

# **American Gear Manufacturers Association Fall Technical Meeting 2013**

**Indianapolis, Indiana, USA  
15-17 September 2013**

**ISBN: 978-1-62993-293-4**

**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© (2013) by the American Gear Manufacturers Association  
All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact the American Gear Manufacturers Association  
at the address below.

American Gear Manufacturers Association  
500 Montgomery Street, Suite 350  
Alexandria, Virginia 22314-1581

Phone: (703) 684-0211  
Fax: (703) 684-0242

[webmaster@agma.org](mailto:webmaster@agma.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

<b>Power Skiving of Cylindrical Gears on Different Machine Platforms .....</b>	<b>1</b>
<i>H. J. Stadtfeld</i>	
<b>Performance and Technological Potential of Gears Ground by Dressable cBN Tools .....</b>	<b>19</b>
<i>J. Reimann, F. Klocke, M. Brumm, A. Mehr, K. Finkenwirth</i>	
<b>Analysis of Gear Root Forms: A Review of Designs, Standards and Manufacturing Methods for Root Forms in Cylindrical Gears .....</b>	<b>31</b>
<i>N. Chaphalkar, G. Hyatt, N. Bylund</i>	
<b>Best Practices for Gearbox Assembly and Disassembly .....</b>	<b>40</b>
<i>J. Bello</i>	
<b>Cubitron™ II: Precision Shaped Grains (PSG) Turn the Concept of Gear Grinding Upside Down.....</b>	<b>51</b>
<i>W. Graf</i>	
<b>High Gear Ratio Epicyclic Drives Analysis .....</b>	<b>61</b>
<i>A. Kapelevich</i>	
<b>Finite Element Analysis of a Floating Planetary Ring Gear with External Splines .....</b>	<b>73</b>
<i>V. Kirov, Y. Wang</i>	
<b>Application and Improvement of Face Load Factor Determination Based on AGMA 927 .....</b>	<b>84</b>
<i>U. Kissling</i>	
<b>Investigations on Tooth Root Bending Strength of Case Hardened Gears in the Range of High Cycle Fatigue .....</b>	<b>103</b>
<i>N. Bretl, S. Schurer, T. Tobie, K. Stahl, B.-R. Höhn</i>	
<b>Calculation of the Tooth Root Load Carrying Capacity of Beveloid Gears .....</b>	<b>119</b>
<i>C. Brecher, M. Brumm, J. Henser</i>	
<b>Striving for High Load Capacity and Low Noise Excitation in Gear Design .....</b>	<b>138</b>
<i>K. Stahl, M. Otto, M. Zimmer</i>	
<b>Practical Considerations for the Use of Double Flank Testing for the Manufacturing Control of Gearing .....</b>	<b>152</b>
<i>E. Reiter, F. Eberle</i>	
<b>Gear Failure Analysis and Lessons Learned in Aircraft High-Lift Actuation .....</b>	<b>184</b>
<i>A. Wang, S. Gines, L. El-Bayoumy, J. Davies</i>	
<b>Metallurgical Investigation of “Tiger Stripes” on a Carburized High Speed Pinion.....</b>	<b>199</b>
<i>M. Li, P. Terry, R. Eckert</i>	
<b>White Structure Flaking in Rolling Bearings for Wind Turbine Gearboxes.....</b>	<b>206</b>
<i>H. Uyama, H. Yamada</i>	
<b>The Anatomy of a Lubrication Erosion Failure - Causation, Initiation, Progression and Prevention .....</b>	<b>219</b>
<i>R. J. Drago, R. J. Cunningham, W. Flynn</i>	
<b>Dynamic Simulations of Radial Lip Seals Followability in an Industrial Gearbox.....</b>	<b>249</b>
<i>M. Organisciak, R. Iervolino, M. Sansalone, S. Barbera, A. Paykin, M. Schweig</i>	
<b>Gear Lubrication – Long Term Protection for Wind Turbines.....</b>	<b>259</b>
<i>S. Mazzola, M. Hochmann, J. Wald</i>	
<b>Gear Resonance Analysis and Experimental Verification Using Rapid Prototyped Gears.....</b>	<b>276</b>
<i>S. R. Davidson, J. D. Hayes</i>	
<b>Influence of Gear Loads on Spline Couplings .....</b>	<b>287</b>
<i>C. H. Wink, M. Nakandakari</i>	
<b>How to Spec a Mill Gear .....</b>	<b>301</b>
<i>F. C. Uherek</i>	
<b>Heat Treatment of Large Components .....</b>	<b>315</b>
<i>G. L. Reese</i>	
<b>Ductile Iron for Open Gearing – A Current Perspective .....</b>	<b>336</b>
<i>F. Wavelet, M. Pasquier</i>	
<b>Innovative Induction Hardening Process with Preheating for Improved Fatigue Performance of Gear Component .....</b>	<b>356</b>
<i>Z. Li</i>	
<b>Press Quenching and the Effects of Prior Thermal History on Distortion during Heat Treatment.....</b>	<b>369</b>
<i>A. C. Reardon</i>	
<b>Vacuum Carburizing Large Gears.....</b>	<b>378</b>
<i>N. Plough</i>	
<b>Author Index</b>	