

International Automotive Body Congress (IABC 2019 LIVONIA)

Papers and Presentations

Livonia, Michigan, USA
25 - 26 September 2019

Editors:

**M Nasim Uddin
Rafiq Uddin**

ISBN: 978-1-7138-0179-5

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2019) by Global Automotive Management Council (GAMC)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact Global Automotive Management Council (GAMC)
at the address below.

Global Automotive Management Council (GAMC)
5340 Plymouth Road, Suite 205
Ann Arbor, Michigan, USA 48105

Phone: (734) 997-9249

Fax: (734) 786-2242

samanthaj@gamcinc.com

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PAPERS

QUANTITATIVE SURFACE QUALITY ASSESSMENT OF CAR OUTER PANELS WITH A VIRTUAL LIGHT ROOM	1
<i>A. Camanho, H. Porzner, R. Padovani, C. Sakuramoto</i>	
SUPPRESSION OF LME CRACKING BY PULSE MODIFICATION IN RESISTANCE SPOT WELDS OF ZN-COATED GEN3 STEELS	5
<i>D.Y. Choi, S. Uhm, H. Lee, C. Prado</i>	
STYLED STEEL WHEELS DEVELOPMENT USING TRIP AND TWIP STEELS	13
<i>Y. Chung, M. Lee, H. Kwon</i>	
FLASH® BAINITE: COIL-TO-COIL PRODUCTION OF ROOM TEMP STAMPABLE, READILY WELDABLE 1500 AND 1800MPA AHSS	19
<i>G.M. Cola</i>	
COMPARISONS OF THE PERFORMANCE IN SOUND RADIATION REDUCTION FOR TWO FRONT PANEL DESIGNS: MONOLITHIC PANEL VS. PATCHED PANEL	35
<i>A. Figueroa, M. Telenko, L. Chen, S.F. Wu</i>	
GETTING WHAT YOU NEED IN A COIL-FED LASER BLANKING SYSTEM	52
<i>J. Finn</i>	
SHARP FEATURE LINE FORMABILITY EVALUATION IN A LABORATORY SETTING	57
<i>L. Huang</i>	
NEW HIGH-PRESSURE HYDROFORM TOOL DESIGN REDUCES SPRINGBACK IN ULTRA-HIGH STRENGTH STEELS	65
<i>B. Carlsson, M. Bergkvist, P. Falk, B. Clark, K. Kannan</i>	
QUALITY IMPROVEMENT OF ALUMINUM RESISTANCE SPOT WELDING THROUGH MAGNETIC STIRRING	77
<i>R. Kossak, J. Malpica, P. Lester, S. Wagstaff</i>	
NOVELIS' NEXT GENERATION HIGH STRENGTH AUTOMOTIVE 6XXX ALLOY: ADVANZ™-6HS-S650	93
<i>R. Kulkarni, D. Roy, K. Dasch, R. Kamat, A. Gupta</i>	
VISTACAL – A TOOL FOR AUTOMATED CONSTITUTIVE MODEL CALIBRATION	104
<i>J. Londono, M. Mobasher, P. Woelke</i>	
ADHESIVE AND THERMAL INTERFACE MATERIALS FOR AUTOMOTIVE BATTERY ASSEMBLY	112
<i>T. Auwil, S. Grunder, N. Hillesheim, F. Koch, S. Schmatloch, A. Lutz</i>	
NEXT GENERATION 7XXX ALUMINUM ALLOY FOR AUTOMOTIVE APPLICATIONS	119
<i>R.R. Mohanty, R. Talla, T. Piroteala, Y. Yuan, R. Kamat</i>	
STAMPING OUT THE BAD PARTS: INDUSTRY 4.0 FORMABILITY	132
<i>J. Psilopoulos, J. Tyson</i>	
RESTRIKE METHODOLOGY DEVELOPMENT FOR AHSS APPLICATIONS	136
<i>H.C. Shih, R.J. Miller</i>	
SSAB EV CONCEPT – HOW ADVANCED HIGH STRENGTH STEELS CAN BE UTILIZED IN ELECTRIC VEHICLES	145
<i>R. Strom</i>	
EXPERIMENTAL STUDY ON THE PERFORMANCE OF VACUUM SUCTION CUPS	151
<i>W. Xu, J. Li, B. Zhang, X. Dan, L. Yang</i>	
ADDITIVE MANUFACTURING OF CAR BODY PARTS	159
<i>C. Potzernheim-Zenkel, K.M. Radlmayr</i>	

PRESENTATIONS

PROCESS MONITORING AND REAL TIME ALGORITHMIC FOR HOT STAMPING LINES	165
<i>R. Vollmer, C. Palm, J. Aspacher</i>	
ADHESIVE AND THERMAL INTERFACE MATERIALS FOR AUTOMOTIVE BATTERY ASSEMBLY	177
<i>T. Auwil</i>	

PSA GROUPE	191
<i>L. Blake</i>	
A COLLABORATIVE APPROACH TO FUTURE MOBILITY	201
<i>S. Collick</i>	
THE ALL NEW 2020 FORD ESCAPE & KUGA	213
<i>B. Corby</i>	
BUILDING FACTORIES OF THE NEAR FUTURE	233
<i>N/A</i>	
S-IN MOTION® STEEL SOLUTIONS FOR BEV BATTERY PACK	238
<i>T. Wormald, K. Eldridge, M. Amblard</i>	
AUTOMOTIVE COMPONENT OPTIMIZATION UTILIZING NEXMET® AHSS	253
<i>S.G. Elengikal</i>	
NEW HIGH PRESSURE HYDROFORMING TOOL DESIGN REDUCES SPRINGBACK IN UHS STEELS	274
<i>B. Clark</i>	
STEEL: THE RESILIENT MATERIAL OF FUTURE MOBILITY	289
<i>P. LeBlanc</i>	
THE FACTORY OF THE FUTURE IS NOW	304
<i>T. McGinnis</i>	
2020 FORD EXPLORER	309
<i>S. Morgans, M. Kozak, V. Bogachuk</i>	
TWP - THE FUTURE OF MOBILITY	324
<i>M. Padovani</i>	
DIGITAL TWIN BENCHMARKING USING HIGH ENERGY SCAN TECHNOLOGY	339
<i>N/A</i>	
EV BATTERY ENCLOSURE OVERVIEW	367
<i>W.J. Parsons</i>	
ADDITIVE MANUFACTURING: AUTOMOTIVE APPLICATIONS	378
<i>C. Potzernheim-Zenkel, K.M. Radlmayr</i>	
AGILE DEVELOPMENT OF A MODULAR TOOLBOX FOR HV BATTERY HOUSINGS: FLEXTRIC - THE NEW MODULAR BATTERY BOX SYSTEM	393
<i>K.M. Radlmayr, M. Wiemann, M. Funcke</i>	
PHS-ROLLFORM - Q&T ROLL FORMED AUTOMOTIVE COMPONENTS	407
<i>K.M. Radlmayr, C. Rouet, F. Mayer</i>	
BODY STRUCTURES AND LIGHTWEIGHTING	416
<i>S. Rawe, R. Sheffield</i>	
SPECIALIZED FOR TUBE CUTTING - JENOPTIK-VOTAN® BIM M	431
<i>N/A</i>	
ADVANZ™ 6HS - S650: NEXT GENERATION HIGH STRENGTH 6XXX AUTOMOTIVE ALLOY	446
<i>D. Roy, R. Kamat, K. Dasch, N. Aphale, A. Gupta, R. Kulkarni</i>	
BODY STRUCTURE CONSIDERATIONS FOR PACKAGING BATTERY ENCLOSURE FOR LONG RANGE BEV	456
<i>H. Singh</i>	
T3 MULTIWALL™ TUBES: VARIABLE THICKNESS TUBES FOR PERFORMANCE AND LIGHT-WEIGHTING	469
<i>T. Weber, T. Ruparel, Q. Khan, S.A. Varanasi</i>	
A LIGHTWEIGHT, AFFORDABLE ALUMINUM SHEET BATTERY ENCLOSURE FOR HIGH-VOLUME BEVS	476
<i>D. Whitacre</i>	
Author Index	