

## WARNER VILLAGE MARCON

Marcon, Venice - Italy

Multiplex cinema

12 screens

Multiplex Clima Solution

**2000**



Warner Village Marcon is one of the international group's first projects in Italy. Strategically located near Venice, between an important motorway interchange and a vast commercial centre, for years it has been one of the key entertainment destinations, with screenings also in the morning. It was taken over in 2009 by the UCI Cinemas chain.

### The Challenge

The high quality standards adopted by leading film studios required an exchange of air in the auditoriums as high as 8 l/s per audience member, i.e. almost 50% more than the 5.5 l/s required by Italian legislation.

This requirement was, however, a source of considerable complications both for the design engineer and for the operator.

It was thought that the rooftop heat pump conditioners normally used in commercial facilities would simplify the system and accelerate its construction.

However they would not have successfully conditioned the higher flows of fresh air and therefore would not have reliably guaranteed the necessary comfort during the year, particularly during winter heating.

For that reason, centralised system solutions had been used until then, based on suitably dimensioned hydronic air conditioning units which operated alongside cooling and heating units. However, these systems were complex to build and operate.

This is why the design engineer was on this occasion requested to provide a solution which would maintain the high quality standards and which at the same time could reduce building costs and times and above all running costs.

The operator also requested a check on the real performances compared to those calculated in the design, with a lengthy trial performed by an independent third party.



Warner Village Marcon – main entrance and corridor leading to the auditoriums.

### The Building

- Prefabricated two-storey building

### The Dimensions

- 12 screens with 2,500 seats
- Refreshments area, Green Planet bowling alley pub

### The Team

- General design by Studio Tecnico Ing. Chiodin, Italy
- Systems construction by Gemmo Impianti, Italy

### About Warner Village Cinemas

Set up in 1996 as a joint venture between the two giants Warner Bros International Theatres and Village Roadshow Australia, the Warner Village Cinemas chain pioneered the development of modern European multiplex cinemas, offering innovative architecture, cutting-edge technologies, crowd-puller screenings and many additional services. Warner Village Cinemas was taken over in 2003 by the SBC International Cinemas group in the UK and renamed Vue, while in Italy it was incorporated into the Space Cinema chain.

## The Solution

A decentralised all-air heat pump climate control system was chosen for the multiplex cinema, designed especially for high occupancy applications.

All the auditoriums are climate controlled by autonomous rooftop monobloc units, also able to process the 70% outside air exchange and including Freecooling regulation and active thermodynamic energy recovery from the exhaust air.

Each unit is equipped with an air quality probe which detects the level of CO<sub>2</sub> in the auditorium and as a result automatically regulates the amount of fresh outside air to be conditioned and supplied.

The machines also contain second stage high-efficiency filtering, of the F6 rigid bag type, and silencers with sound-absorbing baffles on both the delivery and return sections.

The units for the foyer, refreshments area and projection room are similar to the previous ones although designed especially for average occupancy uses.

Finally, an independent water loop heat pump climate control system with energy transfer was provided for the adjacent bowling alley pub, so that the various areas served - pub, pizzeria, snooker area, bowling alley and videogames area - are autonomous.

## The Results

The use of autonomous monobloc units considerably shortened work times and increased the overall reliability and versatility of the system, since every area served is independent of the others.

At the same time the specific design of the system enabled the high exchange of air required by the quality standards of the film studios to be achieved without waste thanks to the automatic reduction in the flows of outside air according to actual occupancy, therefore with lower consumption.

The annual cycle heat pump technology, also used in the device for energy recovery from the exhaust air, considerably increased the seasonal efficiency of the system.

The Department of Engineering Physics of Padua University monitored the temperatures, humidity and energy consumption for one of the auditoriums with 152 seats for one year, starting September 2000. The data obtained minute by minute also served to calculate the specific performances that a traditional hydronic system would have produced in the same working conditions.

In particular, during the period when the heating was on, the seasonal energy saving was over 26%.

Thanks to the application of an electricity tariff differentiated according to time of use, the financial savings on consumption were over 50%.

The Marcon multiplex can rightfully be considered a turning point in the Warner Village Cinemas policy on systems engineering, with a move to fully autonomous direct expansion monobloc units.

The Multiplex Clima System is in fact to be used in all 7 future projects in Italy, with a total of 82 cinema auditoriums.

*For further details on Clivet systems*  
**[www.clivet.com](http://www.clivet.com)**



Warner Village Marcon – Rooftop heat pumps.

### The System

- 16 rooftop Clivet CSNX air to air heat pumps with integrated active thermodynamic recovery for areas with high occupancy, serving the auditoriums.
- 2 rooftop Clivet CRSN air to air heat pumps for areas with average occupancy, serving the foyer and projection rooms.
- WLHP loop system with 16 Clivet water-air heat pumps, of the WH cabinet unit, horizontal CH, vertical CH-V and rooftop CRH types, serving the Green Planet bowling alley pub.

### About the Multiplex Clima Solution

The all-air Multiplex Clima climate control system is based on high-efficiency rooftop heat pumps, designed specifically for the functional needs of the various areas of a multiplex cinema. They feature high air exchange capacity, fans with electronic control, integrated thermodynamic energy recovery system and silencers fitted on the machine. The monobloc construction considerably simplifies both installation and running. The Multiplex Clima Solution also includes the centralised supervision system with intuitive graphic interface.