

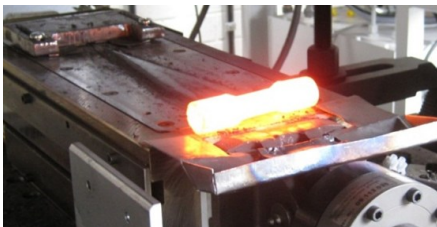
Introduction of the CoVaForm-Project

Aim of the Project

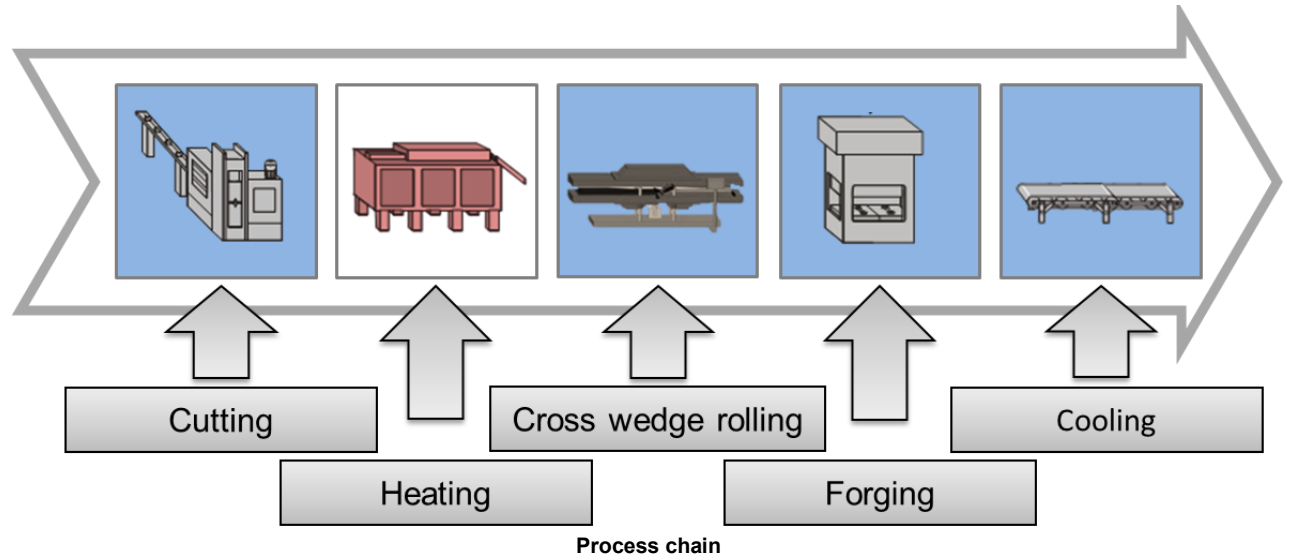
The aim of the project is a reduction of valuable materials (bainitic grade steel, titanium) and energy consumption for SMEs in the European forging industry. One possibility is the usage of CWR tools in flat wedge configuration by which process costs can be decreased significantly for small and medium batch sizes. Such a CWR-machine has been built and tested under laboratory conditions, but is not in industrial use in the EU until now.

Using CWR the material utilization shall be improved for two model products (hip implant and heavy duty common rail) made of titanium and bainitic grade steel. So far, the preforming methods lead to high amounts of flash. CWR of these materials needs further scientific research in order to enable a process with a narrow temperature field to avoid typical CWR-defects like voids in the work piece. For the model products tools in flat wedge configuration will be designed. A temperature sensor with a computer-based analysis method will be developed as online quality control, in order to avoid defects on the work pieces. In parallel, a CWR-machine will be developed for the special needs of SMEs.

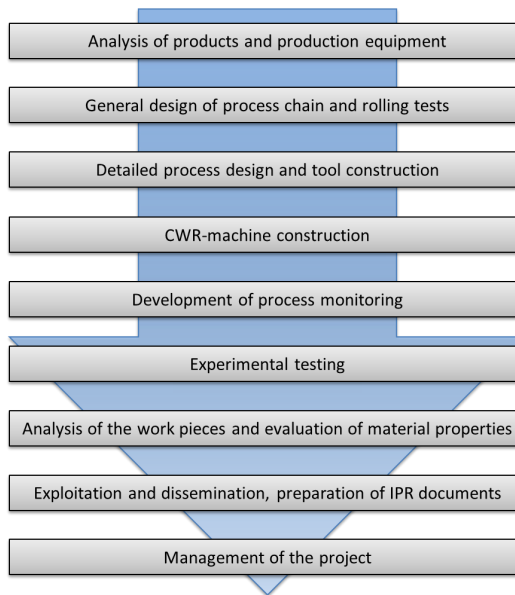
For industrial tests, the CWR-machine will be build up, the tools will be mounted and a batch will be produced. In comparison the conventional process chain including a machining, material savings up to 25 % will be possible using the project results.



Example of cross wedge rolling



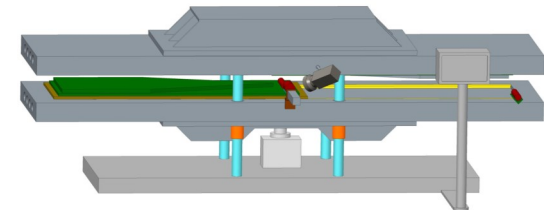
Road map



Road map

CWR-Machine

One task of the project is to develop a modular cwr-machine especially for SMEs. Therefore the costs of the tool should be affordable, so that SMEs are able to use the cwr-technology to extend their range of products. Due to the investigation of cwr of titanium, these new products could include turbine blades, ship propeller, springs or crankshafts. Also in the medical area the use of titanium is usual due to its biocompatibility.



Example of CWR-machine

Consortium

Research Institutes:



IPH – Institut für Integrierte
Produktion Hannover gGmbH
www.iph-hannover.de



Profactor GmbH
www.profactor.at



Fundación Tecnalía
Research & Innovation
www.tecnalia.com

Industrial Partners:



Aurrenak S. Coop.
www.aurrenak.com



Omtas Otomotiv Transmisyon
Aksamı San. ve Tic AS
www.omtas.com.tr



Eratz-Ingenieurbüro
www.eratz.de



OMS S.p.A.
www.oms-spa.it

Contact

Based on the analytical results and the developed design rules, a training session for design engineers including a demonstration of the hot forging process will be performed.

Finally, the results will be documented and published in scientific journals and in SME associations and will be presented at international conferences.

For more information visit:
www.covaform.eu

Project Coordinator and Contact Person:

IPH – Institut für Integrierte Produktion
Hannover gGmbH

Prof. Dr.-Ing B.-A. Behrens
Tel.: 0511/27976 – 0
E-Mail: behrens@iph-hannover.de

Dipl.-Ing. T. Blohm (TECHNICAL TASKS)
Tel.: 0511/27976 – 335
E-Mail: blohm@iph-hannover.de

Dipl.-Ing. J. Knust (ADMINISTRATIVE TASKS)
Tel.: 0511/27976 – 331
E-Mail: knust@iph-hannover.de



CoVaForm

Conservation of valuable materials by a highly efficient forming system

