Saving energy: the Grimaldi Forum Monaco draws on new resources!

The Grimaldi Forum Monaco's technicians may not be climatologists but they could not help but notice that since last summer the water of the Mediterranean Sea close by has regularly been above 27°C!

Now this seawater feeds a pumping and exchanger system that regulates the temperature inside the building via the air conditioning and heating. This technical innovation is part of the added-value of a building that has held ISO:14001 certification since October 2008 and is justly proud of using a natural resource to produce the cold and heat needed for its air-conditioning and heating system.
So if in summer the seawater is too warm, it no longer reduces the temperature sufficiently, the cooling units trip out and the building's entire air-conditioning system is threatened!

So this summer our Building Department installed a new technical means of protecting the cooling units, by using another source of cold water right underneath the Grimaldi Forum Monaco building.

The Grimaldi Forum is in fact built on land reclaimed from the sea and consequently sits above a drainage bed into which a considerable amount of water flows from both land and sea.

The water in this subterranean gallery is channelled into four sumps equipped with 13 pumps, which pump it directly into the sea at a rate of 350m³/hr (350,000 litres per hour); the temperature of this water varies from 12°C to 16°C depending on season.

The work consisted of building a huge channel to link the drainage bed to the trough from which the seawater used in the building's air-conditioning system is drawn. This colder water can now be pumped from the drainage bed into the trough so as to lower the temperature of the water in the system.

With this new installation the Grimaldi Forum Monaco has achieved a three-fold objective:

- to protect the cooling units whatever the temperature of the seawater;
- to significantly reduce the energy used to pump seawater since notably fewer exchangers and pumps will need to function during the summer;
- and consequently to extend the life of the equipment.

The environmental energy performance is therefore considerably improved. The annual saving in electricity is estimated at 60,000kWh, equivalent to the average electricity consumption per year of 15 European households.