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School of Mechanical Engineering, Universiti Sains Malaysia

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Inside the Issue

Recent Publications
Published

N A Jaafar and A B Abdullah 2019 *IOP Conf. Ser.: Mater. Sci. Eng.* **530** 012010

A A Ghafar and A B Abdullah 2019 *IOP Conf. Ser.: Mater. Sci. Eng.* **530** 012015

Active Grant
RUI Grant
Title: Formability Analysis of Tailor Welded Blank of Steel and Aluminum Alloys., 2018-2021.

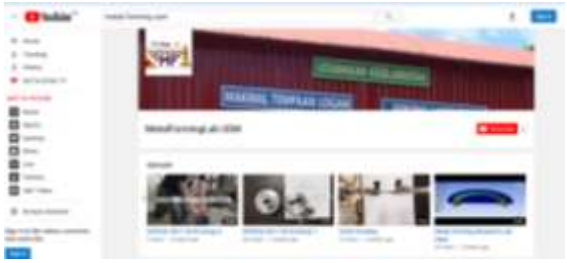
SCAN ME

Preface - Power of Social Media

The Lab moved one step ahead by promoting the Lab thru the most influential media recently i.e. social media.

a) YouTube Channel

Know that YouTube channel is among the top social media platform. Millions of viewers get access to YouTube every day. Our channel name is MetalformingLab USM, which can be visited at;
https://www.youtube.com/channel/UCBVe_pUE7e9ugWyRLgy7x-Q



b) Google Maps

Direction to your place nowadays become easier as many platform can easily be accessed, one of them is Google Maps.

Link to share: https://goo.gl/maps/UF75mG5PaefL8eFV6

Invitation by MRSM Trankerian

As part of our community service responsibility (CSR) and to cultivate science, technology and engineering for secondary student, Metal Forming Research Lab has been invited to become a judge in a yearly event name "SEM Fiesta Type III 2019" at MRSM Trankrian, Nibong Tebal. Out of 10 judges, 7 of them are from our lab, our alumni (Mr. Mohd Fitri Adnan) and 2 lecturers from KKTM Balik Pulau also involve in the evaluation. The group would like to acknowledge the management of the school that invites us for this event. Below some of photos during the day.

Participation in ICADME 2019 Conference

Two of our members had an opportunity to share their works at the ICADME 2019. The conference was organized by Universiti Malaysia Perlis on 26-27 of August 2019. It is a good platform to gain experience in presenting your findings. Congratulation to Norazlin and Adha to them for their effort and good work.

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Article

FACILITIES AT METAL FORMING LAB - USM

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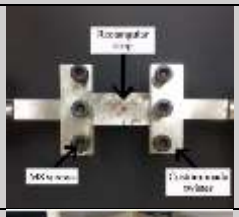
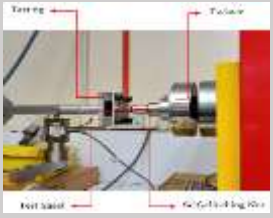
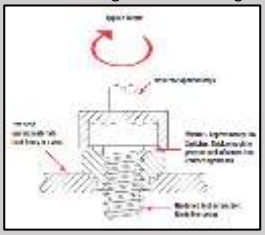
No	Test Name	Photo	Parameters	Standard
1	V-bending		To measure the springback of metal strip. Parameters can be studied including stroke, material type/thickness, heat treatment annealing effect, rolling direction and bend location. Publications; 1. M. F. Adnan, A. B. Abdullah and Z. Samad, "*Effect of Annealing, Thickness Ratio and Bend Angle on Springback of AA6061-T6 with Non-uniform Thickness using Taguchi Method*", MATEC Web of Conferences 90, 01002, 2017. 2. M. F. Adnan, A. B. Abdullah and Z. Samad, "*Springback Behavior of AA6061 with Non-uniform Thickness Section Using Taguchi Method*", International Journal of Advanced Manufacturing Technology, 89 (5-8), 2017, pp. 2041-2052. 3. A. F. Adnan, A. B. Abdullah and Z. Samad, "*Study of springback pattern of non-uniform thickness section based on V-bending experiment*", Journal of Mechanical Engineering and Sciences, 11(3), 2017, pp. 2845-2855.	**ISO 7438:2016** **Machine** Universal Tensile Machine (UTM) Hydraulic Press Machine
2	Twist springback		To measure twist springback of a strip. Parameters can be studied including twist angle, material type/thickness, heat treatment e.g. annealing effect and rolling direction. Publications; 1. M. N. Nashrudin and A. B. Abdullah, "*Finite Element Simulation of Twist Forming Process to Study Twist Springback Pattern*", MATEC Web of Conferences 90, 01026, 2017.	Not available **Machine** Semi-Auto Torsion Test Machine
3	Pin on Hole Bearing Test		This test was conducted to determine the mechanical and failure mode behavior of the holes under tensile loading on laminated composite panel. Publications; 1. M. S. Abdullah, A. B. Abdullah, M. H. Hassan and Z. Samad, "*Bearing strength and progressive failure analysis of the punched hole of CFRP under tensile loading*", International Journal of Advanced Manufacturing Technology, 97, 2018, pp. 2163-2171.	**ASTM D5961 procedure-A** **Machine** Universal Tensile Machine (UTM)
4	Torque-out Test		To determine a fastener's ability to resist rotation within the panel. This test is often made on the fastener's head with values usually exceeding the ultimate torsional strength of the mating screw or nut 	Not available **Machine** Semi-Auto Torsion Test Machine
5	Cupping test		The Erichsen cupping test is a ductility test, which is employed to evaluate the ability of metallic sheets and strips to undergo plastic deformation in stretch forming. The test consists of forming an indentation by pressing a punch with a spherical end against a test piece clamped between a blank holder and a die, until a through crack appears. The depth of the cup is measured.	**ISO 20482:2013** **Machine** Universal Tensile Machine (UTM) Hydraulic Press Machine
6	Dome test		This apparatus can be used to obtain formability data, then to construct the Forming Limit Diagram (FLD). 	**ASTM E2218-02** **Machine** Hydraulic Press Machine Universal Tensile Machine (UTM)

All these test and rig were custom-made by our members in their experiments and had been tested their reliability by publishing many articles in various places and the test rig can be used by outsider by contacting me at mebaha@usm.my