



*Consortium de recherche et d'innovation en aérospatiale au Québec
Consortium for Research and Innovation in Aerospace in Quebec*

“Optimization of high performance machining of light alloy aerospace components” (High Speed Machining)

Final meeting



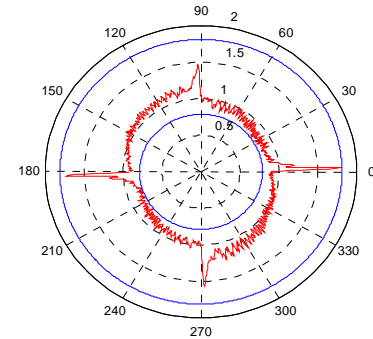
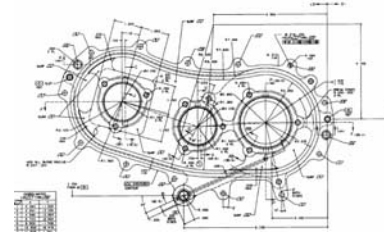
Initial project objectives

1. **Demonstrate productivity improvements capability** through optimal machining strategies and analysis adapted to **HSM**;
2. **Increase the knowledge base** on machining performance and its dependance on the machine, controller and process parameters in order to obtain repeatable results for optimized processes such as **the milling of pockets, thin walls and precision bores**;
3. **Study how to optimize the process** while considering **key factors in non-repeatability** and propose methods.

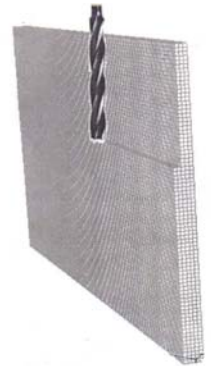
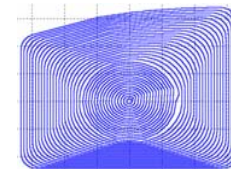
Main applications

HU40 machine tool, G01, R=90mm, F=5000 mm/min, scale = 30 μ m

- Bores by milling
 - Michael Zervoudis
 - Mohamed Slamani
 - Benjamin Carrier



- Pocketing and thin walls
 - Réjean Roy
 - Serge St-Martin



- Cutting tools
 - Victor Dorel Calatoru



Key benefits

- Development of software to assist process design
 - Orbital milling of holes (size and shape prediction)
 - Pockets (roughing paths macro, thin wall machining model)
- Improvement of knowledge for every participant
 - e.g. Cutting tools for aluminium
- Highly qualified personnel (8)
 - 4 Master students (3 on-going), 2 Ph. D. students (on-going), 2 undergraduate students
- Visiting professors (2) to directly coach students and deliver seminars
 - Henri Paris (France) (on-going)
 - Krzysztof Jemielniak (Poland) (on-going)

Chef d'équipe institutionnel :
René Mayer, École Polytechnique

Chef d'équipe industriel :
Don McIntosh, Pratt & Whitney Canada

Équipe institutionnelle :
École Polytechnique : Marek Balazinski
École de technologie sup. : Jean-François Châtelain

Équipe industrielle :
Bombardier Aéronautique : Stéphane Chalut
Pratt & Whitney Canada: Serafettin Engin



Optimization of high performance
machining of light alloy aerospace
components

Projet 1.8

Félicitations et merci!

Collaborations internationales :
Université Joseph Fourier : Henri Paris
Université de technologies de Varsovie : Krzysztof
Jemelniak

Personnel technique :
Mélicca Coté
Guy Gironne
Louida Laliberté
François Ménard

Étudiants :
Poly. : Benjamin Carrier
Mohamed Slamani
Michael Zervoudis
Victor Calatoru
Martine Lavoie
Philippe Morin
ÉTS : Réjean Roy
Serge St-Martin

Conseillé : Guy Létourneau
Secrétaire : Évelyne Rousseau