ENERGIZING YOUR FUTURE

Bewleys Hotel Dublin Airport

DRAIN-BACK SOLAR SYSTEM

General discription:
This system is designed to supply part (30-40%) of the hot water demand of Bewleys Hotel. It is a pre-heater system with 308m² of solar collectors and 2 x 5000 litre solar storage capacity. The first cylinder of 5000 litre is a combined drain-back / solar heat storage and is connected in a closed drain-back configuration with the collector field on top of the Hotel. Therefore the water in this primary collector circuit is pure water in a closed circuit and needs no further treatment.

The second cylinder is fed through a heat exchanger and contains pre-heated water from the mains water supply. This pre-heated solar water is supplied to 3 x 5000 litre indirect gas heated cylinders in order to guarantee the hot water supply at all times.

The collector field is mounted on the 7th story roof of the hotel.
The steel frame support construction and collectors are engineered for the maximum wind loads on this height and location. The advantages of the drain-back concept in this application is that there are no anti-freeze additives required and the system is inherently safe for overheating situations or power failures.

Furthermore the drainback concept has minimum maintenance requirements, whilst the system performance ranks top in any benchmark.

System Engineered and Turn-key supplied by:

ZEN-International bv:
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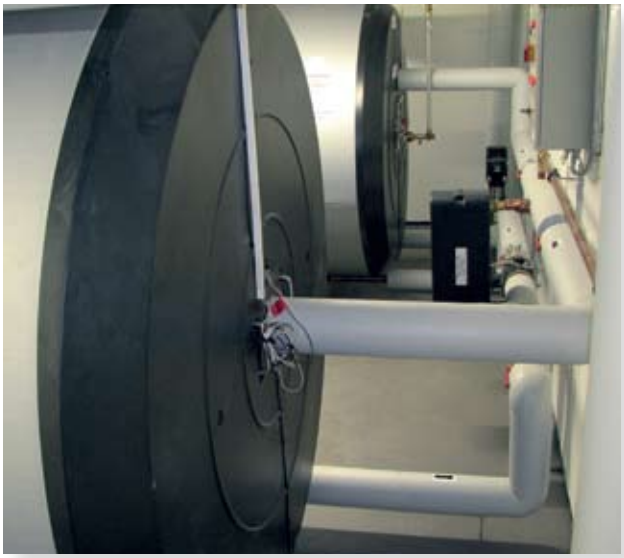
ZEN - THERMIC COLLECTOR

BEWLEYS HOTEL	56 special wind enforced collectors with black glass frame. Manufactured by: ZEN-Production, Belgium
Absorber Plate	Selectively coated surface layer: absorption coefficient = 0.96; emission coefficient = 0.08-0.12. Copper sheet and tube bonded over the full length of the pipe in an automated process. Interchangeable by means of compression fittings, after removal of glass cover.
Glass Cover	Low iron, tempered , low reflection glass, 3.2mm. Removable with black aluminium frame cover. Light transmittance = 91%. Extra wind supports.
Collector Box	Heavy aluminium box section with black anodised aluminium glass cover frame. A temperature sensor pocket is located at the top back side of the collector. Extra wind supports at the back.
Insulation	All insulation materials are 100% CFC-free
Fluid Content	0.5 litre/m^2 of collector area
Flow Rate	0.015 litres per second per m^2 of collector area (recommended)
Pressure Drop	4 kPa at a flow rate of 0.04 litres per second (Thermic 28)
Thermal Capacity	1750 J/K per m^2 collector area
Test Pressure	6 Bar
Tested by	TNO- The Netherlands, TüV, ISFH, ITW - Germany, SPF- Switzerland CSTB- France, TIL- Denmark



ZEN - STORAGE TANK

Drain-back primary storage tank	
Design / Producer	ZEN-International / Lapesa Spai
Material	Steel epoxy coated
Protection	Cathodic protection 3x Correx-up power anodes Maximum pressure 8 B. Minimum pressure 0 Bar. Unit operating pressure 0-1,5 Bar. Expansion valve setting 3.0 Bar. Maximum Temperature 80°C.
Unit Measurements	2.100H x 2.555L (mm). Storage capacity 5.000 litres. Mass of empty unit 1.100 kg. Mass of filled unit 6.100 kg.

Hot water sanitary storage tank	
Design / Producer	ZEN-International / Lapesa Spain Type MXH-5000R/PPS
Material	Stainless steel AISI 316
Protection	Cathodic protection 3x Correx-up power anodes. Maximum pressure 8 Bar. Minimum pressure 0 Bar. Unit operating pressure 3.5 Bar. Maximum temperature 80°C.
Unit Measurements	2.100H x 2.555L (mm). Storage capacity 5.000 litres. Mass of empty unit 883 kg. Mass of filled unit 5.883 kg.

PUMPS / HEAT EXCHANGER / CONTROL

Pumps/Heat Exchanger/Control	
Pumps: Producer Grundfos	Material Stainless + steel
Heat exchanger	Producer Alfa Laval
Control	ZEN International – drain back controllerThe ZEN-international / IZEN DT4 temperature differential- and drain-back solar system controller is especially designed and engineered to serve all ZEN- International systems.

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