plants**. Scientific research and **full-scale experimentation** activities will also make it possible to perfect and validate the current mathematical models of CFD **(Computational Fluid Dynamics)** flow calculation, which are currently scientifically insufficient to predict with the necessary precision the actual fluid dynamic behavior of applications using these new technologies.

The building will be equipped with a weather station and a special **BMS (Building Management System) management system** that will control over a hundred probes in the environment for monitoring both thermal and fluid dynamic behaviour in the various internal and external thermo-hygrometric conditions.

The MIX-IND® Pilot will also house the new **Training Center** with internal terraces that will allow you to safely attend the experimental tests without interference with production activities.

The new research centre will also be available to universities and bodies responsible for the development of innovative energy technologies for educational and experimental purposes.

"Thanks to this long research path," adds Marco Zambolin, "we can say that the MIX-IND® technology is unique in its kind. It has evolved thanks to criteria and calculation methods very different from those traditionally used.

For this reason, it is essential to inform our customers about our technologies. To this end, we regularly organize training and technical update days on three levels, entirely dedicated to professionals in the HVAC sector".

Training and technical support during the design phase

SINTRA's ideal interlocutor is the designer, the person appointed by the client to choose the most suitable solution to meet the performance requirements of the system.

"The designer is perfectly familiar with the different types of air diffusion, the particular design characteristics of radiation or displacement systems, but – in the absence of specific training – he may struggle to imagine the performance achievable today with **Advanced Cleaning systems.**

This requires direct access to our wealth of skills and experience," explains Zambolin.

It is understood how to **design an Advanced Drive system,** Sintra's technical support is indispensable, preferably in the preliminary design phase, where the margins for manoeuvre to introduce innovative solutions (such as the variable capacity and variable comfort Drive Beam are wider).

"With a simple video conference meeting, we provide a preliminary environmental diagnosis and a wealth of experience in similar projects that is the application history of thirty-eight years of application of our technologies," concludes Zambolin.

SINTRA
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MIXIND® TECHNOLOGY

NEW GENERATION ADVANCED DRIVE PLANTS

REDUCTION OF THE INITIAL COST OF THE SYSTEM

ENERGY SAVING:

- - 80% on the electricity consumption of the fans.
- - 70% on the cost of replacing the filters.

TOTAL ELIMINATION:

- Of heat stratification. Of the
- channels of recovery.
- The risk of draughts. Of the thermal insulation of the canals.

INCREASED PERFORMANCE:

- Maximum installation height < 40 m.
- Launches up to 100 m away.
- Variable flow rate up to 20/100 %.
- Maximum homogeneity of temperatures.
- Reduction of air flow rates.
- Fewer channels in the room.
- Less weight on structures.
- Greater longevity of the systems.
- Greater operational safety. Less time to
- get up to speed.
- Winter free-cooling down to -15 °C. Total
- energy requalification.

GREEN TECHNOLOGY