**Reviewer 1 of DYCOPS-CAB 2016 submission 74**

This paper presents application of self-organizing control to two-stage refrigeration cycle processes. Although this paper has merit of applying self-optimizing control to MIMO processes, the quality of simulation results could have been strengthened by using MPC as a benchmark, instead of the current choice of 'open-loop" employed as a benchmark.

**Reviewer 2 of DYCOPS-CAB 2016 submission 74**

The paper deals with an interesting and relevant problem. However, other than the highlighting the procedure for designing self-optimizing control, the results don't create an impact. Even for the procedure, better write-up is needed so that readers not very familiar with this area can also understand the work. Currently, there is no notation and most of the variables have not been defined in the text as well. For example, in section 2 M\_d, M\_{n^y},FW\_d,G^y etc. have not been defined. Also, statements without accompanying discussions/references have been made. For example, in Section 4.4 it is mentioned that "This is the principle eigenvector of the elliptic hyperboloid". Which hyperboloid is being referred to?

Some other minor comments are:

1) In section 4, list the total number of variables under consideration.

2) Locations of variables TP\_{1}O, etc. can be shown in the process schematic in Figure 1.

3) The units of parameters p\_{TP\_{1}O} and p\_{TP\_{2}O} have been wrongly listed as euros/Kh instead of euros/kWh. Kh = Kelvin\*hours, (change to centigrade to make difference noticeable?)

4) In section 4.5, how were the pairings N-c\_1 and XV\_1-c\_2 chosen?

5) In 3rd para in the Introduction section, "More precisely" has been written twice.

6) The last sentence of caption of Figure 2 appears to be incorrect.

7) In section 4.4, it is mentioned that "This is to be expected when using the formulation from Equation 4". Provide an explanation for this statement.

8) The term "open-loop controller" in the last sentence of section 5.1 should be "open-loop" or "open-loop system".

**Reviewer 3 of DYCOPS-CAB 2016 submission 74**

This paper evaluates the application of self-optimizing control to a two stage refrigeration cycle as an alternative to traditional model based control strategies. Various scenarios involving process disturbances and economic parameters have been simulated and the results presented have been compared to the constant input state. The article is well written and presented.

The model description is vague and more details can be provided. "though additional equations were added to the system in the current work to accommodate for input dynamics, level controllers and additional algebraic states."

Also, the chosen model does not help highlight the unique features and benefits of using self-optimizing control. A better model could have been presented. As the model is not the most appropriate one, the authors can consider highlighting the novelty of this work better in the initial sections.

Finally, there are a few typographical errors in the article ("Page 1, Paragraph 1, Line 3; Page 1, Paragraph 3, Line 5; Equation 10; etc.). Please review and revise.

**Reviewer 4 of DYCOPS-CAB 2016 submission 74**

A solid paper on the application of self-optimizing control system design.

The paper is well written and technically correct. I would recommend acceptance for presentation.