Dear editor,

Thank you very much for giving us a new opportunity for working on the manuscript. We would like to thank all reviewers that are expending their time on it. We have analyzed the suggestions. We are answering all the comments below. Moreover, you can see all main changes highlighted in red in the manuscript.

Reviewer(s)' Comments to Author:  
  
Reviewer: 2  
  
Comments to the Author  
All the queries were answered by the authors.  
Finally, Conclusions is presented in the summary form, which is difficult for the readers to pick the conclusion remarks. Hence conclusion may be revised and presented in points  
  
Maybe accepted after this modification

Thanks for your input. We are coming up with a reviewed version putting the conclusions in bullet points to sharpen the major elements of our proposition.

Reviewer: 7  
  
Comments to the Author  
Dear Authors,  
No more comments from my side.

Thanks for your comments.

Reviewer: 1  
  
Comments to the Author  
The authors have revised the paper based on the suggestions. I recommend the paper for publication in the journal.

Thanks for your comments.

Reviewer: 5  
  
Comments to the Author  
Accepted

Thanks for your comments.

Reviewer: 6  
  
Comments to the Author  
The uncorrect visualization of Figure 3b is still on the paper.  
See previous comment: Figure 3b – Unit of Printing speed (Young Modulus) is not completely visible in the graph.  
We apologize for our mistake. We have changed in the last version, but an error from our side did not include the figure. We change the figure and made the necessary to better display the units and readability.

The important info about the recycling process (even if the authors wrote " Normally, the mechanical recycling process is used to create this type of  
recycled bend filaments.) is still missing. It's better to add it!

We agree that despite not having the details of the recycling process we can make a general comment on that as suggested. We are including a comment like that based on a new reference (Park and Fu, 2021). Moreover, we have included the filament manufacturers.  
  
Associate Editor's Comments to the Author:  
  
Associate Editor  
Comments to the Author:  
Associate Editor Comments  
1.        In the abstract you wrote, “The results showed that recycled PLA may be used thanks to the similar resistance, even though this is slightly lower than that of the virgin material”. Please revise and correct the word resistance cannot be correct, be specific about the mechanical property you are referring to. This mistakes occurs throughout the paper.

We have changed it in the manuscript.   
2.        A reviewer has picked up that Figure 3 is still not clear the units for speed are cut.

We have corrected this mistake. We are sorry for this mis   
3.        Your conclusions are still not focused and written in good grammar. Pease make them into bullet points and clearly include contributions to science. An example of incorrect grammar is in the last sentence of the conclusions. Another example is how you are using “there is a retention of the maximum load”. This needs to be corrected.

We thank you for your considered remark. The main rationale for our study is that prototyping in one of the major uses 3D printing. As practitioner, we argue that the ‘draft mode’ from the standard configurations of 3D printers needs to be fully understand in terms of mechanical properties, including the use of recycled materials. Therefore, in our proposition there is two major elements to highlight. First, the methodological approach that we propose in three phases (Screening, Focusing and Anysotropic) make a first experimental roadmap to better understand the influence of printer parameters in mechanical response. This methodology is based on the literature of experimental design. We carefully describe the steps with the purpose to be reproductible, and we hope that other authors make full avantage to study other materials and parameters and improve the general understanding of prototyping. Under the principle that science needs to be reproducible, we expect we contribute to the community proposing this approach as initial roadmap.

The second element concerns the purpose to focalise on recycled and virgin materials. We are aware that this approach is based on fractional design and eventually a full experimental approach is needed. However, we decided to do in that way with the purpose to explore a brad design space (Four parameters with two levels) towards a more precise experimental test with only two parameters in consideration. Certainly our methodological proposition is open to be tested with other variables considers as response (flexion resistance, compression, impact, etc), and consider other testing parameters. But, at the end, we expect that this contribution helps to democratize the use of recycling assets in the 3D printing production chain.

Considering these elements, we have changed the conclusions and presented them with bullet points to better explain to the reader the contributions and limitations that our proposition have.

4.        Please do not use region A and B in conclusions. Conclusions should be able to stand along and capture the generic findings.

We have restructured our conclusion in a more comprehensive way to explain the overall methodological approach. This, we removed the references to these two regions A and B, and wrote a bullet point easy to be understood.

5.        Please get the paper proof read by an English expert.

6.        Revise title for Section 3.2, focussing on what?

We have changed it to “Focusing on the infill density”

7.        Revise the title of section 4.2, normally it is limitation of the study.

We think that you are referring to section 4. We changed it to “Discussion and limitation of the study”  
8.        Text in Figure 5a is not clear.  
We suppose that you are referring to the text written in the specimens. This is the same as we are writing in red. It adds no value and it would be very difficult to make it readable taking a picture to all the specimens as we are doing.

9.        In Figure 4a it is not clear which one is virgin and recycled.

Thanks for your remark. To improve the readability, We have included a footnote for clarity of the text.

‘Note: V: virgin; R: recycled’

10.        In Figure 4b the captions for virgin and recycled should be in the graphs. Each graph much be complete.

As requested, we changed the labels of the graphic to explicit show the captions in each one.

11.        Your paper highlight show the results but do not articulate the science for those results. This needs to be captured and woven into the paper as well.

We thank you for your kind remark. A argued in previous answers, we pointed out our contributions in the manuscript in the methods and results field. We consider that the presentation of our results for each three phases, gives an initial structuration for discussion in the scientific community. In our methodological section, we map the arguments concerning the choices we made (our mindset was to test ‘draft mode’ in the printer). We restructured the conclusions sections to map clearly the elements proposed in the paper hoping that the reader found valuable information to continue exploring the recycling field in the 3D printing domain.

One point to highlight is that in the previous revisions, we improved the discussion, trying to maintain the length of the paper. So, we discussed, for instance, the type of fractures obtained against the main findings in the literature, the influence of the main factors, the effect of perimeters and the influence of printing the layers in the tensile direction.

We are including some additional comments in the discussion and writing the new conclusions trying to capture the main ideas of the study.

In case that there is something specific that at your consideration must be discussed in more detail, please do not hesitate to pointed out. There are too many things in the paper that could be discussed in more detail, but we think that this draft gives a good overview of our study in no more than 7000 words.