-------- Videresendt meddelelse --------
Emne: Proposal
Dato: Wed, 20 Jul 2022 14:31:37 +0200
Fra: Niels Hansen <nh@nhsoft.dk>
Til: info@shoualah.ae

To the technical management at Shoualah,

I have looked with interest at Shoualah's new waste power plant which in construction is very similar to the new plant in Copenhagen see Link The two plants which have a very high degree of utilization of the energy from the waste and especially a very high degree of electricity.

With the very large solar cell plants being installed in the United Arab Emirates, there will be a very great need for water to clean these. Water which is very expensive to produce. This proposal here, together with your new waste facility, can create very cheap water to clean the solar cells and at the same time provide very large cooling effects to the building stock in Dubai via district cooling.

The background for my inquiry:

Back in 2019, I had the opportunity to work with Copenhagen's utility company HOFOR on a major heat pump project at Copenhagen's largest power plant, the Amager power plant. The power plant peninsula where several plants operates in the outskirts of Copenhagen see

The project was developed together with General Electric as HOFOR is still considering whether they will establish in its entirety or a smaller part of the project. At that time, I had received General Electric's commitment to develop and finance a very large heat pump developed on this multistage compressor that could operate with isobutane as a refrigerant see

To extract energy from the seawater for the heat pump when the water was cold the water had to be frozen in a vacuum ice makerLink and the energy from the phase transition when the water freezes would then be supplied to the heat pump as low temperature energy.

When 10 ton. of water is frozen to ice, 1 MWh of energy (100 l of oil) is released. With max. production of ice, the plant would provide 3000 tons of ice per. hour, when the heat pump would deliver 400 MW of district heat to Copenhagen, when consuming 100 MW of electricity.

Purify water by freezing it in Dubai:

Google translation of the Danish website from the Danish Technological Institute on purification of water by freezing it see Link When the water freezes to ice in this vacuum ice maker, the ice crystal is completely clean even if the water in the freezer is contaminated.

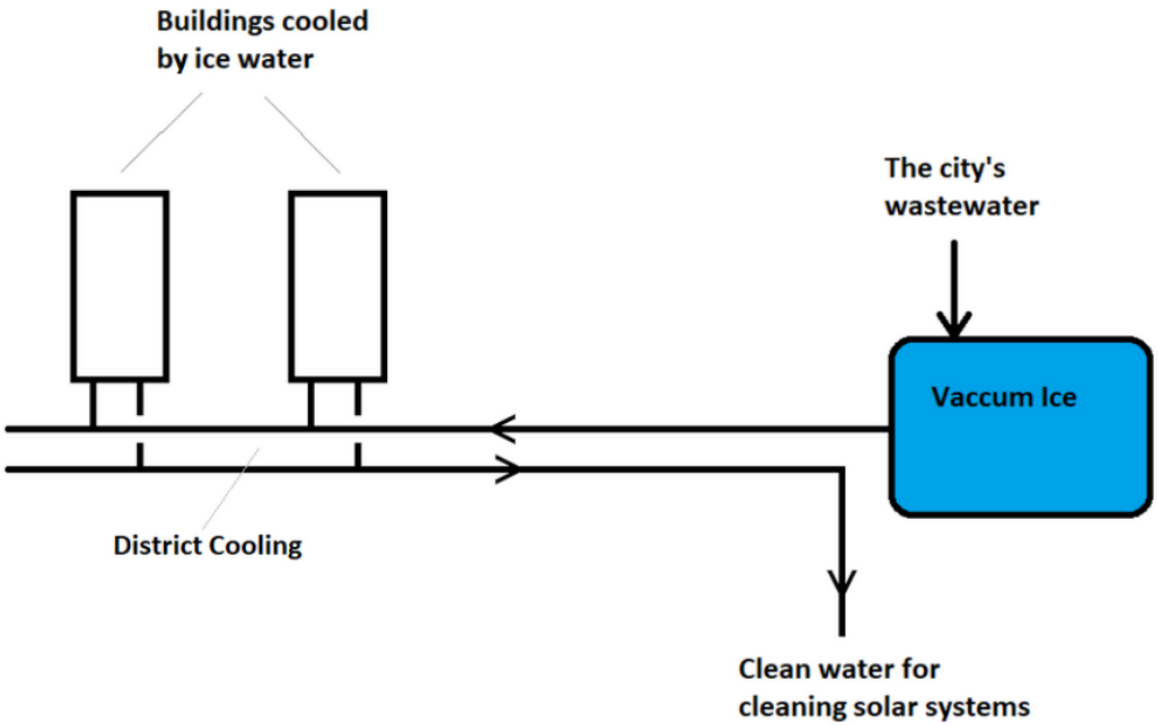
Wastewater treatment plant close to your new waste facility, see

District cooling with ice storage in Chicago Link exploiting surplus electricity generation at night.

If this ice system is integrated in your new waste power plant as with the project in Copenhagen, then the wastewater could be frozen and the clean ice could now be pumped out in Dubai via a district cooling system and large living areas will be cooled without using electricity.

The clean water from the cooling process can now be used to clean solar cells.

Principle sketch see



And very large power plant electricity production is now saved for cooling.

I am available for further information if needed.

Best Regard

NIels Hansen