EuroBLECH Bulletin

Issue 2 January 2008

*The EuroBLECH Team would like to wish all exhibitors, visitors and friends of EuroBLECH a very happy, healthy and successful 2008!*

## Vehicle research project using stainless steel

Next Generation Vehicle is a project currently being carried out with the aim of improving sustainability in car manufacture. The weight of a vehicle derives mainly from the steel used in its production. The project is designed to help resolve the conflict of objectives arising from environmental demands on the one hand and the striving for safety on the other.

Cars manufactured using stainless steel materials weigh less, thereby paving the way for lower fuel consumption. The stainless steel materials tested and used in the project create excellent opportunities for the car industry, as vehicles made this way weigh less and still meet all safety requirements.

Next Generation Vehicle is a joint research project involving steel makers, car manufacturers and software developers. Through their work on this long-term project, all of the partners will be able to take the solutions found and use them directly in their respective companies.

*Production of the 'classic' DeLorean stainless steel car has resumed, now in Texas, USA.*

*Photo: Jill Bell for delorean.com*

**The research partners involved:**

*Car manufacturers:* AUDI AG, Bayerische Motoren Werke AG, Centro Ricerche Fiat, Daimler AG, GM/Saab Automobile AB, Volvo Car Corporation

*Stainless steel makers:* ArcelorMittal-Stainless Europe (Ugine&Alz), Outokumpu Oy, ThyssenKrupp Nirosta

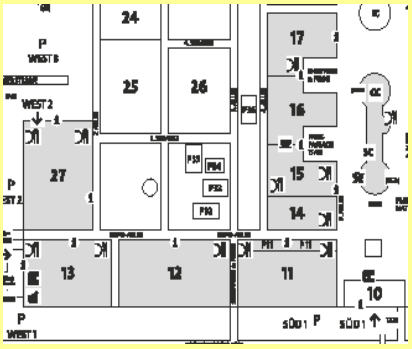
*Software developers:* ALTAIR Development France, AutoForm GmbH, Engineering Research Nordic AB, ESI Group

*Machine tool manufacturers:* AP&T AB, BASF Coating AG, Uddeholm Tooling AB

*Research partner:* Camanoe Associates
www.ngvproject.org

## Eight halls for EuroBLECH 2008

Demand for stand space at EuroBLECH 2008 has shown no sign of slowing: by the end of 2007, some 1,100 exhibitors from 34 countries had reserved 86,000 $m^2$ of floor space at the world's leading show for sheet metal working. In particular, the areas of separation technology, flexible sheet metal working technology and joining technology have expanded considerably. To accommodate the growth in these technology areas, the organisers Mack Brooks Exhibitions have added 8,000$m^2$ of floor space: the technology sectors located in hall 13 will be extended into hall 12, and those technology areas previously in halls 12 and 11 will grow into neighbouring halls 14 and 15. The areas of sheet metal and semi-finished product technology will also be extended to halls 16 and 17. In total, this year's EuroBLECH will occupy eight halls at the Hanover exhibition grounds: 11, 12, 13, 14, 15, 16, 17 and 27.



# FlyLine software increases efficiency in Trumpf 2D-laser cutting systems

*Photo: TRUMPF*

Up to 70% efficiency gain when cutting out gridwork - that's the promise made for the innovative system which controls the movement of the laser beam. Instead of cutting out each opening individually and changing direction with every cut, the laser beam flies along straight lines, first making the cuts along all the parallel lines before it starts moving along the transverse axis. Then the laser stops and starts cutting at the edge or corner of each opening.

This greatly enhances the travelling speed of the laser head and all is done with superb precision. The FlyLine software release 4.70 can be installed on all current Trumpf machine models and is standard in the TruTops Laser version 5.4.

www.trumpf.com

## *Did you know...?*

…that China has now become a major net steel exporter with an export surplus of 32 million tons (12 mill. tons alone to the EU)?

…that in 2007 steel consumption in the German mechanical engineering and plant construction sector was more than twice that of the motor industry?

…that increasingly aluminium is being used in the international car manufacturing industry? America's Aluminium Association assumes an annual growth of 3.6 to 4.5 kg per vehicle. In addition to sheet metal panels, this does however include cast and forged parts - in the drive train and chassis, for example.

…that of the total energy required to move a car the driver accounts for only approx. 2%. The remaining 98% is needed for the vehicle itself.

# *What's that?* Ironing bending

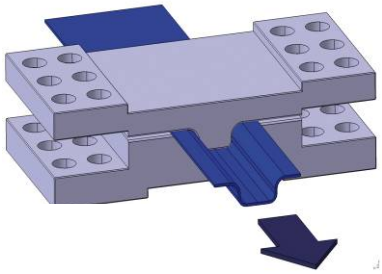


*Illustration: MM Maschinenmarkt*

Ironing bending is a highly flexible bending forming process using linear flow tool movements. First tried out in the early Sixties, this process was continuously developed and offers substantial potential, particularly in lightweight design. Compared with conventional profiling processes (e.g. rollforming), it has the advantage that the most wide-ranging profiles can be manufactured using relatively simple tools and equipment. In addition to U-shaped profiles, it is also suitable for top-hat profiles with different flange widths and integrated longitudinal curvatures, in both small batches and mass production.

The process involves the use of fixed tools consisting of a punch (upper tool) and die block (lower tool). The flat sheet metal (either blanks or coils) is drawn longitudinally through the tool. This process can also be used for tailored blanks, even if the sheet metal used in the blanks varies in thickness or the blanks are made from different materials.

Ironing bending was developed at the Institut für Umformtechnik (IFUM - Institute for Forming Technology) at the Leibnitz University in Hanover and at the Institut für Festkörpermechanik (IFKM - Institute for Solid State Mechanics) in Dresden. The process and the extensive opportunities for its use were described in detail in the specialist journal MM Maschinenmarkt (issue 45/2007).

www.maschinenmarkt.de
www.ifum.uni-hannover.de
http://tu-dresden.de

# 1000 kN for testing mechanical deformation

*Photo: Zwick*

Zwick's new hydraulic BUP 1000 machine addresses the latest requirements of the steel industry, especially for use in new automotive applications where higher tensile strength combined with high formability has become more and more important. Forming behaviour has to be characterised, both for the modelling of newly developed products, and for quality assurance/production control. The machine can be used to determine the forming limit curve (FLC) and, with drawing forces up to 1000kN and a punch diameter of 100mm, meets the latest requirements of ISO 12004.

www.zwick.com

# Tomorrow's focus
# - Latin America -

***Whilst today's business world is mainly concerned with Asia and the Indian subcontinent, new markets are developing and rapidly gaining in importance in the south-west corner of the world. The infrastructure in Brazil and Mexico in particular is increasingly improving, and both countries boast high growth rates.***

Last year Brazil's gross national product rose by 4.7% and, according to the British magazine 'The Economist', a slight fall to 3.9% is only anticipated for 2010. Mexico's GNP on the other hand is currently at 3%, but is expected to reach 3.5% by 2010, thereby more or less tracking the USA's economic cycle.

Latin America's cultural and geographic proximity to major markets in the North and the relatively low language barriers constitute major commercial benefits for the region. Europe can be reached directly both by air and by sea, and the risk of product piracy is smaller in this part of the world. The situation for foreign companies wanting to establish themselves in Latin America is favourable, with the US dollar's low exchange rate making acquisitions easier.

## Mexico

The USA accounts for almost 85% of Mexico's exports and a good 50% of its imports. Canada and Germany are also important export destinations, whilst Japan and China are the main sources of imports. Mexico exports industrial commodities and ready-made products assembled in the country from imported primary products. The focus is on automotive and - increasingly - white goods.

*Virtually no machine tools are made in Mexico itself, which means there is great demand for equipment and materials for use in the country's extensive car production (forecast: over 3 mill. vehicles in 2010).*

As a result, in 2006 German manufacturers of metal forming machinery succeeded in increasing their turnover in Mexico by an impressive 36.8% versus 2005. As these are mainly international corporations manufacturing in Mexico, the quality demands are accordingly high.

There are currently seven major car manufacturers with production facilities in Mexico: Ford, VW, Daimler, GM, Nissan, Toyota and Honda. Hyundai is to build a factory in Veracruz and the first Chinese manufacturers (FAW, Geely) are planning to set up a production site to serve the entire NAFTA region. Supplying steel products to these expanding automotive manufacturing facilities is also a promising growth market for the entire industry - from the rolling mill to the steel service centre, especially as steel production in the neighbouring USA is stagnating.

## Brazil

In Brazil the situation is far more complex than in Mexico. The world's tenth largest economy has rich mineral resources and is virtually independent of such imports. Domestic demand is high and even in the medium term the country will manage to achieve a slight foreign trade surplus.

Transport equipment and accessories are the main export items, particularly cars. However, Brazil also exports commercial vehicles and aeroplanes, iron and steel products, agricultural produce and chemicals. Machinery and electrical equipment, oil and refinery products are the principal imports, plus chemical products and materials handling equipment.

Brazil's major foreign markets are the USA, Argentina and China, with all of whom the country has an almost level trade balance. All other countries account for substantially less than 5% of the overall volume in terms of both imports and exports.

Brazil's industrial infrastructure continues to show rapid growth in many sectors, even sweeping its neighbours along with it. Brazil is an interesting growth market for steel production, for example, and there are high expectations, particularly in the field of flat products, thanks to privatisation of former state-owned enterprises.

Prensas Schuler plant (daughter company of Schuler AG), Sao Paolo, Brasil

*Photo: Schuler Prensas*

In terms of tool making machinery output, Brazil was No. 12 in the world in 2006, whereby metal cutting/milling machines accounted for 81% of output and forming machines for 19%. A large part of this production was used to meet domestic demand, because in that same year Brazil ranked only 20th as an exporting nation, tendency falling, according to the 2007 World Machine Tool Output and Consumption Survey.

*In the automotive industry, the most important sector for sheet metal working, all the signs point towards growth.*

The average age of a car in Brazil is nine years and three months (in Europe, it is a good seven years), according to the German federal agency for foreign trade information (BfAi). The demand arising from this is further fostered by a trend towards more upmarket models, which means that there are excellent sales opportunities on the automotive market and a substantial investment push can be expected from 2008. Fiat is already operating three shifts in its factories in Brazil and there are rumours of a new factory.

Aside from Fiat, the main car manufacturers in Brazil are Volkswagen, Toyota, GM, Renault and Hyundai. It is not just in the car industry that things are looking good, though - the truck sector is positively booming and according to reports from the BfAi, in the first 6 months of 2007 alone production was increased by 21.3% (versus 2006) to just under 62,000 units. The reasons cited for this are the flourishing rural economy (ethanol fuel) and the very busy construction industry.

Suppliers of sheet metal, plate, wire and tubes are also increasing their capacities in Brazil. ArcelorMittal is doubling the capacity of its steelworks in Monlevade (Minas Gerais), for example, and will be investing a total of 5 billion US$ in Brazil over the next five years. Expansion of the hot rolling plant in Tubarão to 4 mill. tons annual capacity, plus a new hot-dip galvanising line in Vega do Sul are further elements of this development. Marcegaglia, one of the world's biggest manufacturers of condensation tubes for refrigeration and air conditioning equipment, is also substantially expanding its capacities in this sector in Garuva (Santa Catarina).

The new Marcegaglia plant in Garuva (Santa Catarina)

*Photo: Marcegaglia*

Further investments in the production of carbon steel and stainless steel semi-finished products are also planned. ThyssenKrupp, already well-established in Brazil, Argentina and Chile, is currently building a new steelworks in Sepetiba (Rio de Janeiro) with an annual capacity of 4.4 mill. tons, where production is due to start in March 2009.

MACK BROOKS exhibitions

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