



Water Erosion Resistant Surface Treatments Using Low Plasticity Burnishing







Outline

- Review
- Correlation between micro hardness and residual stress
- Residual stress measurement
- LPB high speed coupon preparation
- Timeline for the end of the project







Review



DOE for LPB



DOE for LPB ----Surface Roughness



DOE for LPB

----Surface Hardness







Correlation Between Micro Hardness and Residual Stress



Correlation Between Micro Hardness and Residual Stress



Correlation Between Micro Hardness and Residual Stress



Residual Stress Measurement ----Blind hole-drilling method



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Residual Stress Measurement ----Blind hole-drilling method

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LPB High speed Coupon Preparation



High Speed LPB Coupons







Factor of safety > 2

Timeline

----By the end of September

Activity	Description	Finishing percentage by the end of September 2013	Explanations	
Review of low plasticity burnishing		100%		
Process optimisation and evaluation of process parameters on mechanical effects	Based on DOE, samples will be manufactured and characterized by stress measurements, hardness measurements and microstructure analysis.	60% (In-depth micro hardness measurements and microstructure analysis should be able to be finished by then)	Since the residual stress measurement will be started in the middle of June (12+ week's delivery time of the hole-drilling equipment).	
Compilation of Water erosion tests	LPB with various stress distributions tested on the water erosion rig.	70% (Erosion test will be started as soon as the samples are ready)	The machining of the coupons will take time and the time for finishing the testing also depends on the working schedule of the water erosion rig.	
Testing	Correlation of erosion resistance and residual stresses.	<mark>60%</mark> (Correlation could be done with the tested samples)	Both the residual stress measurement and the water erosion rig test will take time and they depend on the uncontrollable factors, such as delivery time and machining time.	

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Thanks

