

# **Automotive Closures Conference (ACC 2020) and Advanced Laser Applications Conference (ALAC 2020)**

Papers and Presentations

Online  
23-24 September 2020

**Editors:**

**M Nasim Uddin  
Rafiq Uddin**

ISBN: 978-1-7138-2031-4

**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© (2020) by Global Automotive Management Council (GAMC)  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2021)

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](mailto: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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

CFD SIMULATIONS FOR LASER WELDING .....	1
<i>P. Allu</i>	
EVOLUTION OF JOINING TECHNOLOGIES IN CLOSURES - TECHNOLOGY OVERVIEW WITH UNIQUE APPLICATION EXAMPLES .....	12
<i>M. Auger</i>	
MANUFACTURING ADVANCES IN AUTOMOTIVE CLOSURES .....	23
<i>P. Belanger</i>	
3D OPTICAL STRAIN GAGE AND NEXT-GENERATION NON-CONTACT MEASUREMENTS .....	40
<i>J. Bucinski</i>	
2021 FORD BRONCO DOOR DESIGN STRATEGY .....	59
<i>D. Burgess, C. Moccio</i>	
2020 CHEVROLET CORVETTE CLOSURE SYSTEMS.....	71
<i>R. Cahill, D. Gordon, S. Resch, K. Smith, L. Berry</i>	
HIGH EFFICIENCY LASER CUTTING OF STAINLESS STEEL .....	88
<i>C. Caristan, P. Lefebvre, C. Bertez, M. Stepanova</i>	
KIA TELLURIDE - SIDE CLOSURE SYSTEM DEVELOPMENT.....	95
<i>J. Choi</i>	
COMAU'S WAY TO IOT AND AI: BUILDING THE FACTORY OF THE FUTURE, NOW .....	102
<i>P. Avagliano</i>	
BATTERY ELECTRICAL VEHICLES AND COST-EFFICIENT LIGHTWEIGHTING SOLUTIONS.....	111
<i>M. Corradin</i>	
APLI AFFECTS ON HOOD CUTLINES & RADAR PACKAGING .....	120
<i>B. Cote</i>	
POTENTIAL ROOF RAIL AIR BAG INTERACTION WITH INSIDE DOOR HANDLES .....	138
<i>J. Konchan, D. VanHouzen</i>	
NEXT GENERATION ALUMINUM FOR AUTOMOTIVE CLOSURES & OUTER PANELS.....	151
<i>J. McGuire</i>	
INDUSTRY 4.0 FORMABILITY - NEXT GENERATION OPTICAL METROLOGY FOR SHEET METAL STAMPING QUALITY CONTROL .....	159
<i>J. Psilopoulos</i>	
COMPOSITE SPACE FRAME .....	193
<i>R. Chaaya, J. Puta</i>	
FRICITION AND LUBRICATION MODELING IN STAMPING SIMULATIONS - APPLICATION TO THE FORD TRANSIT HOOD INNER PANEL .....	208
<i>S. Berahmani, C. Bilgili, G. Erol, J. Hol, B. Carleer, A. Wankhede</i>	
THE EXPERIMENTAL MEASUREMENT OF SUCTION CUPS RELEASE TIME .....	223
<i>X. Zheng, W. Ma, R. Wang, X. Gu, L. Yang</i>	