



COST 526

**“Automatic Process Optimization in Materials Technology”
(APOMAT)**

Half-Yearly Report

1. Reporting Period	1.1.2003 – 30.6.2003
Project title	Optimization of sheet and tube metal forming processes
Project leader Organization	Dr. Laurent Stainier LTAS-MCT Université de Liège
Main collaborators involved	Dr. Jean-Philippe Ponthot Pierre-Paul Jeunechamps

2. Funding Situation	
Amount of money received specifically for COST	0 kEuros
Other resources partially used for the project	100 kEuros

3. International Collaboration (mention group and type of work done in collaboration during the reporting period)
Participation in the Working Group Meeting in Brussels + project progress report YES

4. Industry participation (mention name of companies and work done in collaboration during the whole project)
Collaboration with the following partners is expected: <ul style="list-style-type: none">• RDCS (RD center of Arcelor)• Samtech (software company)

5. Meetings, visits, exchange of scientists, short-term scientific missions	Location, date
Work Group meeting	Brussels, May 26-27, 2003

6. Progress within the reporting period (Not exceeding 3 pages, including tables and figures)
The plan in this project is to use Boss/Quattro (Samtech) as the optimization engine, with built-in algorithms and with user-implemented algorithms. Since there has been

delays in getting a proper license for Boss, the initial focus was put on the implementation and testing of new optimization algorithms (based on trust regions) developed by the Applied Mathematics group in our department.

Several numerical tests have shown a general better behavior of these new methods, when compared to Levenberg-Marquardt. Trust region methods almost always reached a better minimum, in terms of objective function value, but also in terms of distance to the global optimum (known in most academic cases). They also proved to be more robust than Levenberg-Marquardt, which failed to converge in many cases.

Trust region methods thus seem worthy of further investigation.

7. List of publications

a) Published

b) Submitted for publications

c) In preparation