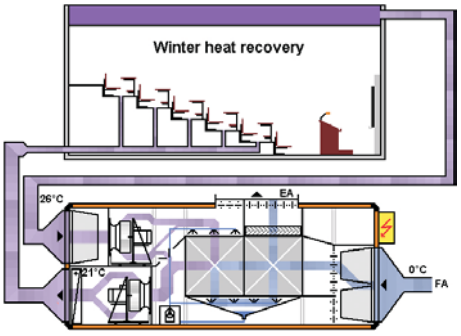
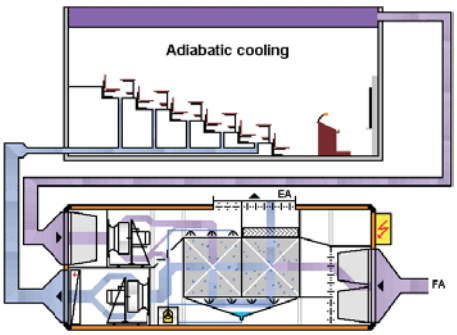
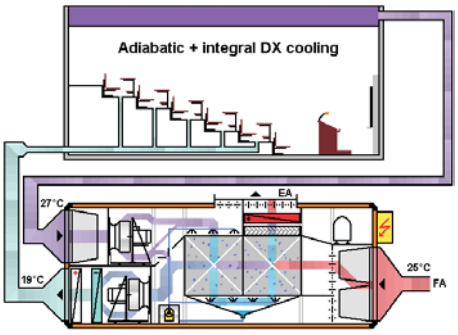
MENERGA Adsolair air conditioning units with indirect adiabatic cooling for the University of Liverpool.
Sherrington Buildings (School of Medicine lecture theatres)







The Sherrington Buildings were officially opened on 15th May 2002 and replaced an existing 200 seat lecture theatre. The old lecture theatre was in poor condition and did not meet the strategic needs of the Medical School. It was replaced by a 600 seat theatre and a 250 seat theatre. There is also a cafeteria on the ground floor.

The high thermal mass of the building, TermoDeck hollow core active thermal storage and low energy lighting (including a fibre optic lighting system for the writing ledgers) all contribute to minimising the primary heating and cooling loads.

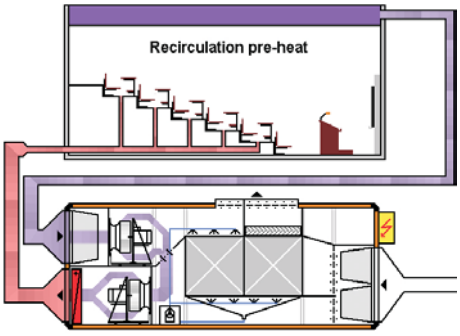
The 600 seat and 250 seat lecture theatres are conditioned by two MENERGA Adsolair units in conjunction with a displacement ventilation system. The supply air also passes through TermoDeck hollow core concrete floor planks before reaching the underseat displacement terminals. A third Menerga Adsolair unit conditions the cafeteria area.

Under winter design conditions, the two stage heat recovery achieves temperature efficiencies >75% thereby minimising the installed heating capacity and energy consumption.

In summer maximum use of free cooling is utilised to meet the supply air temperature setpoint. At higher outdoor temperatures, indirect adiabatic cooling reduces the supply air temperature by up to 10°C. Full use of night time cooling is used to reduce the temperature of the fabric prior to the next occupied period.

A small integral DX cooling system meets the peak cooling requirements. The compressor, evaporator and condenser are all built into the unit and so no external refrigeration pipework or condensing unit is required. At peak summer design conditions the MENERGA Adsolair units operate with a cooling efficiency of approximately 12:1 compared with 2.8:1 for an air cooled chiller system.

CO2 monitoring allows the air volumes to be reduced during periods of low occupancy. Direct coupled free running ventilator wheels with frequency controlled motors eliminate drive losses and dynamic pressure to achieve fan motor power consumption below 1W per l/s.



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