We thank the Reviewer for their constructive criticism and suggestions for improving the paper. We have found them very useful and we have implemented changes and clarifications in the revised manuscript accordingly. All new or modified text in the revised manuscript has been highlighted using red colour. Below is our detailed response to the reviewers' comments:

Over all the paper is well written, the findings of the research are good. Address the following queries to make it look better.

Comment 1. In the abstract, add the key findings and their influence on the study (may not be the numerical values, but the general discussions).

Response 1: The abstract has been modified according to the Reviewer's suggestion.

Comment 2. I find the introduction is too vast and most of the basics related to electropolishing is discussed. For a technical paper you can limit it to one page and discuss only the necessary information related to your manuscript.

Response 2: According to the Reviewer suggestion, the length of the introductory section has been reduced. The basic electropolishing literature have been removed from the introduction to focus on the most relevant studies related to our manuscript.

Comment 3. The discussion written wrt. Figure 3 is very less. The authors are suggested to elaborate the significance of each plot in this figure and discuss how it is influencing the study.

Response 3: Authors agree with the Reviewer's comment. The residue analysis plot of Figure 3 was incorporated to the manuscript for evaluating the regression model on which the multifactorial ANOVA analysis was based. Verifying of residues is an ordinary analysis that has a minor influence on the study. Thus, for a better understanding of the paper, the authors have removed Figure 3 from the manuscripts.

Comment 4. In table 3 P-value for one main effect and few interaction effects are higher than 0.05, that means the selected factor are not correct. The explanation regarding this is required.

Response 4: Section 3.1 has been modified in order to clarify the results in Table 3. The experimental study of this work entailed the analysis of five electropolishing parameters (factors) for a broad range of values (levels). Thus, for minimizing the experimental tests, a previous ANOVA analysis with the 5 factors at only two levels (maximum and minimum) were performed. This study allowed us to determine if some of the 5 factors were not significant and could be rejected for reducing the number of the experimental tests. The results of the ANOVA shown in Table 3 revealed both significant and non-significant parameters. As can be observed in Table 3, the variable "electrode gap (Di)" was the only factor having no significant effect on the output variable ΔRa (p-value > 0.05), neither in the main effect, nor in second-order interactions. Thus, this factor was rejected and was not used for subsequent analyses. This allowed for a considerable reduction in the number of experimental tests.

Comment 5. In page no. 9, while explaining about the figure 4 at some place authors mentions Fig. 49!! What is that??

Response 5: The term Fig. 49 on page 9 is a mistake, and it has been amended in the manuscript.

Comment 6. General discussion is given about figure 4. The author should explain the significance, the meaning of the colour contours in the figure.

Response 6: The manuscript has been modified according to the Reviewer's suggestion, and an explanation of the figures colour contours in each section with response surfaces has been included.

Comment 7. Equations 17-19 usage is not very clear in the manuscript, kindly rewrite.

Response 7: Equations 17, 18 and 19 explain in a simple way how to calculate the desirability functions depending on whether the response is maximized, minimized, or to obtain a specific objective value. Authors consider these equations have been explained sufficiently in the manuscript, but for a better understanding, the reader can consult the references (Harrington, 1965), and (Derringer & Suich, 1980) cited in the manuscript where a detailed explanation of the method is provided. This mathematical method cannot be explained in any other form, and we have made an effort to explain it as simply as possible.

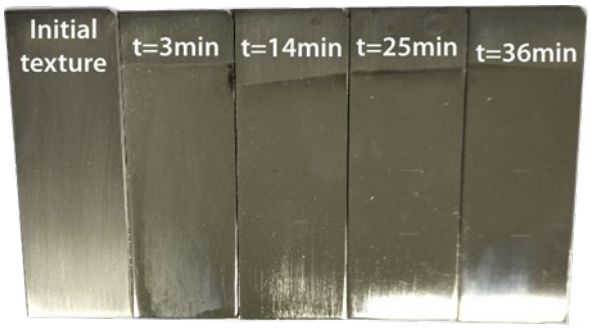
Comment 8. What does the curved lines and slopes indicate in the figure 15 and 16?

Response 8: In the figures 15 and 16, each curve explains the behaviour of the EP parameter (T, J, and t) versus the individual desirability of the responses (ΔRa, Δh, C_e) and the composite desirability (D). The lines with a high slope indicate a high linear influence. In this case, a higher value of the parameter EP increased the individual desirability of that response. Curves of order 2 indicate that there is an increase in desirability reaching a maximum prior to declining. This graph is interactive in "Statgraphics", the vertical red line can be moved on each EP parameter to observe how the individual desirability of the responses changes versus the behaviour of the parameter curve. In graphs 15 and 16, the red line is fixed at the points where simultaneous optimisation makes the desirability values as high as possible.

Comment 9. Entire work is based on the design of experiments, the author should show some, before and after images of the specimens.

Response 9: The present work was developed based on a factorial design of experiments combining all the electropolishing parameters under study. This methodology involved a broad number of experimental tests (64x2x2=256 worpieces). Thus, including images with all specimens before and after the electropolishing procedure would be unfeasible. Moreover, specimen images are not the best option for extracting any type of results as

the differences between the evaluated process aspects cannot be appreciated (see figure below).



Comment 10. If the images are not available in the results section, the authors can discuss some similar studies in the results section.

Response 10: According to the Reviewer's suggestion, a sub-section 3.8 "Discussion" has been included with the discussion of results. In line with the Reviewer's suggestions, an in-depth revision on the results has been performed to compare our results with other studies in the field of electropolishing processes. In the studies published to date there are substantial differences in the experimental methodologies employed as well as in the electropolishing parameters and materials evaluated. These factors should be borne in mind in any comparative analysis since they substantially condition the results obtained. For this reason, only a partial comparison of results has been possible.