



Maharaja Agrasen Institute of Technology, Delhi Department of Mechanical Engineering

Department of Mechanical Engineering, Maharaja Agrasen Institute of Technology organized an online webinar on the topic '**Experimental investigations on mechanical behaviour of friction stir welded aluminum based composites**' on **29 January 2022**. The event was started with the welcome address of Prof. Neelam Sharma, Director, MAIT who enlightened us with her inspirational and encouraging words. She emphasized the significance of research for the benefit of the students and the faculty.

The main theme of the event was based on the research work carried out by Dr. Narinder kaushik during his PhD. Dr. Narinder kaushik is working as an Assistant Professor in the Department of Mechanical and Automation Engineering (MAE) at Maharaja Agrasen Institute of Technology, New Delhi. Dr Narinder kaushik is awarded with the Ph.D. degree from NIT Kurukshetra in the year 2019. He has done his M.Tech in Mechanical Engineering in the year 2009 from NIT Kurukshetra. Dr. Narinder kaushik has been involved in research on the composite materials characterization, wear analysis and FSW of AMC's. He has authored many research papers in International Journals and Conferences of repute.

Dr. Narinder kaushik presented a very informative talk on 'Experimental investigations on mechanical behaviour of friction stir welded aluminum based composites'. The lecture focuses on the adoption of Friction Stir Welding (FSW), a green welding technology, for the welding of aluminum matrix composites. The talk started with the introduction of composite materials and introduction of FSW process. Further, the principle of FSW was very well explained along with the supporting literature. Dr. Narinder kaushik listed the various types of equipment utilized for achieving the research objectives. The speaker briefly explained the influence of microstructural features obtained after FSW on the mechanical and tribological properties of the FS welded joints. The lecture concluded with the future scope of the research work.

Finally, the webinar was ended with a Q & A session. More than 100 participants attended for the same and the event was a great success.

GUEST SPEAKER



Dr. Narinder Kaushik
Department of Mechanical and Automation Engineering

Dr. Narinder Kaushik is presently working as an Assistant Professor in the Department of Mechanical and Automation Engineering at Maharaja Agrasen Institute of Technology, Delhi. He has been awarded the Ph.D. degree from National Institute of Technology, Kurukshetra (NITKRR). Prior to working in MAIT, he had worked at Vaish College of Engineering, Rohtak for 9 years summing his total teaching experience to 14 years. His research interests includes experimental and numerical aspects of fabrication of composite materials, wear analysis and tribological behavior of composite materials, and some novel approach in friction stir welding (FSW) etc. He has authored many research papers in International Journals and Conferences of repute. He is also in the reviewer board of some reputed international journals.



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DEPARTMENT OF MECHANICAL & AUTOMATION ENGINEERING & DEPARTMENT OF MECHANICAL ENGINEERING

PRESENTS

WEBINAR SERIES


DR. NARINDER KAUSHIK, SPEAKER

EXPERIMENTAL INVESTIGATIONS ON MECHANICAL BEHAVIOUR OF FRICTION STIR WELDED ALUMINUM BASED COMPOSITES




PRODUCTION OF AA6063/SiC AMC


(0%, 3.5%, 7%, 10.5% wt. % of SiC) using stir casting



Stirrer
Electric resistance furnace



Permanent mold



Fabricated casting

Labels in images: Argon gas cylinder, Permanent mold, Stirrer, Electric resistance furnace, Fabricated casting.

PIN-ON-DISC APPARATUS

DUCOM (TR-20LE)




Labels: Pin, Counter face disc, Load lever, LVDT, Pin specimen, Counter face rotating disc.

PIN-ON-DISC DRY SLIDING WEAR ANALYSIS

- The manufactured composite ought to have a decent wear protection performance, when it is suited in any application. Consequently, the impact of applied load, sliding distance and wt. % of SiC particles on the output response characteristics such as wear rate, specific wear rate and frictional force are researched.

$$\text{Volumetric loss} = \text{Height loss} \times \text{cross sectional area of pin}$$

$$\text{Wear rate (WR)} = \frac{\text{Volumetric loss } \text{mm}^3}{\text{Sliding distance } \text{m}}$$

DEVELOPMENT OF FSW TOOLS

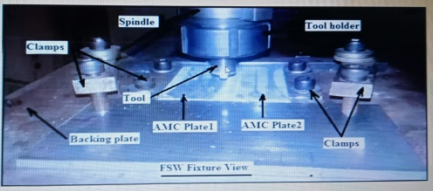




Labels: (a), (b), (c)

- The trials welds were carried out using tools of different profiles viz., square, cylindrical threaded and conical

SPECIALLY DESIGNED FIXTURE TO PERFORM FSW



Labels: Clamps, Spindle, Tool holder, Tool, AMC Plate1, AMC Plate2, Backing plate, Clamps.

FSW Fixture View

Meeting Summary

Total Numt 101

Meeting Title General

Meeting Start 1/29/2022, 4:12:15 PM

Meeting End 1/29/2022, 5:18:26 PM

Meeting Id 11340ca8-3ac2-4281-8379-94fedb376d4c

Full Name	Join Time	Leave Time	Duration	Email	Role	Participant ID (UPN)
Narinder K	1/29/2022, 1/29/2022, 1h 56m			narinderk@mae.mait.ac.in	Organizer	narinderk@mae.mait.ac.in
Vipin Kumar	1/29/2022, 1/29/2022, 1h 52m			vipink@mae.mait.ac.in	Presenter	vipink@mae.mait.ac.in
Ajay Kumar	1/29/2022, 1/29/2022, 1h 31m			btech.le_148@me.mait.ac.in	Attendee	btech.le_148@me.mait.ac.in
4.41E+09	1/29/2022, 1/29/2022, 1m 30s			shubham.044148111@me.mait.ac.in	Attendee	shubham.04414811119@me.mait.ac.in
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Dean Acad	1/29/2022, 1/29/2022, 21m 59s			deanacad@adm.mait.ac.in	Presenter	deanacad@adm.mait.ac.in
Rohit Uday	1/29/2022, 1/29/2022, 1h 19m			rohitu@ece.mait.ac.in	Attendee	rohitu@ece.mait.ac.in
7.91E+09	1/29/2022, 1/29/2022, 14s			rajat.07914803620@mae.mait.ac.in	Attendee	rajat.07914803620@mae.mait.ac.in
3.52E+10	1/29/2022, 1/29/2022, 2m 43s			anshuman.352148111@me.mait.ac.in	Attendee	anshuman.35214811119@me.mait.ac.in
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Nitin Sharn	1/29/2022, 1/29/2022, 1h 9m	nitins@ece.mait.ac.ir	Attendee	nitins@ece.mait.ac.in
8.61E+09	1/29/2022, 1/29/2022, 3m 32s	shivam.0861480361	Attendee	shivam.08614803618@mae.mait.ac.in
2.03E+10	1/29/2022, 1/29/2022, 1h 7m	kunal.20314811120	Attendee	kunal.20314811120@me.mait.ac.in
4.2E+10	1/29/2022, 1/29/2022, 1h 6m	adarsh.42014803618	Attendee	adarsh.42014803618@mae.mait.ac.in
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9.41E+09	1/29/2022, 1/29/2022, 55m 9s	tanvir.09414803620	Attendee	tanvir.09414803620@mae.mait.ac.in
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5.01E+09	1/29/2022, 1/29/2022, 51m 17s	kartik.05014803620	Attendee	kartik.05014803620@mae.mait.ac.in
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6.71E+09	1/29/2022, 1/29/2022, 2m 35s	neeraj.06714803620	Attendee	neeraj.06714803620@mae.mait.ac.in
2.15E+08	1/29/2022, 1/29/2022, 14m 44s	aditya.00214811120	Attendee	aditya.00214811120@me.mait.ac.in
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8.15E+08	1/29/2022, 1/29/2022, 1m 7s	chirag.00814811120	Attendee	chirag.00814811120@me.mait.ac.in
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3.91E+09	1/29/2022, 1/29/2022, 11m 7s	sparsh.03914811120	Attendee	sparsh.03914811120@me.mait.ac.in
3.55E+10	1/29/2022, 1/29/2022, 1m 8s	diptanshu.35514811	Attendee	diptanshu.35514811120@me.mait.ac.in
2.06E+10	1/29/2022, 1/29/2022, 29s	aashray.20614803120	Attendee	aashray.20614803120@it.mait.ac.in
4.01E+09	1/29/2022, 1/29/2022, 9m 45s	gaurav.04014803620	Attendee	gaurav.04014803620@mae.mait.ac.in
1.71E+09	1/29/2022, 1/29/2022, 5m 19s	himanshu.01714811	Attendee	himanshu.01714811120@me.mait.ac.in