

# Taking the Heat Out of High Rise

## Towards Class A - Shining examples

...are everywhere and in a town near you...

### Inspiration and Financing

The municipality of Lisbon City conceived of Cueta Norte as urban renewal for an area where much dilapidated housing had been demolished. The aim was to improve social housing in the area in terms of visual amenities, ventilation and thermal comfort.

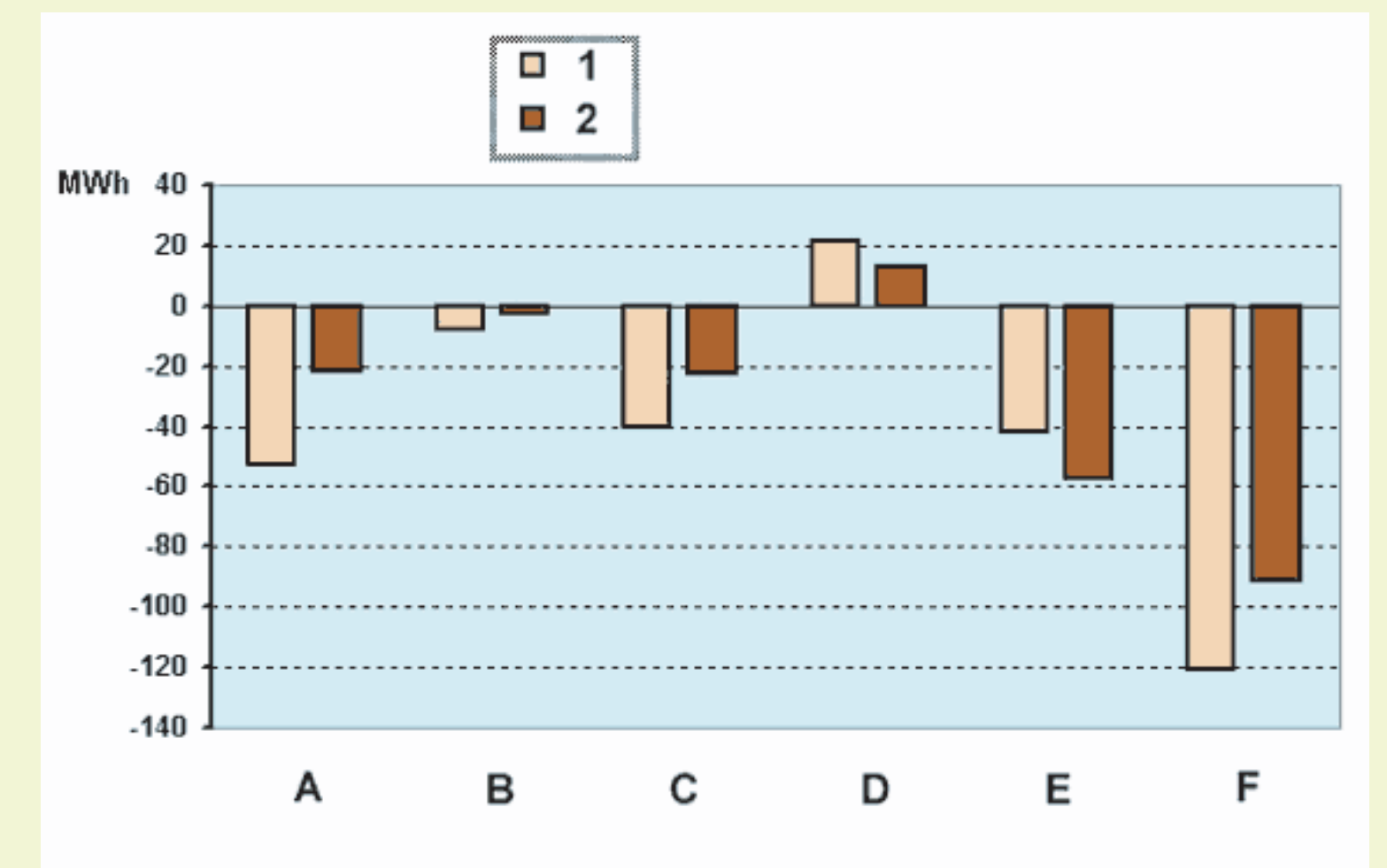
The development was part-funded under the EC SUNH programme and project managed by INETI.

62 apartments of social tenure were constructed, over two sites. Several solar-shading devices, low-emissivity glazing and thermo-mechanical ventilation were integrated.



### Solar Shading

These devices had to meet requirements for shading efficiency, reduced energy consumption and desired lighting levels. Moveable shutters were fixed to all windows, that provided night insulation during the heating season. Fixed louvres were also attached to the building, designed in view of the seasonal path of the sun, and orientation of building openings.



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**Time-controlled thermo-mechanical ventilation** was used to efficiently remove pollutants from bathrooms and kitchens, and to generally ensure good internal air quality and comfort.

1: 'Standard apartment', 2: Improved apartment A: External wall, B: Roof, C: Heat loss through windows, D: Solar gain through windows, E: Ventilation, F: Total

### Windows

In warm countries there is often trade-off to consider between allowing a desired level of daylight into a room and minimising this significant source of solar heat gain at times when it is unwanted.

Consequently moderate solar gain double-glazed low-e units were selected. These minimised the effects of solar heat gain without obstructing views and daylight unduly.



### Summary

This Shining Example usefully illustrates the application of fully matured passive technologies to reduce cooling demand in a warm climate context. Refurbishments can incorporate the same measures illustrated here to help minimise and possibly avoid the need for active cooling systems altogether.

### Performance

Total building cost:  
EURO 2.19 m

Total heated floor area:  
4266m<sup>2</sup>

Costs per Apartment for each technology:

-Low E Glazing:  
EURO 3,400

-Ventilation:  
EURO 900

Energy savings:  
50 kWh/m<sup>2</sup>a

For details see the  
Display website!



### Partners



### Contact

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Intelligent Energy Europe

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