Issues associated with insertion and implementation of new surface engineering technologies

HCAT Program Review
Greensboro, NC
March 2005

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### Report Documentation Page

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<td>Rowan Technology Group, 1590 S. Milwaukee Ave., Suite 205, Libertyville, IL, 60048</td>
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<td>25th Replacement of Hard Chrome and Cadmium Plating Program Review Meeting, March 15-17, 2005, Greensboro, NC. Sponsored by SERDP/ESTCP.</td>
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Standard Form 298 (Rev. 8-98)  
Prescribed by ANSI Std Z39-18
Documents we have on HVOF (landing gear)

And that's just landing gear!
What are we seeing in new programs?

- A lot of issues we never thought about when doing the validation
  - Using the wrong coating so they get severe counterface wear
  - Spraying into snap ring grooves
  - Having to worry about adhesion on IVD on plasma spray Mo
  - Design engineers unsure of runout
- For F-35 we are developing Guidelines documents
  - “How I Did It” by Baron von Frankenstein, that includes all the details not in the specs
  - Could we do something better?
  - Interactive web-based training?
Where do we have the most trouble?

- Technology match to need
- Degree of development
- Engineering data
- Producibility
- Cost-benefit
- Equipment installation
- Approval
- Specs
- Training
- Performance shortcoming
- Some critical missing capability
- Often get stuck here
- Ridiculous length of time often needed
- Sometimes fall short here

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Minimizing engineering risk

- How can we best make sure we do not have an important shortcoming in performance or producibility?
  - Finding a problem too late locks us in to a specific set of coating parameters, leaves no money to fix it
  - With new technologies, need to get data up-front at the extremes before launching full JTP
  - How best do that?
Approval

- Approval is relatively straightforward when the people doing the work are also the decision-makers (Air Force, OEMs)
  - They know all the details of the technology, its capabilities and limitations
- How can we smooth the approval process for Navy and Army?
Specifications

- Specs usually have to be internal
  - Takes years and thousands of gray hairs to get industry specs
  - Is there a better way of doing this?
Training

- Some organizations find themselves in a bind with training
  - HCAT trained OO-ALC through Jerry Schell
  - PEWG supplied training at OC-ALC through Engelhard
  - Training on nCo-P at HAX will be done by close collaboration with Integran and installation of equipment at JAX
  - Same thing presumably for Al-Mn at NADEP NI
  - That all works for the first folks – what about the rest (e.g. WR-ALC)?
Other information and assistance

- What else is needed? Do we need
  - Guidelines?
  - Formal or informal training?
  - Better way of anticipating technical problems?
  - Better ways of finding the $$ for implementation?