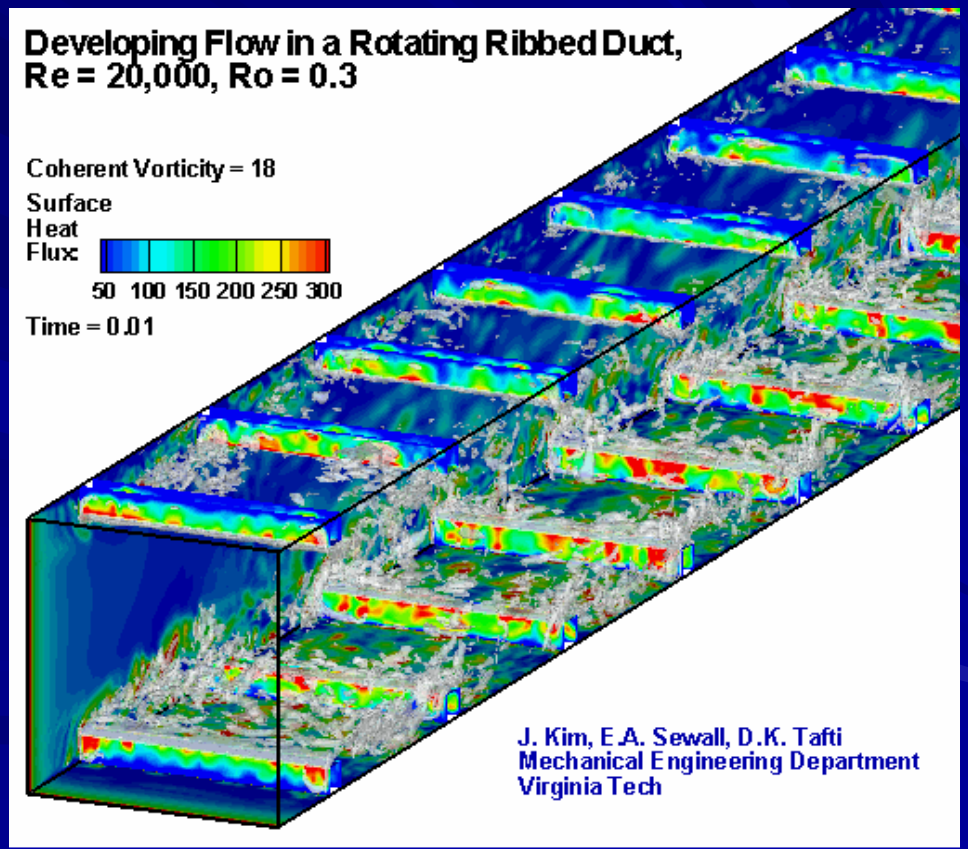
Improved Design Tools through CFD

Virginia Tech

Danesh Tafti #100

- Developed advanced analytical methods to predict high speed turbulent cooling flows
- Tested using stationary blades, blades with rotation and significant buoyancy forces across the cross-section of the coolant channels.

- Verified better prediction capability for blade cooling design
  - More accurate
  - Less expensive
  - Lower factors of safety needed – results in increased efficiency
  - Less coolant air, reducing both aerodynamic losses and cooling losses
  - Improved predictions for high rotation speeds will reduce expensive testing



High Performance Computational Fluid-Thermal Sciences & Engineering Lab