The present work, includes design, construction and operates of a prototype solar absorption refrigeration system, using methanol as a refrigerant to avoid any refrigerant that cause global warming and greenhouse effect. Flat plate collector was used because it’s easy, inexpensive and efficient. Many test runs (more than 50) were carried out on the system from May to October, 2013; the main results were taken between the period of July 15, 2013 to August 15, 2013 to find the maximum C.O.P, cooling, temperature and pressure of the system. The system demonstrates a maximum generator temperature of 93.5 oC, on July 18, 2013 at 2:30 pm, and the average mean generator temperature Tgavr was 74.7 °C, for this period. The maximum pressure Pg obtained was 2.25 bar on July 19, 2013 at 2:00 pm. The current system shows cooling capacity of 0.15 ton with coefficient of performance of 0.48, and minimum evaporator temperature obtained was 14.2oC.

A comparison of the present with previous works, showed that most of the previous work used ammonia as the main refrigerant, and even that used methanol it was as aqua methanol, or to be part of pair refrigerant, while the present work use the methanol as the main and the only refrigerant in the system. The results and the factors that provided by the current work, give a good understanding for using the methanol as a refrigerant with the solar absorption system. And the system can work in continuous operation cycle. This work gave fundamental understanding for designing solar refrigeration system, by using the results of present study to design air-conditioning unit, with one ton capacity, using the solar energy, and the methanol as a refrigerant flotation process.