Master Class on Hot Sheet Metal Forming Technology
The GRUNDIG AKADEMIE was founded by Max Grundig more than 30 years ago. He was one of Germany’s most successful entrepreneurs and set the akademie up as a non-profit organization. Since then GRUNDIG AKADEMIE has been a reliable training partner for many companies, organizations and individuals. The academy offers a broad range of professional education, from technical vocational schools to open enrolment courses in management, IT and engineering and long term vocational training with certified diplomas.

Pictures: Volkswagen AG, Schloßhotel Kassel-Wilhelmshöhe Betriebs GmbH, Parkhotel Weiskirchen GmbH, private
Presently, we are facing the biggest change in paradigm in metal forming technology for more than half a century. The source of this change is constituted by the worldwide trend towards an intense application of hot stamped/press hardened ultra-high strength steel components in modern body-in-white automotive structures, eventually leading to superior crash performance and significant weight reduction.

Although globalization of hot stamping technology started almost a decade ago, the remaining market and innovation potential still leaves huge “blank spots” on the map. However, the “conquistadors” are already on their way!

During this period, it became clearly obvious that being successful in these emerging markets is no longer a question of being just a “big player” in industrial metal working technology, but rather of being a “smart player”. Therefore, many SME companies have succeeded in becoming “key players” in technology. Apart from the part producers themselves, producers of specialized production equipment (e.g. presses, furnaces, cutting and joining technology, automation, tools, tool steel etc.) are among these.

The particular key of their success is always based on a fundamental and comprehensive understanding of the governing thermo-mechanical mechanism. Most of them relied and still consequently rely on a close cooperation with the focal points on research & development in hot sheet metal forming technology at the University of Kassel, Germany, and the Luleå University of Technology, Sweden.

This Master Class, therefore, offers a unique and exclusive opportunity to share this knowledge and to attain one of the few remaining “keys” to the market.
Benefits

The Master Class Seminar is aimed at connecting the exclusive knowledge of decision taking on management level. The attendee will achieve more than sufficient comprehension for the guaranteed configuration of such production processes at the interface between materials engineering and process technology. The participants will be provided with exclusive knowledge, finally enabling them to develop technological strategies to improve their companies performance in application of state-of-the-art hot sheet metal forming processes.

Beyond that you will meet internationally accepted experts who successfully managed the adversities of this business. Our referents, professionally experienced and established, implement their wide know-how in their field in daily practice. They have excellent theoretical and practical information ensuring that you receive answers to your individual questions.

The overall performance and the variety of methods of the seminar are designed most helpful for efficient studying. You will have the opportunity to experiment with various parameters and experience Hot Sheet Metal Forming in the field and acquire a deep insight into efficient skills in technology as well as in qualification of human resources management.

To perfect the Master Class Seminar everything will be arranged for you. A shuttle will be at your service for the local transportation from airport to training location. Your stay in Kassel and Weiskirchen is arranged in a premium hotel with excellent service and gastronomy. In the evenings you may relax at fireside chats …

Courses

A. Lectures
   1. Press Hardening – from Ultra-High-Strength Steel to Body-In-White Application
   2. Fundamentals of Thermo-Mechanical Processing of UHSS
   3. Modelling of the Press Hardening Process

B. Workshops
   1. Material Selection and Thermal Process Design
   2. Simulation of Hot Stamping Processes

C. Tutorials
   1. Market Data & Forecast
   2. Materials Testing & Surface Analysis
   3. High Temperature Tribology and Coatings
   4. Tools, Presses & Automation
   5. Furnace & Heating Technology and Thermal Sensoring

D. Evening Forum
   1. Body-In-White Design & Crash Performance
   2. Strategies, Chances & Challenges
   3. Future developments of Body-In-White with respect to weight and crash performance
   4. Humans love progress but hate change – from vision to reality

Company Visit

Exam

Course Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>slot</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
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<tr>
<td>08:30 – 09:15</td>
<td>1</td>
<td>individual travelling</td>
<td>Lecture A1</td>
<td>Lecture A2</td>
<td>Lecture A3</td>
<td>Travelling to location 2</td>
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<td>09:15 – 10:00</td>
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<td>10:00 – 10:30</td>
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<td>Refreshment break</td>
<td>Refreshment break</td>
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<td>Final assembly FA</td>
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<td>10:30 – 11:15</td>
<td>4</td>
<td>Tutorial C2</td>
<td>Tutorial C3</td>
<td>Tutorial C4</td>
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<td>11:15 – 12:00</td>
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<td>12:00 – 13:30</td>
<td>6</td>
<td>Arrival at location 1</td>
<td>Lunch break</td>
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<td>Lunch break</td>
<td>Fare Well Lunch</td>
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<td>13:30 – 14:15</td>
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<td>Welcome assembly WA</td>
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<td>14:15 – 15:00</td>
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<td>Refreshment break</td>
<td>Workshop B1</td>
<td>Workshop B2</td>
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<td>15:00 – 15:30</td>
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<td>15:30 – 16:15</td>
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<td>Workshop B1</td>
<td>Workshop B2</td>
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<td>16:15 – 17:00</td>
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<td>17:00 – 17:45</td>
<td>12</td>
<td>Tutorial C1</td>
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<td>Company visit CV</td>
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<td>17:45 – 18:30</td>
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<td>18:30 – 20:00</td>
<td>14</td>
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<td>Evening Forum D3</td>
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<td>20:00 – 20:00</td>
<td>16</td>
<td>Dinner</td>
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## Expenses and Services

The price for the elite Master Class Seminar is 12,000 Euro. In order to guarantee the participants an exclusive, innovative and high levelled seminar, we have made every effort to provide you with the best services during your stay.

The price includes transfer from and to the Airport Frankfurt/Main, accommodation at the hotels below and all meals and beverages during your stay.

It also includes course materials, tuition fees, refreshments during the courses, the company visit, the qualification exam and the GRUNDIG AKADEMIE certificate.

## Number of Participants

We ensure a high quality in our seminar and attach great importance on individual support. Therefore the number of people attending in this Master Class Seminar is limited. Due to the complex range of topics this seminar is for a maximum of 12 participants.

## Location

**Schlosshotel Bad Wilhelmshöhe**  
Schlosspark 8  
34131 Kassel, Germany  
www.schlosshotel-kassel.de

The Schlosshotel Bad Wilhelmshöhe is situated next to the largest and the most beautiful nature park in Europe. Next to the castle "Wilhelmshöhe" the hotel fascinates his guests with an superior view over the city of Kassel.

The four star hotel offers a restaurant with national and international gastronomic specialties, a hotel bar with exotic cocktails, local beer and excellent wines, 10 conference and presentation rooms for meetings, company events and more.

**Tagungshotel Parkhotel Weiskirchen**  
Kurparkstraße 4  
66709 Weiskirchen, Germany  
www.parkhotel-weiskirchen.de

Surrounded by the National Park Saar-Hunsrück, one of Germany’s most attractive low mountain regions, we offer you a near perfect setting for a relaxing yet exciting holiday. The park with its lake (belonging to the Kneipp spa town of Weiskirchen) on the opposite side of the hotel makes this the perfect location on the edge of the Saarland high forest.

At the heart of the tri-border region where Germany, France and Luxembourg meet, a variety of excursions and activities await you. Perfect for business or pleasure, with a wide range of things to do and see, our facilities and the welcoming and familiar ambience of our hotel will make you want to extend your stay.
A1 Press Hardening – from Ultra-High-Strength Steel to Body-In-White Application
Prof. Dr. Kurt Steinhoff

Aim
A comprehensive understanding of the technological development of hot stamping in a closed conceptual loop with body-in-white design principles will be provided.

Content
This lecture builds a bridge between ultra-high strength steel, part production by press hardening/hot stamping and body-in-white design. To accomplish this, the technological development is explained from the very first industrial application in the 1980’s up to recent trends on the technological “high-end” in product design and process technology. Among these trends, means of shortening of process chains will be addressed in the same way as functionally graded part properties.

A2 Fundamentals of Thermo-Mechanical Processing of UHSS
Prof. Dr. Kurt Steinhoff, Prof. Dr. Jürgen Göken

Aim
A comprehensive understanding of the governing thermo-mechanical mechanism during hot stamping will be provided. Individual material systems consisting of steel substrates and coatings will be taken into account.

Content
The secret of press hardening / hot stamping is finally hidden in the very complex thermo-mechanical interaction of simultaneous forming and multiple heat treatment. To be able to reveal these secrets in sense of being able to design reliable and robust processes, the underlying mechanism are explained from a fundamental point of view. The special effect of induced heat on forming behaviour will be explained in the same way as its effect on material properties during processing as far as the properties of the final product. The influence of different substrates and coatings will be discussed.

A3 Modelling of the Press Hardening Process
Prof. Dr. Mats Oldenburg

Aim
A comprehensive understanding of models for numerical analysis of the press hardening process will be provided.

Content
This lecture includes a presentation of a model for numerical analysis of the press hardening process. The modeling and simulation is aimed at the study of the mechanical response during the forming process in order to evaluate possible excessive thinning or failure as well as the final phase composition, hardness, possible springback and residual stresses. The model accounts for the influence from actual temperature on mechanical and thermal properties, transformation plasticity and influence from straining at high temperatures.

I Modelling requirements for coupled thermo-mechanical analysis
I Numerical solution of quasi-static thermo-mechanical problems
I Choice of elements in the FE method
I Material state interactions in the press hardening process
I Mechanical material properties
I Thermal material properties
I Flow stress of individual phases
I Modelling of austenite decomposition
I Modelling of the composite mechanical response
I Modelling of transformation plasticity
I Influence from deformations at high temperatures
I Required material data and experimental techniques
I Modeling examples

B1 Material Selection and Thermal Process Design
Agim Ademaj, Matthias Schupfer

Aim
The choice of appropriate materials data for press hardening of different material systems is trained by a learning-by-doing method. Skills to transfer desired product properties into necessary process parameters with total quality control are derived.

Content
Within this workshop the time-temperature course for different material systems consisting of a typical boron steel substrate and selected coatings will be defined on the bases of available material data. Based on these data, different hot stamping process routes then are experimentally investigated under real industrial conditions. All process parameters are recorded under application of specialized sensing systems. The resulting material data are revealed by mechanical testing, surface analysis and metallography. Quality relevant parameters are evaluated on exemplary process and product control sheets.
B2 Simulation of Hot Stamping Processes
Dr. Göran Lindqvist

Aim
Gain introductory skills in performing simulations of hot stamping processes. Including preprocessing, analysis and postprocessing.

Content
This workshop includes a presentation of the requirements for simulation of the hot stamping process. A simulation program system including a CAD-system, a finite element code (LS-Dyna) and a postprocessor (LS-prepost) is described. The different stages of the model creation and execution of the simulation are presented. The workshop includes an exercise where the participants perform the different stages of a hot stamping simulation based on a detailed tutorial. The exercise includes several simulations where typical parameters of the process are changed and the results are evaluated. Finally, the results from a more comprehensive industrial forming example are evaluated with use of different options in the postprocessor.

The workshop highlights several important process parameters and input data types required for a simulation of the hot stamping process, including:
- Simulation methods and approximations used in different commercial codes for hot stamping analyses
- Requirement and methods for complete thermo-mechanical analyses
- Material state interactions in the press hardening process
- Thermal material properties and material model data
- Mechanical material properties and material model data
- Thermal and mechanical contact conditions and model data
- Heat convection and radiation and associated data
- Choice of element types
- Time scaling
- Mass scaling
- Evaluation and presentation of results

C2 Materials Testing & Surface Analysis
Dr. Natalie Barbakadze, Manuel Maikranz-Valentin

Aim
Knowledge on relevant methods for material and surface analysis of press hardened UHSS-parts are available. Correct choices of appropriate methods for the determination of thermo-physical material data can be created.

Content
Heating and cooling during hot stamping are aimed at a controlled microstructure adjustment within the steel substrate, and, if applicable, metallic surface coatings. Among them are austenitisation, phase transformation and surface layer formation by diffusion. These treatments have to be monitored and controlled properly in order to maintain a sufficient quality of the final product. Therefore, technological means for material testing and surface analysis are covered comprehensively within this tutorial. The aspect of fast non-destructive testing methods suited for in-line quality assurance is especially highlighted. Beyond that, the determination of thermo-physical data of tool steels and characteristic data for the description of the temperature-dependent formability of the steel substrate will be discussed.

C3 High Temperature Tribology and Coatings
Dr. Jens Hardell

Aim
The aim of this tutorial is to learn about why tribology is important in hot forming and also how tribology affects the hot forming process. The tutorial will address the tribological challenges encountered at high temperatures and how these can be resolved. Design and important considerations in high temperature tribological testing will be discussed. Surface treatments and coatings for high temperature application will also be discussed.

Content
- Introduction to tribology
- What is high temperature?
- High temperature tribology
- High temperature tribology in hot forming
- High temperature tribological test methods
- How to design a high temperature tribological test
- What can be obtained from the test results?
- How can the results be utilised in practical applications?
- Tribological challenges encountered at high temperature
- Surface engineering
- Surface treatments
- Surface coatings
- Which properties are important?
- What are the benefits and limitations?
- Future challenges and research needs in high temperature tribology
<table>
<thead>
<tr>
<th>Module</th>
<th>Title</th>
<th>Lecturers</th>
</tr>
</thead>
<tbody>
<tr>
<td>C4</td>
<td>Tools, Presses &amp; Automation</td>
<td>Dr. Ralf Hund</td>
</tr>
<tr>
<td>D1</td>
<td>Body-In-White Design &amp; Crash Performance</td>
<td>Prof. Dr. Hermann W. Kurth, Prof. Dr. Kurt Steinhoff</td>
</tr>
<tr>
<td>C5</td>
<td>Furnace &amp; Heating Technology and Thermal Sensoring</td>
<td>Dr. Fabian Loges, Agim Ademaj</td>
</tr>
<tr>
<td>D2</td>
<td>Strategies, Chances &amp; Challenges</td>
<td>Prof. Dr. Rüdiger Weißner, Prof. Dr. Kurt Steinhoff</td>
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</table>

**C4 Tools, Presses & Automation**

**Aim**
The main mechanical process design principles are properly understood. This includes tool system design as well as the technical specification of presses and automation and the main requirements on cutting and joining.

**Content**
The special process course of hot stamping, finally integrating heating, forming and cooling, leads to specific requirements especially for the mechanical equipment. The experience of almost a decade of large series production has brought a couple of process design and layout issues forward which have to be taken into account properly for starting a highly productive and reliable press hardening production. In this tutorial these issues will be addressed separately for presses, tools and automated handling. Aspects of subsequent processing such as cutting and joining will also be covered.

**D1 Body-In-White Design & Crash Performance**

**Aim**
The participants will attain a holistic view on body-in-white design and resulting decisions on the choice of different materials and production technologies.

**Content**
Principles of body-in-white design are determined by multiple aspects. Among them are crash-performance, environmental compatibility, car type and model, batch sizes, etc. These aspects will be discussed comprehensively on the basis of the exemplary design of selected cars and on selected examples of their performance in real accident situations.

**C5 Furnace & Heating Technology and Thermal Sensoring**

**Aim**
Time-temperature courses for austenitisation and resulting technological requirements on furnace systems including options for heating sources are fully understood. Criteria for the choice for thermal sensors are known.

**Content**
The integration of heating, forming and cooling during press hardening puts highest requirements especially on heating technology including thermal process control. The main design principles of industrial furnace systems and applied heat sources are covered as well as the appropriate choice of thermal sensors and their application over the entire process course.

**D2 Strategies, Chances & Challenges**

**Aim**
The participants receive a comprehensive understanding of the ongoing market activities. Based on this, differentiated market approaches and deducible strategies can be developed individually.

**Content**
Although hot stamped components already have become a “commodity”, press hardening still offers a huge market potential. However, a clear differentiation between the technological “low” and “high” end has already become obvious. While at the “low” end the increasing and intense global competition already leads to “killer” prices, the “high” end still leaves attractive options and resulting courses of action open. These strategical options will be discussed as well from a technological point of view as from a market point of view.
D3  Future developments of Body-In-White with respect to weight and crash performance  
Hans Lindh, Prof. Dr. Mats Oldenburg

Aim
The participants will receive a view of the strategy governing the development of the next generation of car structures. The participants will also understand the working methods in the development of components and systems in cooperation with the car producers and the suppliers.

Content
The Volvo commitment to passenger safety and care for the environment is presented. The strategy for the developments of the next generations of car structures and the possibilities and challenges of using press hardened components are discussed. The development of the car structures is performed in cooperation with the suppliers of components and systems. The development methods and the expectations of the competence and input from the suppliers are discussed.

D4  Humans love progress but hate change – from vision to reality  
Stefan Scheurer

Aim
The attendee receives a broad understanding of the importance of sensitivity for change processes. The professionalism should be first-rate in the Hot Forming Technology as well as in human resources.

Content
Fundamental changes in the process of manufacturing are based on the change of human behaviour. The so called “human factor” can be a critical driver for success during bigger transitions. The tools, which are used during such transitions to manage the change, are more fuzzy than precise. Their contribution to success is also only roughly to estimate. The use of these tools has to be orchestrated according to different process stages and they need good timing and adaption during their use. It is not like planning from the scratch, it is more like improvisation. This article provides a rough overview over the well established toolset within change management. Besides the fuzziness coping with human complexity and holding a good balance could be a challenging, interesting and forceful art of leadership. An art that aligns the energy, which is available within an organisation to get the best possible result.

CV  Company Visit
Dr. Ralf Hund, Dr. Fabian Loges

During the company visit, state-of-the-art in press hardening process technology will be demonstrated on shop-floor level. During the guided tour, detailed explanations will be given about all relevant aspects of press hardening production including heating & furnace technology, press & cutting technology, process automation and control. Exemplary press hardening processes and equipment will be also demonstrated. All explanations will be given by Dr. Hund and Dr. Loges assisted by experienced engineers and technicians of the hosting companies.

Exam
Prof. Dr. Mats Oldenburg, Prof. Dr. Kurt Steinhoff

In order to confirm the high level of received knowledge, all contents of the Master Class will be reflected in a 1 1/2 hour written examination. During the examination, fundamental aspects of thermo-mechanical processing will be addressed in the same way as specific process and product design aspects. Beyond that, data-based market analysis, trend scouting and productivity estimations for selected process set-up will also be part of the examination. Finally, the exam constitutes an individual audit to indicate the decision level reached by participating in the Master Class.
Prof. Dr.-Ing. habil. Kurt Steinhoff
Professional experience in metal forming technology both in industry and in science for 20 years. Has established the internationally leading research site for the development and production of hot formed ultra-high-strength body-in-white components.

Education/Qualifications
- MSc, Mechanical Engineering, Gerhard-Mercator-University of Duisburg, Germany
- PhD & Habilitation and Venia legendi, RWTH Aachen, Germany

Professional Experience
- Full Professor of Metal Forming Technology, University of Kassel, Germany
- Associate Professor of Production Technology, Delft University of Technology, The Netherlands
- Research Assistant, Department of Metal Forming Technology, Max-Planck-Institute for Iron Research, Düsseldorf, Germany
- Management positions in Cold Strip Production and Research & Development in Steel & Automotive/Aerospace/Defence Industry

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Prof. Dr. Mats Oldenburg
Mechanical Engineer and specialist for solid mechanics. Has been working in the field of the metal forming technology for 25 years.

Education/Qualifications
- MSc, Mechanical Engineering, Luleå University of Technology, Sweden
- Licentiate of Technology, Computer Aided Design, Luleå University of Technology
- PhD, Computer Aided Design, Luleå University of Technology

Professional Experience
- Luleå University of Technology, Dep. Mechanical Eng. as Professor in Solid Mechanics, Head of Division
- Luleå University of Technology, Dep. Mechanical Eng. as Associate Professor in Computer Aided Design
- Luleå University of Technology, Dep. Mechanical Eng. as Assistant Professor in Computer Aided Design

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Prof. Dr. rer.nat. Jürgen Göken
Expert in Materials Science and Metal Physics with special focus on thermo-mechanical treatment of metals and non-destructive testing

Education/Qualifications
- Professor of physics at the Faculty of Maritime Sciences, University of Applied Sciences Emden/Leer, Germany
- Deputy director of the Faculty of Maritime Sciences, project partnership with the European project North Sea Connect (NSSC)

Professional Experience
- Postdoctoral research fellow/research associate at the Chair of Metal Forming Technology, University of Kassel, Germany
- Head of the workgroup magnesium technology
- Member of the special research programme (Process-integrated Manufacturing of Functionally Graded Structures Based on Coupled thermo-mechanical Phenomena)

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Prof. Dr.-Ing. Rüdiger Weißner
Former member of the top-management of Volkswagen and previous Managing Director of the Volkswagen Works in Kassel, Germany. With the start of production of the Passat B6 in 2005, Prof. Weißner rolled out Hot Stamping Technology for the Volkswagen Group and, therefore, became one of the main driving forces in globalisation of press hardening of boron-alloyed steel.

Education/Qualifications
- MSc, Mechanical Engineering, University of Technology TU Berlin, Germany
- PhD, University of Technology TU Berlin, Germany

Professional Experience
- 40 years of experience in leading technical positions in automotive industry
- Management Consulting

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Prof. Dr.-Ing. Hermann W. Kurth
More than 40 years experience in automotive engineering and expert for accidents research

Education/Qualifications
- MEng and MSc, Mechanical Engineering and Physics, University of Gießen and Darmstadt, Germany
- PhD, Faculty of Automotive Engineering, University of Technology Stuttgart, Germany

Professional Experience
- 13 years at a vehicle manufacturer
- 22 years professor for automotive engineering, development methodology, CAx-Technologies
- Expert / consultant / referent / author
- Occupational focus on: Automotive engineering, E-mobility, vehicle body construction, structural and material of coachwork, vehicle safety, research in accidents, reparation of accidents

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Dr.-Ing. Fabian-Alexander Loges
Expert in metallurgy and materials and Managing Partner of IOG

Education/Qualifications
- Studies of metallurgy and materials at RWTH Aachen, Germany
- Advanced study period focusing the field of forming, resulting in degree dissertation at Institut für Bildsame Formgebung (IBF) of RWTH Aachen, Germany
- Doctor degree of engineering technology at Lehrstuhl für Umform-technik (metform) of University of Kassel, Germany

Professional Experience
- Plant Engineer at Rasselstein Hoesch GmbH in the works of Andernach and Dortmund, Germany
- Member of the Management of IOG Industrie-Ofenbau GmbH

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Hans Lindh
Director for Body and Exterior Engineering, Volvo Car Corporation

Professional Experience
- Director Body and Exterior Engineering VCC
- Director Exterior Engineering VCC
- EuCD Platform Director FMC (Volvo, Ford, LandRover)
- Process Manager Product Creation Process Europe, (Volvo, Ford, Jaguar/LandRover)
- Process Manager PD VCC, Process, Methods & IT
Dr. rer.nat. Natalie Barbakadze
More than 10 years established know-how in investigations of the mechanical performance of engineering and natural materials

Education/Qualifications
I PhD, Material science, Max Planck Institute for Metals Research, Stuttgart, Germany
I Study of Materials Science, Georgian Technical University, Tbilisi, Georgia

Professional Experience
I Research Assistant, Chair of Metal Forming Technology, University of Kassel, Germany. Main research topics: surface coatings, development of new composite materials.
I Assistant Professor for Materials Science at the Faculty of Chemical Technology and Metallurgy, Georgian Technical University, Tbilisi, Georgia
I Vice-president, Georgian Foundrymen and Material Scientists Society
I Research Assistant, Institute of Materials Science, Technical University Bergakademie Freiberg, Germany
I Research Assistant, Chair of Materials Science, Georgian Technical University, Tbilisi, Georgia

Dipl.-Ing. Matthias Schupfer
Research assistant for body in white, chassis, transmission and crash structures

Education/Qualifications
I Master Study of Business and Innovation Management, University Innsbruck, Austria
I Study of Forming Technology, University Vienna, Austria

Professional Experience
I Research Assistant, process development of press hardened components, University Kassel – Institute of Forming Technology
I Managing Director, GORDICA Engineering GmbH & KG, development of production lines for the production of press hardened components
I Director Research & Development, Neuman Aluminium Strangpresswerk GmbH, Marktl, Austria

Dipl.-Ing. Agim Ademaj
Head of Materials Technology and process engineer

Education/Qualifications
I MSc, Mechanical engineering, University of Kassel, Germany

Professional Experience
I Process Engineer, Metakus GmbH, Center for Applied Metal Forming Technologies, Germany
I Head of Process Technology, Metakus GmbH, Center for Applied Metal Forming Technologies, Germany

Dipl.-Ing. Manuel Maikranz-Valentin
Specialist for Materials Technology particularly with regard to thermo-mechanical processes

Education/Qualifications
I MSc, Mechanical engineering, University of Kassel, Germany

Professional Experience
I Research Engineer University of Kassel Institute for Production Technology and Logistics
I Head of Materials Technology, Metakus GmbH, Centre for Applied Metal Forming Technologies

Dr.-Ing. Ralf Hund
Managing expert in the field of mechanical engineering, metal forming and material testing

Education/Qualifications
I Doctor degree in aerospace technology, Institute of statics & dynamics of aeronautical structures, University of Stuttgart, Germany
I Dipl.-Ing. mechanical engineering, University of Kaiserslautern, Germany

Professional Experience
I Director Engineering Product & Process, Sales, BraunCarTec GmbH
I Manager Engineering Wheel bearings, mech./electromech. systems, Schaeffler KG
I Technical development, Durability and Structural Integrity Chassis, Body, AUDI AG

Dr.-Ing. Göran Lindkvist
Specialist for solid mechanics and numerical simulation of mechanical and thermo-mechanical processes

Education/Qualifications
I MSc, Engineering Physics, majoring in Applied Mathematics, Luleå University of Technology, Sweden
I PhD, Solid Mechanics, Luleå University of Technology

Professional Experience
I Post doctoral researcher, Division of Solid Mechanics, Luleå University of Technology
I Research Engineer, Luleå University of Technology

Dr.-Ing. Jens Oskar Hardell
Research coordinator for the Centre for High-performance Steel (CHS)

Education/Qualifications
I PhD, Machine Elements, Luleå University of Technology, Sweden
I Licentiate of Engineering in Machine Elements, Luleå University of Technology
I MSc, Mechanical Engineering, majoring in Machine Design

Professional Experience
I Assistant Professor at the Division of Machine Elements, Luleå University of Technology
I Research coordinator for the Centre for High-performance Steel (CHS), Luleå University of Technology
I Researcher at the Division of Machine Elements, Luleå University of Technology

Stefan Scheurer
Specialist in Management Consulting, Coaching and learning & development record in national and international environment

Education/Qualifications
I Magister, Heinrich Heine University, Düsseldorf, Germany

Professional Experience
I Strategy & organization projects in different companies
I M&A project lead experience
I Responsible project lead for corporate university and management development programs
I Management trainer in the fields of leadership, strategy, etc. for renowned business schools and in MBA programs
I Director Industrial Processes and organisational development, Alstom Power, Baden, Switzerland