

## CINESTAR AVENUE MALL

Novi Zagreb, Croatia

Multiplex cinema

9 screens

Multiplex Clima Solution

**2007**



CineStar Avenue Mall is located in the shopping centre of the same name and is one of the main entertainment centres of the Croatian capital. It offers modern digital projection systems for an audience of over 1,900 and seats over 500 in the adjoining restaurants, cafeterias and bars.

### The Challenge

The aim of the capital's second Blitz-CineStar multiplex cinema was to endorse the Group's ambitious expansion plan as the most modern, appealing and technologically advanced chain in the whole of Croatia.

It obviously had to ensure maximum audience comfort throughout the year, including during Zagreb's cold winter months.

The air had to be constantly purified and conditioned according to the strict hygiene regulations applied in these situations, yet this time with two further limitations to be overcome.

The first challenge was represented by the particular variability of the loads occurring in high occupancy areas such as cinema auditoriums.

A building of this scale would require the design of complex air conditioning units and installation of supply cooling and heating units. Special regulation would be necessary to guarantee the operational autonomy required of the various machines, while at the same time seeking the best energy efficiency conditions required to reduce consumption and therefore running costs. It was clear from the architectural design that neither the spaces nor the structural capacity available for the service systems would have been sufficient for meeting all these conditions at the same time.

The second challenge arose from the complexity of a very varied site with problematic construction times demanding high reliability also during planning and handover.



*Blitz-CineStar Avenue Mall – cinema entrance area and interior of an auditorium  
www.blitz-cinestar.hr*

### The Building

- 3-storey building

### The Dimensions

- 9 screens with over 1,900 seats
- 3 restaurants and 4 refreshment areas

### The Team

- Architectural design by Plan, Croatia
- Systems design by Termoinženjering-Projektiranje, Croatia
- Climate control systems supplied by MB Frigo, Croatia

### About Blitz-CineStar

Blitz-CineStar is the top-ranking chain of multiplex cinemas in Croatia. It is the product of the ten-year experience of the largest Croatian film distributor Blitz Film and Video Distribution which merged with Germany's CineStar in 2003 to provide the Croatian public with the best service in terms of comfort, technology and programming. To date it numbers 74 cinema auditoriums with over 14,000 seats.

## The Solution

CineStar Avenue Mall also adopted the Clivet Multiplex decentralised all-air climate control system. Its rooftop monobloc reversible heat pump units are compact and also suited to working with low outside air temperatures.

Each auditorium is served by a unit designed specially for climate control of areas with high occupancy. These machines are able to condition a larger quantity of fresh outside air than a generic rooftop unit for commercial uses, where the number of people per surface unit is typically as much as 80% lower.

The equipment also includes fans with electronic control of the air flow rate, high-efficiency thermodynamic energy recovery from the exhaust air and hot gas post-heating to control summer humidity by recovering the condensation heat which would otherwise be dispersed externally.

The remaining rooms also use rooftop climate control units with reversible heat pump cooling circuits, in this case however selected from among the models specifically for average occupancy areas.

The entire system is controlled by the centralised Clivet supervision system which displays information on comfort in the various areas and on the status of the climate control units and system. It also enables each individual unit to be programmed automatically on the basis of the required conditions and the chosen times of operation.

## The Results

The compactness of the Clivet Multiplex System units meant that the limited free space available on the roof could be used to the full, in compliance with structural loads with average incidence of 250 kg/m<sup>2</sup>.

Since this is a dedicated system, temperature, humidity and air quality are controlled automatically throughout the year, maintaining the required conditions in all the areas served.

In winter the Clivet Multiplex System also operates with outside temperatures down to -12°C in heat pump mode, continuing to function with outside temperatures of -20°C thanks to the auxiliary hot water battery provided for this specific situation.

From the management and environmental standpoint the combination of decentralisation and high energy efficiency of the units allows an energy saving of over 40% compared to a centralised hydronic system.

Finally the industrialised construction of the units, which contain most of the system components within them, accelerated site operations both during assembly work and testing so that the scheduled deadlines were met.

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



*Blitz-CineStar Avenue Mall – Compact Clivet rooftop units installed outdoors*

### The System

- 9 rooftop Clivet CSNX-HE air to air heat pumps with energy recovery for areas with high occupancy, serving the cinema auditoriums.
- 7 Clivet air to air heat pumps for areas with average occupancy, serving the foyer, games room, common areas and projection room.
- Clivet P-Matic centralised supervision system.

### 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.