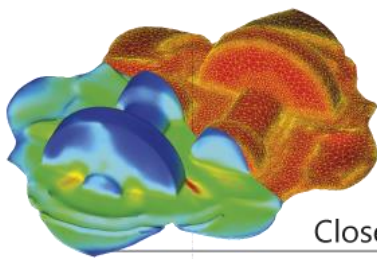




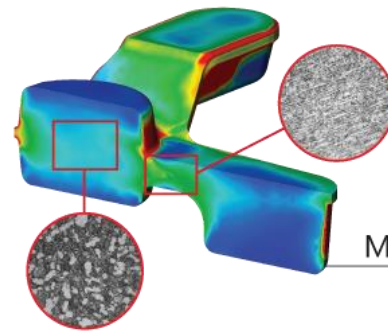
QForm Forum. Berlin

27-29 May 2019

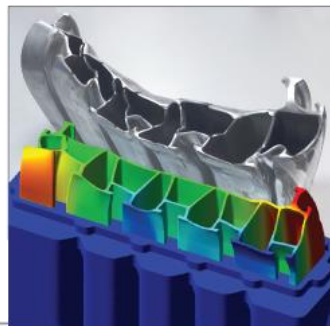
Latest developments in numerical simulation
of metal forming and heat treatment processes



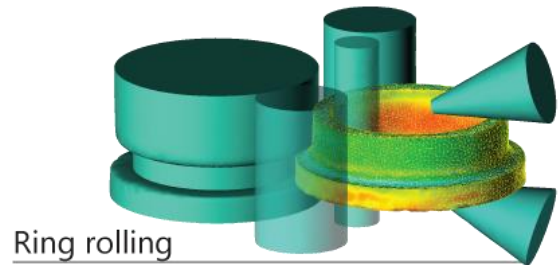
Closed die forging



Microstructure



Profile extrusion



Ring rolling

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Location of the event:

Pentahotel Berlin-Köpenick, Grunauer Straße 1,
12557 Berlin, Deutschland



<http://www.qform3d.com/forum/berlin>



The development team for QForm simulation software would like to invite you to attend our QForm Forum to allow us to introduce a new version of QForm and to learn about the latest interesting and important developments that have been implemented. We pay special attention to effective technical support and advanced training of users and we expect this QForm-Forum to be an opportunity for productive and friendly communication between developers and users of the program for a mutual exchange of information and ideas that will result in intensive development of our simulation software to further improve its benefit and practical implementation in industry.

First of all, we would like to introduce a new variant of our client-server architecture that has been developed and implemented following the contemporary trend of cloud computational services. It allows the use of powerful multi-processor computational resources available through the Internet. Next, we can show you how our already strong applications for the modelling of ring rolling and extrusion of aluminium profiles have been improved and extended even further. Specifically, a new type of equipment with

electromechanic drive was introduced for ring rolling simulation that allows automatic adjustment of specified parameters of the ring size growth rate depending on its diameter. The extrusion module now has the option to utilize symmetry planes that significantly speeds up simulation for symmetric profiles. New special output fields have also been introduced for more comprehensive analysis of profile extrusion technology. The simulation of sequential extrusion of several billets has been implemented as well.

Our system of automated extrusion die design QExDD has been significantly enhanced. This system speeds up the development of new dies and provides design and simulation integration for fast and accurate feedback required in die making. The success of our extrusion die design automation has initiated similar development for automated die design for closed die forging. Now this work is going very intensively.

The application of QForm for sheet metal forming has initiated the implementation of a new type of brick-type finite elements that significantly speed up the simulation of this kind of task. New specific friction laws have been also been implemented to simulate sheet metal stamping more effectively.

The new version of QForm has an option for multivariate simulation in which a batch of cases can be run as a numerical experiment following a plan based on design of experiment (DOE). This will allow the program to automatically find the optimal parameters for a specific forming technology.

The option has been added for ductile fracture predicting. It includes several models based on different damage criteria that are applicable to cold and hot forming operations.

Heat treatment and microstructure simulation modules have been enhanced and extended to a variety of metals and alloys.

A new improved method has been developed for more accurate simulation of coupled thermo-mechanical tasks that is important for cases of hot deformation when very high temperature gradients may occur.

The interface of the program has been enhanced to make setting up a simulation task and analysis of results even easier and more informative. Specifically, the program now has multi-window graphic output of the results that is very convenient for comparison of results of the simulation of different cases and projects. The program has become even more user-friendly and more effective for solving various industrial and scientific problems.

The program QForm has originated from our first code FORM2D that was issued in 1991 for the DOS operating system run on PCs with only 640 kB of RAM! QForm has been implemented as a Windows application since 1998 and the program has been expanded every year since then. Starting as a tool for just closed die forging tasks, QForm is now able to effectively simulate shape and ring rolling, piercing, cogging, rotary forming, profile extrusion, microstructure evolution, heat treatment simulation and other related technologies. Our team of developers has grown significantly today it includes many talented scientists and programmers who look forward to meeting you in Berlin.

*Dr. Sergey Stebunov, CEO
QuantorForm Ltd.*

EVENT PROGRAM

27 May

18:00	Check-in at Pentahotel Berlin-Köpenick
19:00	Joint dinner at the hotel

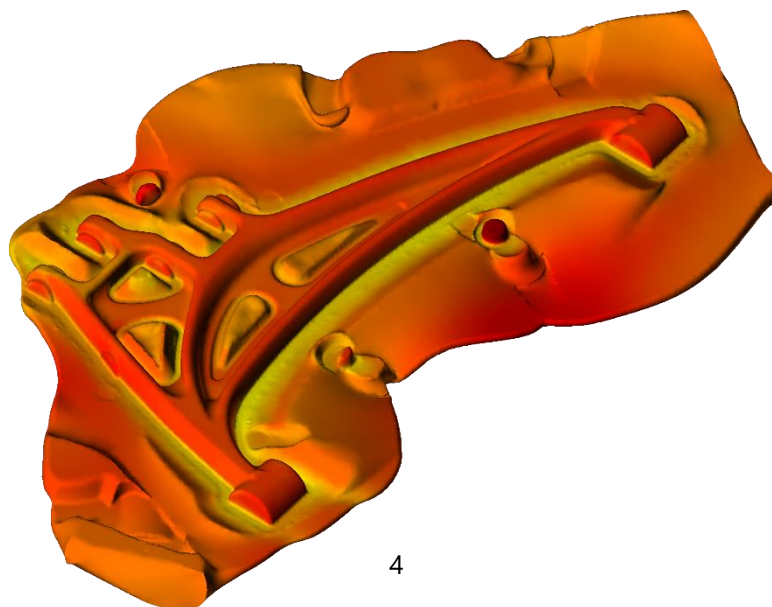
28 May

GENERAL SESSION (language – **English**). Big conference room.

8:30	Complimentary speech <i>QForm Group, QuantorForm Ltd., Russia, CEO, Dr. Sergey Stebunov</i> <i>GMT Berlin, Germany, CEO, Dr. Alexander Borowikow</i>
8:35	New possibilities of QForm <i>QForm Group, Micas Simulations Ltd., UK, Managing Director, Dr. Nick Biba</i>
9:00	Failure prediction models in QForm <i>QForm Group, QuantorForm Ltd., Russia, CEO, Dr. Sergey Stebunov</i>
9:25	Microstructure simulation cases for steels, titanium and nickel-based alloys <i>Bauman Moscow State Technical University, Head of laboratory of metal forming technologies, Dr. Artem Alimov</i>
9:50	Coffee break
10:20	Cloud computing for simulation of metal forming processes <i>QForm Group, Head of Technical Support Department, Arthur Gartvig</i>
10:45	Optimization of hot forging technology, variance analysis <i>QForm Group, Product Manager D/A/CH, Dmitry Gerasimov</i>
11:10	Heat treatment simulation cases for steels, aluminium and titanium alloys <i>Bauman Moscow State Technical University, Head of laboratory of metal forming technologies, Dr. Artem Alimov</i>
11:35	Forging technology design based on simulation <i>QForm Group, Manager, Stanislav Kanevskiy</i>
12:00	
12:30	Lunch
13:30	Sessions 1, 2, 3
15:10	Coffee break
15:30	Sessions 1, 2, 3
17:00	Sessions end
18:00	Boat trip on the river Spree
20:00	Dinner

SESSION 1. Bulk forming processes (language – **English**). Big conference room.

13:30	Incremental Bulk Metal Forming processes: Flow Forming, Rotary Forming, Rotary forging <i>Advanced Forming Research Centre, University of Strathclyde, UK, Research Fellow, Dr. Olga Bylya</i>
13:55	Improving the plasticity of materials in dieless drawing processes using FEM simulation and optimization <i>Department of Applied Computer Science and Modelling, AGH University of Science and technology, Poland, Prof. Andrij Milenin</i>
14:20	Design of thermomechanical processing of die-forgings with aid of QForm <i>AGH University of Science and Technology, Poland, Ph.D., Eng., Assistant Professor Piotr Skubisz</i>
14:45	Modelling of severe plastic deformation processes <i>Karlsruhe Institute of Technology, Germany, Researcher, Dr. Roman Kulagin</i>
15:10	Coffee break
15:30	Simulation of profiled ring production <i>Schmiedewerke Gröditz GmbH, Germany, Dr. Alexander Kovalev</i>
15:55	Simulation of roll-bonding of aluminum/aluminum and aluminum/austenitic steel mesh /aluminumflat composites using QForm software <i>National Metallurgical Academy of Ukraine, Ukraine, aspirant Yurii Haranich</i>
16:20	Simulation of the production of layered metallic composite based on aluminum using the angular extrusion process <i>National Metallurgical Academy of Ukraine, Ukraine, Cand. of Tech. Sc., Associate Professor, Andrii Samsonenko</i>
16:45	
17:10	Session end

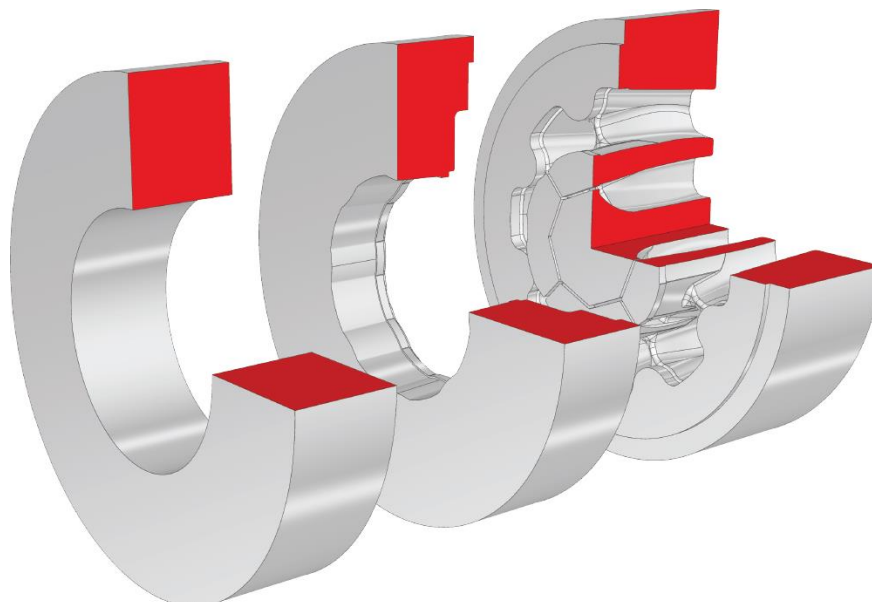


SESSION 2. Bulk forming processes (language – **German**). Conference room 2.

13:30	New possibilities of QForm. Overview with examples <i>QForm Group, Product Manager D/A/CH, Dmitry Gerasimov</i>
14:30	Failure prediction models in QForm. Overview with examples <i>QForm Group, Product Manager D/A/CH, Dmitry Gerasimov</i>
15:10	Coffee break
15:30	How to control FE-Mesh parameters. What is it: adaptation and FE-element size? <i>QForm Group, Product Manager D/A/CH, Dmitry Gerasimov</i>
16:15	Interpretation of simulation results using standard subroutines <i>QForm Group, Product Manager D/A/CH, Dmitry Gerasimov</i>
17:00	Session end

SESSION 3. Aluminium profile extrusion (language – **English**). Conference room 3.

13:30	QForm Extrusion. New features and developments <i>QForm Group, Leading Engineer, Ivan Kniazkin</i>
13:55	
14:20	QForm Extrusion Die Designer (QExDD) <i>QForm Group, Leading Engineer, Ivan Kniazkin</i>
14:45	
15:10	Coffee break
15:30	Examples of effective use of QForm Extrusion. Comparison of simulation and experiment <i>QForm Group, Leading Engineer, Ivan Kniazkin</i>
15:55	
16:20	Economic aspects of simulation software implementation <i>QForm Group, Manager, Stanislav Kanevskiy</i>
17:00	Session end



29 May

SESSION 1. Bulk forming processes (language – **English**). Big conference room.

Master classes. Lecturer: QForm Group, Head of Technical Support Department, Arthur Gartvig

8:30	Variance analysis of hot forging process
9:15	Failure prediction models in QForm
10:00	Coffee break
10:30	Simulation of recrystallization in hot forging process
11:15	Hexahedral FE-Mesh and anisotropy of material properties
12:00	Session end

SESSION 2. Bulk forming processes (language – **German**). Conference room 2.

Master classes. Lecturer: QForm Group, Product Manager D/A/CH, Dmitry Gerasimov

8:30	Variance analysis of hot forging process
9:15	Failure prediction models in QForm
10:00	Coffee break
10:30	Simulation of recrystallization in hot forging process
11:15	Hexahedral FE-Mesh and anisotropy of material properties
12:00	Session end

SESSION 3. Aluminium profile extrusion (language – **English**). Conference room 3.

Master classes. Lecturer: QForm Group, Leading Engineer, Ivan Kniazkin

8:30	Advanced analysis of defects in aluminium profile extrusion
9:15	Extrusion variants. Optimization of technological parameters by means of simulation
10:00	Coffee break
10:30	Implementation of steady-state factor for profile extrusion simulation
11:15	QForm for extrusion study
12:00	Session end

12:30	Lunch at hotel restaurant
14:30	Excursion



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