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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	Influence of roughness on the behavior of three-dimensional journal bearing based on fluid-structure interaction approach
Jumlah Penulis	:	4 orang (**Mohammad Tauviqirrahman**, Brain Choirul Ichsan, Jamari and Muchammad)
Status Pengusul	:	Penulis Pertama sekaligus Penulis Korespondensi
Identitas Jurnal Ilmiah	:	a. Nama Jurnal : Journal of Mechanical Science and Technology b. Nomor ISSN : E-ISSN: 1976-3824, P-ISSN: 1738-494X c. Vol, No., Bln Thn : Volume 33, Nomor 10, Oktober 2019, Hal. 4783–4790 d. Penerbit : Korean Society of Mechanical Engineers (Springer) e. DOI artikel (jika ada) : 10.1007/s12206-019-0919-4 f. Alamat web jurnal : https://www.springer.com/journal/12206 Alamat Artikel : https://link.springer.com/article/10.1007/s12206-019-0919-4 g. Terindex : Scopus (Q2, SJR 0,576), Web of Science (IF 1,221)

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   Data-data disajikan secara lengkap dalam bentuk grafik yang menarik disertai dengan pembahasan yang cukup detil dan komprehensif. Keterbaruan penelitian dinyatakan dengan jelas di Bagian Pendahuluan dengan merujuk pada pustaka terkini. 7 pustaka acuan dari 18 pustaka yang ada merupakan pustaka terkini 5 tahun terakhir. Metodologi telah dirancang secara sistematis. Meskipun artikel ini hanya terdiri dari 8 halaman, Metodenya yang dimulai dari pemodelan kekasaran, teori dasar, dan step-by-step analisis numerik disajikan secara lengkap dan runut. (12)
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Semarang, 27 Maret 2020
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2. **Ruang lingkup dan kedalaman pembahasan:**
   Artikel ini membahas tentang pengaruh kekasaran permukaan yang diperoleh dari imbas proses pemesinan terhadap pelumasan pada bantalan dengan mempertimbangkan kavitasi. Tata bahasa dan pembahasan dalam artikel disajikan cukup baik. Detil tentang persamaan yang dipecahkan, metode numerik yang digunakan (One way FSI dan Two-way FSI) juga diberikan. Diskusi yang mendalam juga disajikan secara menarik dengan berbagai kontur seperti volume of fraction dan kontur deformasi.
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Semarang, 3 Mei 2020
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Journal of Mechanical Science and Technology
Volume 33, Issue 10, 1 October 2019, Pages 4783-4790

Influence of roughness on the behavior of three-dimensional journal bearing based on fluid-structure interaction approach (Article)

Tauviqirrahman, M.[a], Ichsan, B.C.[a], Jamari[a], Muchammad[b]

Save all to author list

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Abstract

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In present study, a fluid-structure interaction (FSI) approach is proposed for predicting the effects of roughness on the performance of hydrodynamically lubricated three-dimensional (3D) journal bearing, taking mechanical deformation effects. The multi-phase cavitation mass flow conservation model is adopted, in which the phase change boundary condition is allowable. The results show that the mechanical deformation effect on bearing performance has been confirmed to be substantial. When the deformation of the structure is considered in calculating the change of film thickness, the bearings carry less load (i.e. 30–70 % smaller depending on the surface roughness value) as compared to the case in which the deformation is neglected. It is also highlighted that the hydrodynamic pressure and load support decrease with surface roughness. © 2019, KSME & Springer.

SciVal Topic Prominence

Topic: Journal bearings | Bearings (machine parts) | Hybrid journal

Prominence percentile: 82.969

Author keywords

Cavitation | Deformation | Fluid-structure interaction (FSI) | Journal bearing | Roughness

Indexed keywords

Engineering controlled terms: Cavitation | Deformation | Fluid structure interaction | Surface roughness

Engineering uncontrolled terms: Bearing performance | Hydrodynamic pressure | Mass flow | Mechanical deformation | Phase Change | Threedimensional (3-d)

Engineering main heading: Journal bearings

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Finite element analysis and mathematical characterization of contact pressure distribution in bolted joints

Jianbin Cao & Zhousuo Zhang

Journal of Mechanical Science and Technology **33**, 4715–4725(2019) | Cite this article

Abstract

Quantitative characterization of contact pressure distribution in bolted joints directly influences the calculation accuracy of connection stiffness. In this paper, a three-dimensional finite element model of the bolted joints is established using the software ANSYS, and pretension force and contact between the joint components are accommodated in the model. Then, parametric studies are carried out to investigate the effects of the material properties, preloads, bolt sizes, grip lengths and hole clearances on the contact pressure distribution. According to the finite element analysis results, a polynomial equation system is derived for mathematical representation of contact pressure distribution in bolted joints. Furthermore, the conical envelope angle used in the mathematical characterization is identified for the bolted joints with different bolt sizes and grip lengths. Finally, an experimental platform is constructed for the measurement of contact pressure distribution, and then the applicability of mathematical characterization is validated by comparison with a series of experiment results.

Abbreviations

E: Elastic modulus

d: Stud diameter

d_h: Hole diameter

d_w: Contact diameter of bolt head and upper plate

D_w: Outer diameter of plates

t_1: Thickness of upper plate

t_2: Thickness of lower plate

r: Radius of pressure distribution

L: Grip length

α: Conical envelope angle

σ: Pressure distribution characterization

P: Pretension force

ΔT: Virtual temperature difference

β: Thermal expansion coefficient

A: Cross section area of bolt

l: Scale factor

T: Tightening torque

K: Torque coefficient

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Development of PMMA/TiO_2 nanocomposites as excellent dental materials

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Abstract

This paper presents the application of the *in-situ* synthesized nanocomposites of poly (methyl methacrylate) (PMMA) and TiO_2 for use as dental materials. TiO_2 nanoparticles with different percentages (wt% and 2 wt%) were blended with PMMA through a melt compounding process. The prepared nanocomposites were characterized by a micro-indentation test, scratch test, and field-emission scanning electron microscopy analysis. The effects of different vol. % of TiO_2 on the mechanical properties of the nanocomposites were studied. The evaluation of the mechanical properties of the composites revealed that the utilization of TiO_2 as a reinforcing agent strengthened the polymer. The morphological observation demonstrated the presence of significant adhesion between TiO_2 and the polymer matrixes with a homogeneous distribution of TiO_2 in the polymer matrix. The proper compatibilization between TiO_2 and the polymer matrix enhanced the mechanical properties. Overall, this work may pave the way for the production of a new compatibilized TiO_2-based blend for dental applications.

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Thrust force modelling and surface roughness optimization in drilling of AA-7075: FEM and GRA

Nafiz Yaşar

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Abstract

AA7075 aluminum alloy attracts scientific interest to participate in production of crucial components in aerospace, construction and automotive domains. Specifically, final products need to display equal quality to ensure the basic standards of safety in the aircraft industry. Despite the high machinability of the AA7075 alloy, hole quality may vary according to tool geometry and drilling parameters. In this study, the effects of different feed rate levels and cutting speeds on the surface roughness (Ra) and thrust (Fz) were investigated. Drilling experiments were conducted with drills of three different quality and geometry. The effects of drilling variables on the surface roughness and the thrust force according to "the smaller-the better" approach of the gray relation analysis (GRA) method have been investigated. Consequently, the highest and lowest gray relations degrees obtained were α 0.828 and α 0.338, respectively. Numerical analyzes for thrust force were performed with the ThinWave AdvantEdge simulation software based on the finite element method. We also outlined that there exists an average difference of 4.9 % between the experimental and simulation thrust force values, and we proved the applicability of the finite element model.

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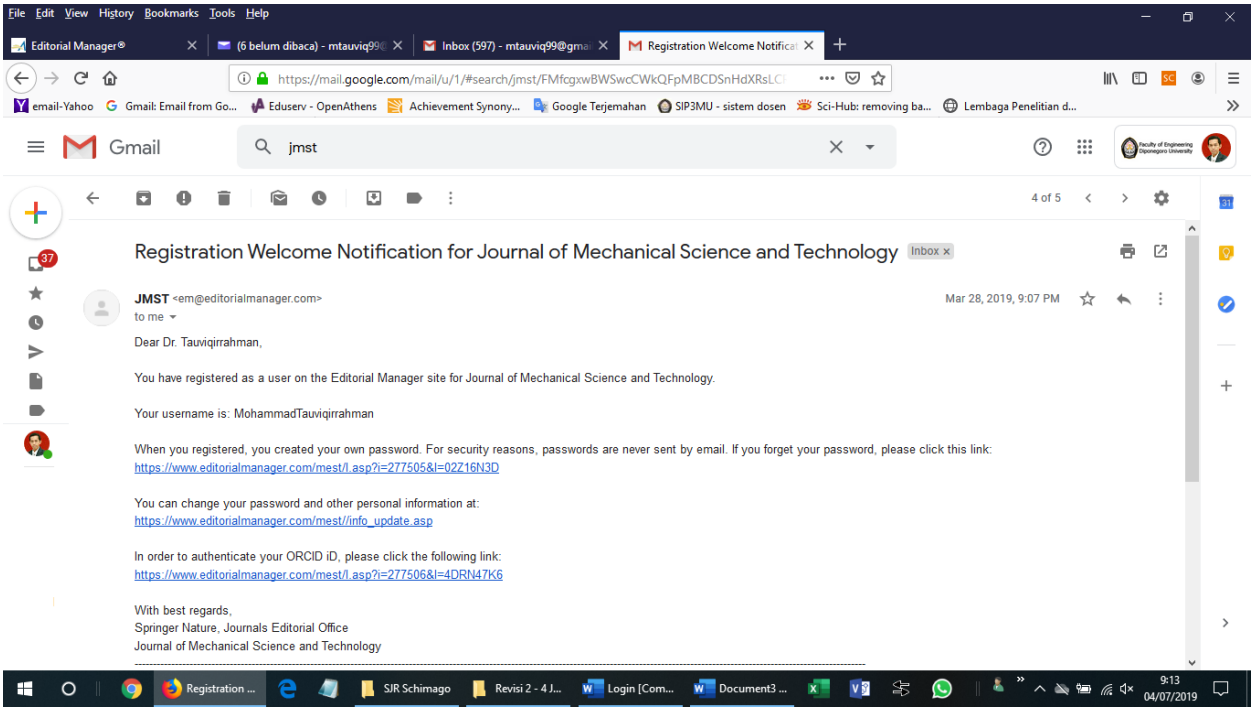

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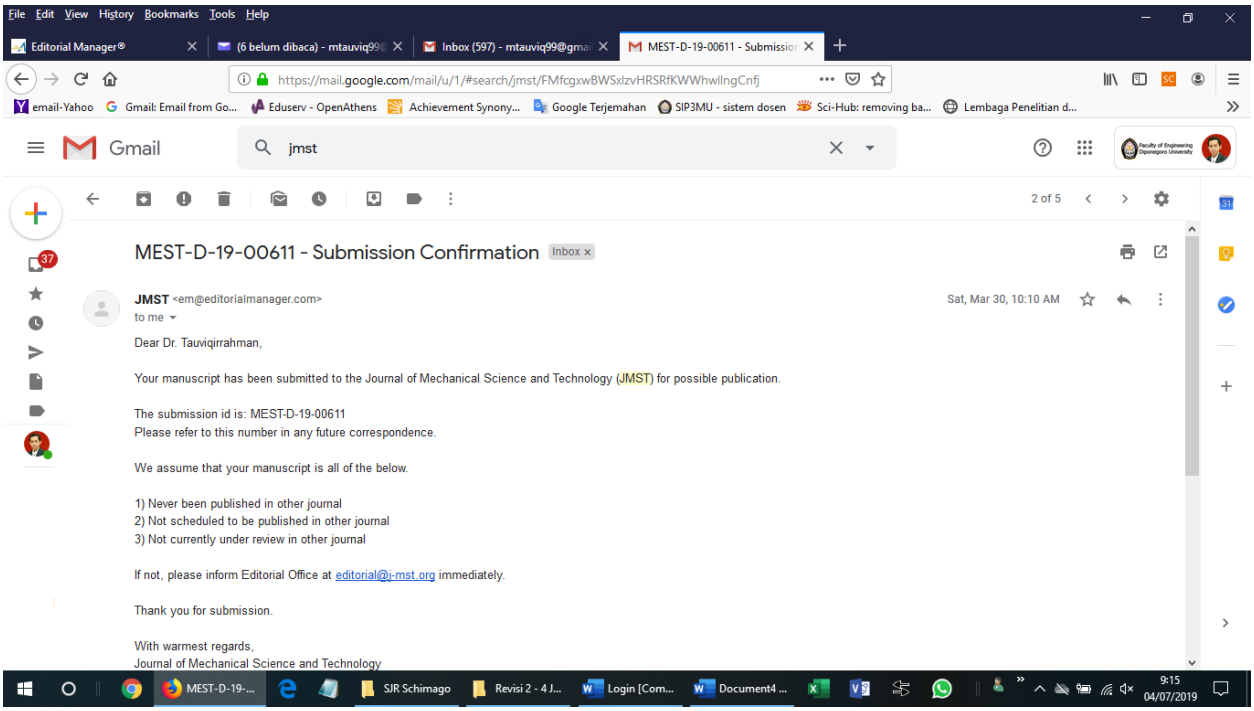

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The submission id is: MEST-D-19-00611
Please refer to this number in any future correspondence.

We assume that your manuscript is all of the below.

1) Never been published in other journal
2) Not scheduled to be published in other journal
3) Not currently under review in other journal

If not, please inform Editorial Office at editorial@j-mst.org immediately.

Thank you for submission.

With warmest regards,
Journal of Mechanical Science and Technology

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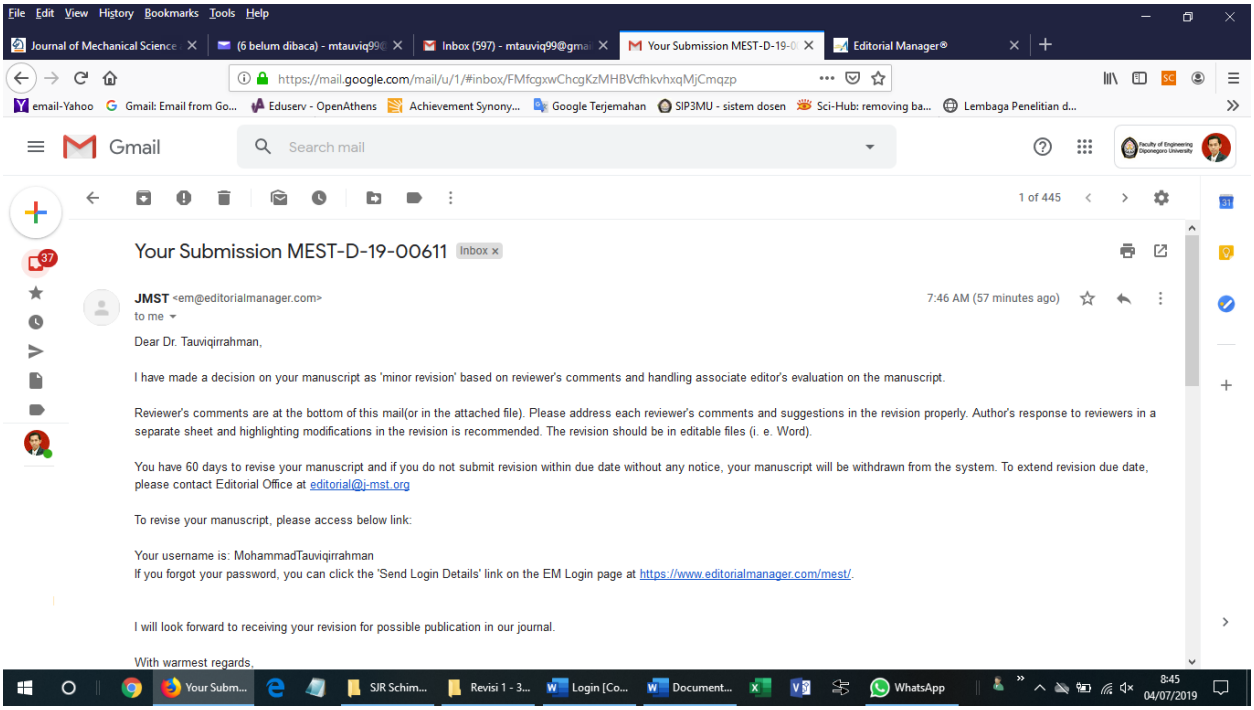
3. Minor revision

4 Juli 2019



Detail email revisi 4 Juli 2019:

Your Submission MEST-D-19-00611

Inbox x

JMST <em@editorialmanager.com> 7:46 AM (57 minutes ago)

to me

Dear Dr. Tauviqirrahman,

I have made a decision on your manuscript as 'minor revision' based on reviewer's comments and handling associate editor's evaluation on the manuscript.

Reviewer's comments are at the bottom of this mail (or in the attached file). Please address each reviewer's comments and suggestions in the revision properly. Author's response to reviewers in a separate sheet and highlighting modifications in the revision is recommended. The revision should be in editable files (i. e. Word).

You have 60 days to revise your manuscript and if you do not submit revision within due date without any notice, your manuscript will be withdrawn from the system. To extend revision due date, please contact Editorial Office at editorial@j-mst.org

To revise your manuscript, please access below link:

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I will look forward to receiving your revision for possible publication in our journal.

With warmest regards,
Editor of the JMST

Comments for the Author:

Reviewer #1: Please cite a reference to Equation 2 and 3 so that readers can find their derivation.

Check again the caption of Fig 2. I believe that one of the hmax should be written as hmin

Please indicate the angles indicated in Fig 3 as "circumferential angle θ" or "attitude angle Φ". Then replace the x-label of Fig 4 and of other similar figures from "circumferential degree" to one of these angles. Make sure that the "circumferential angle θ of 145º" written in Section 3.3 4th paragraph is correct, not Φ.

The text uses a mixed English, for example behavior (USA) and vapour (British). Use vapor instead to be consistent.

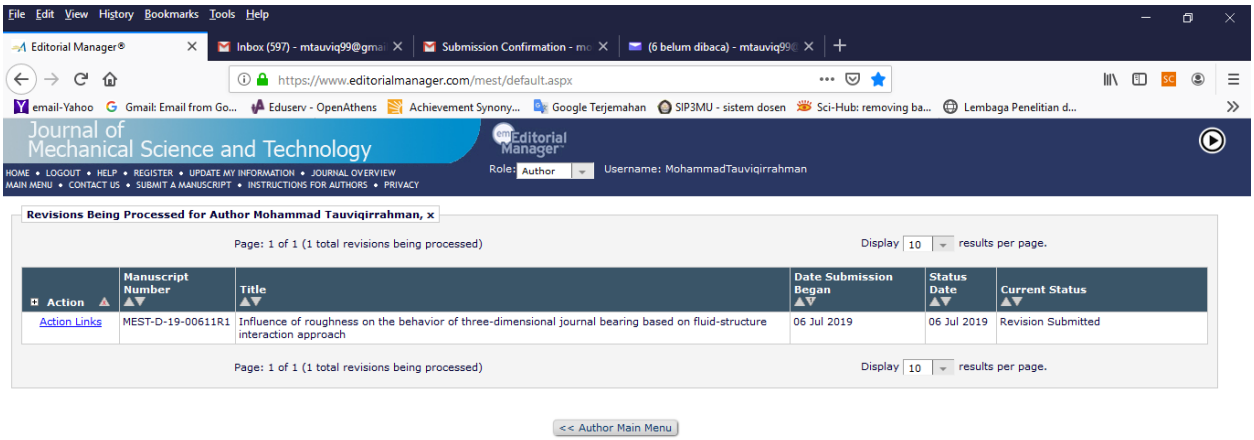
Legends of Fig.7 and 8 are too small and difficult to be read.

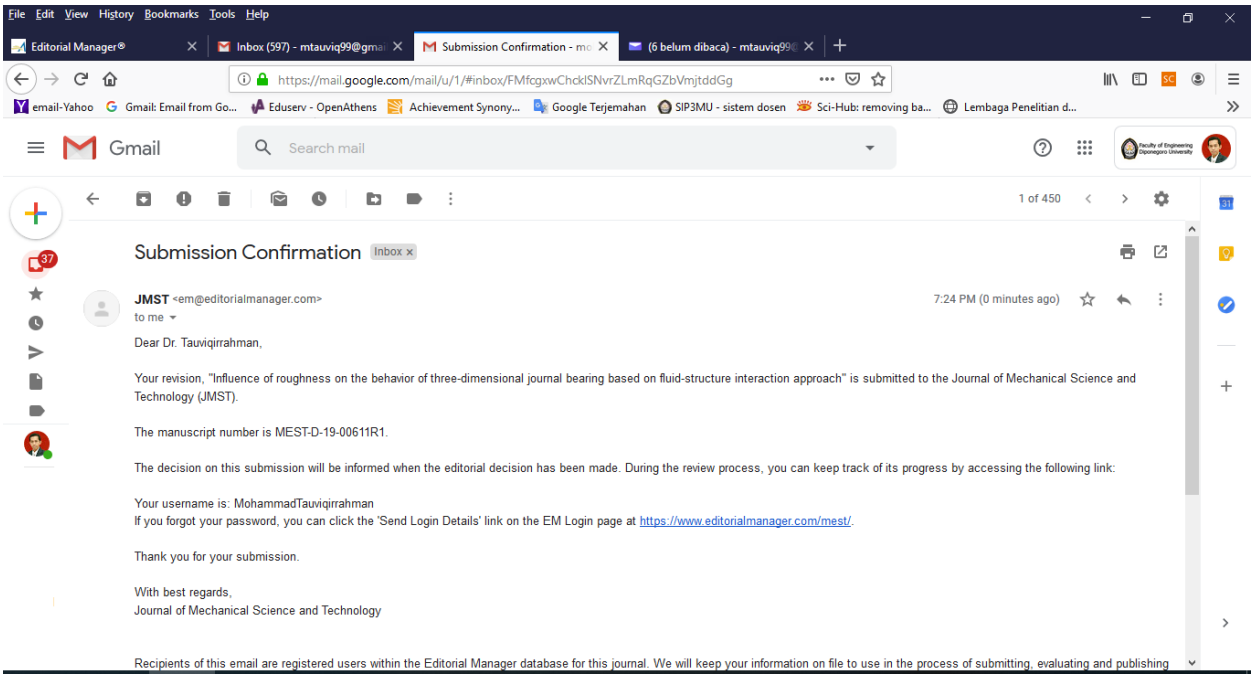
Please check again the English of the manuscript. There is still room for improvement.

—

4. Submission confirmation

6 Juli 2019





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Dear Dr. Tauviqirrahman,

Your revision, "Influence of roughness on the behavior of three-dimensional journal bearing based on fluid-structure interaction approach" is submitted to the Journal of Mechanical Science and Technology (JMST).

The manuscript number is MEST-D-19-00611R1.

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Dear Dr. Tauviqirrahman,

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With best regards,
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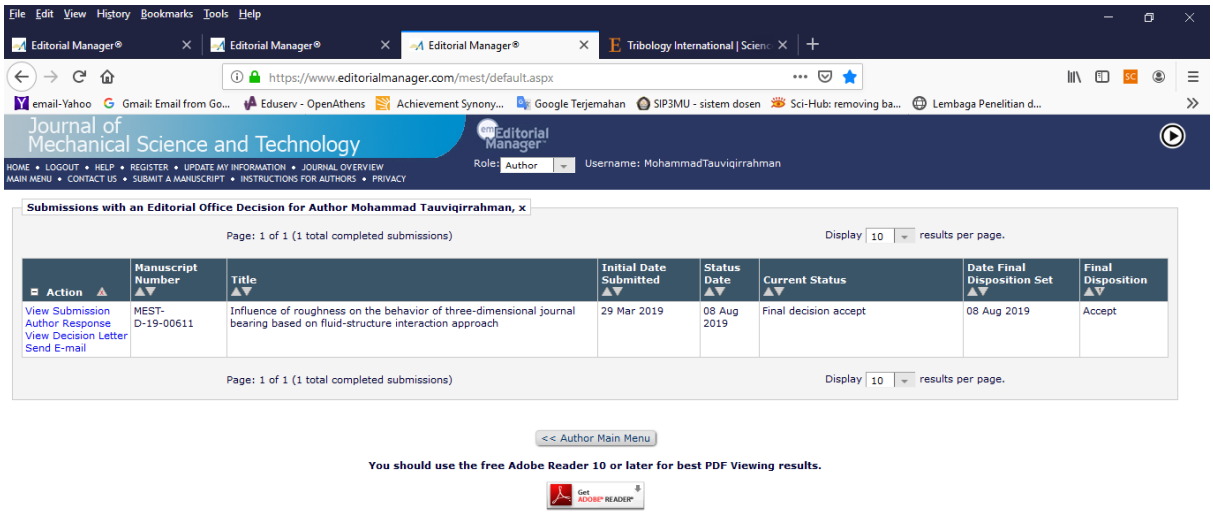
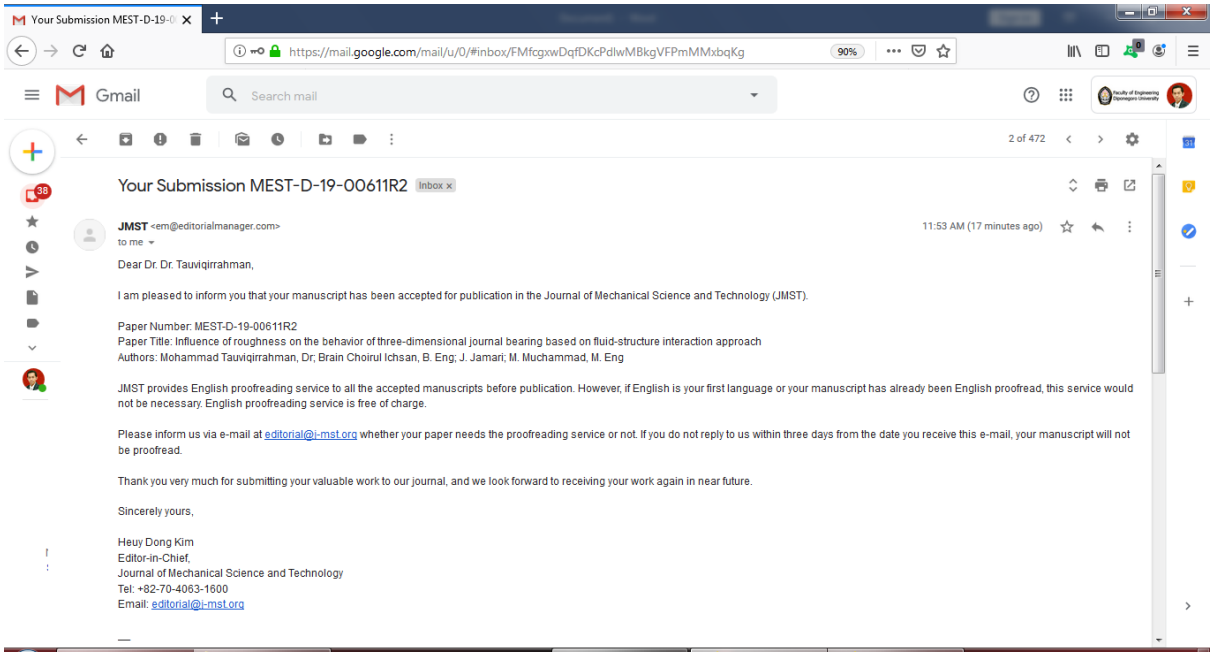
5. Accepted

8 Agustus 2019

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Dear Dr. Dr. Tauviqirrahman,
I am pleased to inform you that your manuscript has been accepted for publication in the Journal of Mechanical Science and Technology (JMST).
Paper Number: MEST-D-19-00611R2
Paper Title: Influence of roughness on the behavior of three-dimensional journal bearing based on fluid-structure interaction approach
Authors: Mohammad Tauviqirrahman, Dr, Brain Choirul Ichsan, B. Eng; J. Jamari; M. Muchammad, M. Eng
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Thank you very much for submitting your valuable work to our journal, and we look forward to receiving your work again in near future.
Sincerely yours,
Heuy Dong Kim
Editor-in-Chief,
Journal of Mechanical Science and Technology
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Email: editorial@j-mst.org

Your Submission MEST-D-19-00611R2

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I am pleased to inform you that your manuscript has been accepted for publication in the Journal of Mechanical Science and Technology (JMST).

Paper Number: MEST-D-19-00611R2
Paper Title: Influence of roughness on the behavior of three-dimensional journal bearing based on fluid-structure interaction approach
Authors: Mohammad Tauviqirrahman, Dr; Brain Choirul Ichsan, B. Eng; J. Jamari; M. Muchammad, M. Eng

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Thank you very much for submitting your valuable work to our journal, and we look forward to receiving your work again in near future.

Sincerely yours,

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