



SDI Review Form 1.6

PART 1:

Journal Name:	<u>British Journal of Applied Science & Technology</u>
Manuscript Number:	2013_BJAST_4802
Title of the Manuscript:	A STUDY OF SECTIONS INTERACTION EFFECTS ON THERMODYNAMIC EFFICIENCIES OF A THERMAL POWER PLANT
Type of the Article	Research paper

General guideline for Peer Review process is available in this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)

- This form has total 7 parts. Kindly note that you should use all the parts of this review form.



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PART 2: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<u>Compulsory</u> REVISION comments	Abstract: Is well written that comprises both the description of the problem and the output. Little reduction would be better. Keywords requires little modifications to reduce the word [section]. The bonus here in this paper using Hysis and integrated with excel but result still need to be re-check General: 1. The work is good and considered to study the A STUDY OF SECTIONS INTERACTION EFFECTS ON THERMODYNAMIC EFFICIENCIES OF A THERMAL POWER PLANT 2. Is well written that comprises both the description of the problem and the output. Little reduction would be better. Keywords requires little modifications to reduce the word [section]. 3. The author justifies each of the points made. The methods, and conclusions are mostly correct, robust, comprehensive and sensible. 4. The author did not shows in details or expressed the limitations of the research but in a limited approach. 5. The author performed an incomplete analysis and drawn insightful conclusions and managed with limited effort to described his or her research plans. 6. But unfortunately it is not clear in some areas where the research described in this paper will lead and what the next step will be. I suggest little effort can make the work positive towards proper output. So use the results to strength the output of the work and use the graphs to support the argument. 7. His or her conclusion significant and it is just a rehash of the paper. It leaves the reader look forward to the research domain. More work is required to be done to move the	



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	reader to proper path. 8. Citations are noticeable but 21 references are quite good number. Here is worth to mention that the author did not completely utilized the references mentioned in this research. More paper are avail in the net or sciencedirect.com related to exergy and energy analysis of power plant and this will sure support any argument. 9. The author's writing style is not too “dense” and makes sense. It keeps the reader's interest to some extent courage and style is deemed appropriate. Introduction 1. The introduction is also have its significance not explained and the core issues and research variables have to be identified so little modification in the writing would do the necessary. 2. The research objectives clearly stated and the hypotheses with specific research questions identified. This gives a bonus to the piece of work. Methodology Please notice that CO₂ usually is about 6% so the specification of the natural gas requires more clarification unless CV is more than 998. Also notice the followings: (A) The turbine-generator section Check equation (7) (B) The condenser section Check <i>Exsource ExS39 ExS 42</i> kindly check that <i>ExS42</i> is not true (C) The regenerators section In line eq 23 I don't have a comment but equation must be written in proper way (D) The furnace-boiler section Equation 25 and 26 needs little modification in the presentation So in general, the equations are not well typed and requires more scrutinization.	The natural gas is now assumed to be pure methane CH₄ I have checked and it is true. <i>ExS39 ExS 42</i> are the in and out flow of the process. I have checked it. The equations have all been checked using Microsoft equation 3.0.
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	Results and Discussion The author's major findings clearly presented but required a more précised graphical presentations based on the author works in trial and errors. The overall exergetic efficiency was lower than the overall energetic efficiency as was expected because of proper accounting of different types of process. Here in the study I can see it not equal to 15-23% as is usually stated. If this case is true then I would like to ask the writer to do one more run Line 265 The overall energetic and exergetic efficiencies at different throughputs showed further that thermal plants must be complimented with economic analysis to optimize the operation of the plant. <u>That what we expected from this study which is not done</u> References Requires to be reviewed again as there is inconsistency in some references presentations Decision To be published with conditional to do another run for the package to make sure that the conclusion is right and correct figures that shows high Strengths I think that, the subject is interesting to many power plants in many countries in the world and this is the strength of the study. Because the correct application of the tool exposed could be useful to achieve the development of so many organizations. Weaknesses The literature reviewed is limited and leads the reader to think that there is nothing in the topic reported in this study	The reasons for the differences in results have been given. This paper does not deal with economic analysis and optimization of thermal plants using exergy analysis.
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Minor REVISION comments	I am worried about the high % ages given in Table 1 and Table 2 so please revise the work	
Optional/General comments	I wish this study comes up with the following : 1. The second law (Exergy) analysis shows that combustion chamber in both steam and gas turbine thermal power plants are main source of Irreversibility. The Irreversibility in condenser is insignificant, because in the condenser the low quality energy is lost. An Exergy method of optimization gives logical solution improving the power production opportunities in thermal power plants. 2. Energy and Exergy Analysis of a Steam Power Plant in Egypt; A. Rashad, and A. El Maihy found that thermal efficiency based on the specific heat input to the steam was about 43% while the exergy efficiency of the power cycle was (44% - 48%). <i>Cannot see this conclusion in this study as numbers goes above 100%</i> 3. Full load calculation is not discussed in this study. 4. In his study Vundela Siva Reddy, An Approach to Analyse Energy and Exergy Analysis of Thermal Power Plants: A Review found that irreversibility but in this study this is also missing.	Thermal efficiency cannot be less than exergy efficiency.