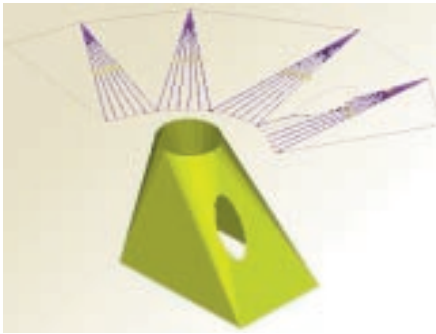


► continued from page 2: Flat Pattern Calculation made easy with...

are calculated absolute exactly and are represented in the flat pattern. The calcula-



tion of the flat pattern is always done according to sheet metal necessities and can directly be used for the cutting of the blanks.

The new version of the COPRA® Metal Bender HVAC 3D opens a big number of 2D CAD users an easy way into the 3D-design. The proven 2D-features like forked pipe, conical bend or the transitions are of course still available. ■



data M Online or on CD-ROM Infos and service in four languages

On our Internet Web-Site we are offering actual info to customers and interested companies.

Various sections provide you with most actual news (also containing previous issues of this info forum), sections showing actual product- and price info as well as dealer- and representative's addresses, customer support section and other details. Why not having just a look at data M's web-site?

By the way: If you haven't got an Internet connection or fast modem, we'll send you a

copy of our web-site on CD-ROM. Please call us or send us a short fax message with your address and fields of interest. ■



Are you prepared for the Year2K bug?

Less than 4 months remain before 2000 and the possible computer problems caused by date change. If you are not sure if your actual software versions are able to handle the year 2000 problem accurately, please contact your sales representative or our team at data M directly.

At <http://www.datam.de/English/Support/index.htm> we have listed the actual Y2K-ready software versions and respective testing environments. ■



Do you want more information about our products?

... please fax or E-mail us for more detailed info on our products or services:

Fax: +49-8024-640300

E-mail: sales@datam.de

Name _____

Company _____

Address _____

Telefon _____

Fax _____

E-Mail _____

- data M CD-ROM
- COPRA® MetalBender Desktop
- COPRA® MetalBender 3D
- COPRA® MetalBender 2D
- COPRA® MetalBender Solver
- COPRA® MetalBender HVAC
- COPRA® LaserCheck
- COPRA® Rollformsimulation
- COPRA® Rollenscanner
- COPRA® Rohr
- COPRA® Ziehringe
- COPRA® Profile



data M Solutions live: where and when?



EWI Conference
A two days conference presenting about 16 technical papers on hydro forming
21.-22. September '99
Columbus/Ohio, USA



6th ITCP
International Conference on Technology of Plasticity
19.-23. September '99
Nuremberg, Germany



Systems 99
Representation at the booth of Systemhaus Bissinger
Cad Connect (Computer 2000)
Motiva GmbH (Computer 2000)
18.-22. October '99
Munich, Germany



Tube Singapore 99
Tubemaking for Asia's Recovery
19.-21. October '99
Republic of Singapore



FABTECH/Tube & Pipe
International exhibition and World Tube Congress
14.-18. November '99
Chicago, USA



Südblech
29. March - 1. April 2000
Sinsheim, Germany



Tube & Wire
3.-7. April 2000
Düsseldorf, Germany



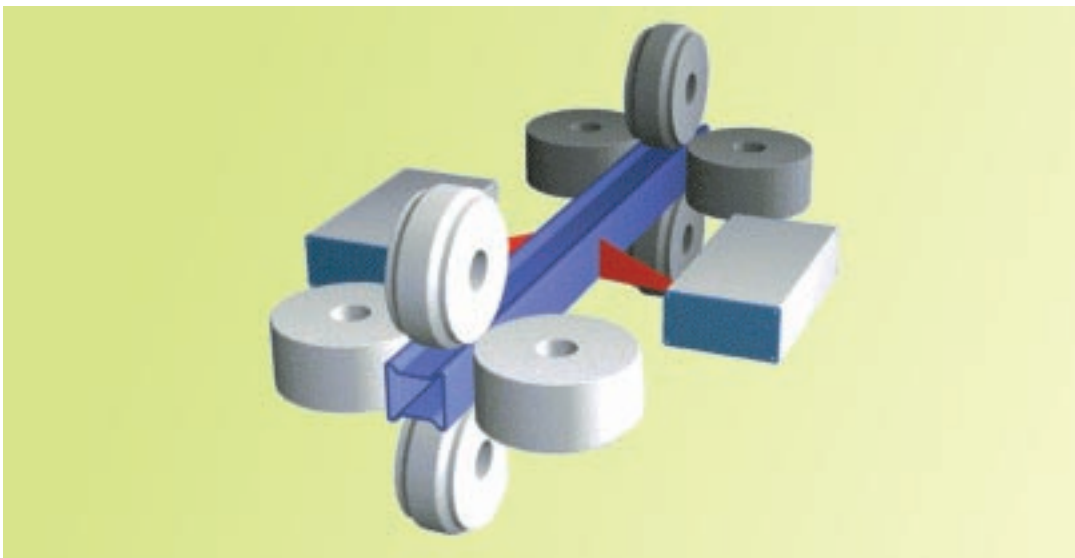
Lamiera Bologna
17.-21. October 2000
Bologna, Italy

For more information and details please visit our website:
<http://www.datam.de/shows/indexeng.htm>



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Solutions for the Sheet Metal and Roll Forming Industry



In-line laser-based quality inspection system for roll forming mills: "COPRA® LaserCheck Profile"

data M Software GmbH – supplier of software and engineering products for the sheet metal and tube & pipe industry – is growing. End of June 99 data M moved into larger facilities at Valley. Valley is a village located in Upper Bavaria, about 25 km south of Munich. With approximately 1,100 square meters (11,000 square feet) office space and about 150 square meters shop floor data M's engineers and mechanics will have the space they need for development and future support of their customers. Since its foundation in 1987 data M has been supplying customers in more than 45 countries (COPRA® software is partly available in 7 languages) throughout the world – having a continuous growth.

Albert Sedlmaier, one of data M's managing directors said "With this significant increase of space for development and demonstration, we are sending clear signals of our commitment to continued development and customer satisfaction".

data M is the developer of the sheet Metal software package COPRA® Metal Bender for AutoCAD/ Mechanical Desktop as well as COPRA® Roll Forming for the roll forming and tube & pipe industry.

data M's field engineers are also offering consulting and roll design services to their customers.

COPRA® MetalBender is a 2D and 3D sheet metal software package for the design and unfolding of sheet metal parts for the Autodesk software platforms AutoCAD/ Mechanical Desktop. COPRA®



MetalBender has been further developed from its successful predecessor Genius. Another part of data M's products range is COPRA® Roll Forming, a software package for the roll design and roll form simulation. A major issue of the COPRA® roll form software solution is its so-called COPRA® Deformation Technology Module which allows the simulation of the roll for-

In this issue:

- Parametric Sheet Metal Parts
- Flat Pattern Calculation made easy with the COPRA® Metal Bender HVAC
- New Software Programs for Roll Design and more...
- "Find the best rollformers and tube mills on the planet"
- data M donates COPRA® Software to Edison Welding Institute (EWI) at Columbus, OHIO.
- data M Online
- Are you prepared for the Year2K bug?



Autodesk
Registered Developer



data M Software



► ming process on the computer, taking into account parameters like roll diameter, strip thickness or material properties. Thus, the designer is able to optimise his roll set long before any roll has to be manufactured. Even existing roll sets can be analysed and re-engineered in order to improve the production process.

Major manufacturing and production companies are using COPRA® software products – worldwide.

In addition to COPRA® software data M is developing and distributing optical inspection systems for the sheet metal industry as well. An example is an optical and contactless working roll inspection machine – the COPRA® Roll Scanner. This automatically working device is able to scan existing rolls and verify the roll contour against the geometry stored in the computer (drawing files). It allows also for developing a roll archive for reworking and re-using all stock rolls.

Another example for of data M's engineering capability is the development of a continuously working in-line quality inspection system for roll forming lines, based on COPRA® LaserCheck, a laser based angle sensor for press brakes.

data M's product portfolio has been growing from sole CAD solutions to complete process chains for the sheet metal industry – including quality control systems. ■

Parametric Sheet Metal Parts

COPRA® MetalBender from data M has got a long history and has matured from sole 2D design (in 1987) over 3D design features to the current version of CMB which allows for a full 3-dimensional parametric design. "A maximum of flexibility" is the key-word. Object-oriented programming and parametric components allow you to easily change or vary an already created object. This method offers many advantages for both prototype and special constructions. If changes are necessary, the respective parameters of the model will be adjusted accordingly. Those changes are automatically taken over by



the parametric design of sheet metal parts decisively easier. It only needs one step to automatically create a fully flexible flange what design engineers otherwise would have to do in many individual, time-wasting steps. A single flexible flange type is enough to create all common types. When entering the flange parameter, the design engineer can choose among different dimensioning types. Consequently, values have no longer to be converted if a measure in the drawing does not correspond to the standard values.

All components of a sheet metal design, which have been structured parametrically via above mentioned features, can be deleted by the user. This means, that these features can also be deleted from already saved drawings. The AutoCAD "Undo" command has not necessarily to be used.

Finally, the unfolded blank of the designed sheet metal part needs to be calculated. In addition to technology data also manufacturing-specific boundary conditions can be considered for the calculation of the neutral line. This involves, for example, the method with which the blank has to be cut. For instance, if it is a laser cut, transitions of the unfolded blank can be automatically rounded off with a specific radius, in order to avoid that the laser has to slow down or even stop to change direction. If intersection of so-called "break-through" bodies is not perpendicular, penetration can be calculated in a way that the body can penetrate the part even in case of a vertical cut – no matter whether laser cut or punching was used. ■

Flat Pattern Calculation made easy with the COPRA® MetalBender HVAC

The software for heating, ventilation and air conditioning.

A handmade flat pattern calculation of transitions and ductings is inaccurate and time wasting. For such kind of applications, especially in the area of heating, ventilation and air conditioning, data M provides an effective and user-friendly software solution called COPRA® MetalBender HVAC 3D (for AutoCAD/ Mechanical Desktop).

Many new design features have been added to the current program version. Also improvements of the flat pattern calculation have been made compared to its predecessor. Transitions with round, filleted or rectangular shapes or any combination of those can now be created fast and exact as a 3D solid model. The same applies for cylindrical or conical tubes. This reduces the design time and makes the flat pattern calculation much more efficient. On top the dialog-driven user interface is clearly structured and very easy to understand.

The flat pattern of the 3D solids is calculated automatically. Very important is in fact that intersection curves of intersecting objects



the 2D-drawing office so that the finished drawings, too, are always state-of-the-art.

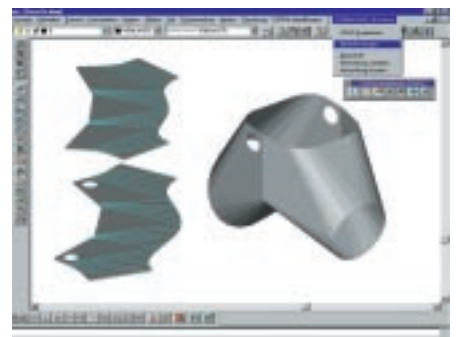
COPRA® MetalBender Desktop offers you a variety of 'intelligent' design features like

- base plate feature
 - contour plate feature
 - flange feature
 - z-flange feature
 - close corner feature
 - close mitre-cut feature
 - table feature (MS Excel link)
 - punch feature
 - punch contour feature
 - piercing feature
 - tool administration
- and a lot more.

What does this mean for the user? Let's have a more detailed look at one of these features: The Flexible Flange.

This design element makes

continued on page 4 ►



3D Pipe Branch with additional intersection. The unfolded blank with respective bending lines and penetrations are shown as well.

New Software Programs for Roll Design and more...

info Forum

The COPRA® Professional Design Module for Sections is the software package for every roll form designer. It allows you to do a professional roll form design for simple as well as most complex shapes. It includes functions like...

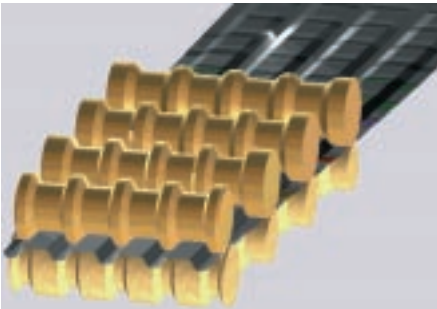
- section design library
- 'punched holes' function



- static properties calculation
- design of the flower pattern
- COPRA® bending sequences for automatic flower design
- Design of for combination tool sets

In addition to the continuous improvement of our software solutions data M has been developing software modules tailored specifically to certain roll form applications:

The **COPRA® Professional Design Module for Trapezoidal Sections** is the software



package for the roll form designer working with corrugated or trapezoidal sections. It includes similar functionality as the Section Design Module above, plus

- calculation of an optimised forming sequence (for trapezoidal shapes)
- calculation of horizontal material movements
- automatic roll design

Training, workshops, design service, and more...

data M Software + Engineering not only offers software programs but also sound advice or workshops/ training for your staff in order to achieve an optimum roll design quality.

The **COPRA® Professional Tube Mill Roll Design Center** is the advanced software package for tube mill roll design. It has been installed at a various number of the largest tube makers in the world in its standard version – without additional modification. The package includes features as...

- Project manager
- Machine data set up
- Set up for forming methods (circular, 2-radius, W-forming, 4-radius, oval or others...)
- Set up of forming parameters
- Automatic flower design
- Automatic roll design
- Parametric roll modification of previously and automatic designed rolls

COPRA® Professional Design Module for Shaped Tubes allows you to calculate calibrating passes from round tubes to special shapes. It allows for a quick and accurate design of calibration forming steps.

COPRA® Professional Design Module for Drawing Rings is at the moment the only software available for this specific problem and comprises of two separate parts – a 2D part as well as a 3D part.

COPRA® Deformation Technology Module (DTM) is the roll form simulation software package which enables the designer to verify and optimise his forming strategy. COPRA® DTM takes into account parameters like material, forming geometry, tooling diameters as well as the so-called forming geometry. Not longer having the inaccuracy of the former "strip edge strain/stress calculation" COPRA® DTM is based on extensive FEA calculations and research results. COPRA® DTM is already a "third generation" software solution and being used by major roll forming and tube mill manufacturers worldwide – in more than 45 countries.

- COPRA® DTM gives you highest accuracy!
- COPRA® DTM allows you to increase your product quality! ■

We are also offering services for roll design or analysis of already existing roll sets in order to give you hints how to improve them in future. We are looking forward to working for you. ■

"Find the best roll-formers and tube mills on the planet"



Yoder Manufacturing

Yoder's product line is now complete – included is standard roll forming machines and tube mills, roll tooling, mill rebuilds, and special purpose developments. Particularly in the roll tooling area, a main reason for being more successful than their competitors is obviously the short time between engineering/development and manufacturing. Short tryout and setup periods for roll tooling can be achieved by computer aided design and simulation of respective roll tooling already during the design process.

Yoder has been using the advanced roll design software COPRA® which allows the designer to determine proper forming processes before the rolls are even manufactured. "We like the performance of COPRA® and the technical service provided by data M", Gary Loutzenheiser from Yoder states. He added, "data M knows about the roll designer's needs".

<http://www.yodermfg.com> ■

data M donates **EWI**
COPRA® Software to
Edison Welding Institute
(EWI) at Columbus,
OHIO.

With the increased level of interest in the use of hydroformed tubing for automotive and related applications, EWI is working on specific research projects in order to develop a broader based understanding of the many factors that affect the performance of welded structures. This activity involves the actual manufacture of welded tubes. The COPRA® software program provided by data M is especially useful in supporting this activity. The ability to model the tube-making process allows for a prediction of performance of experimental materials and laboratory equipment.

<http://www.ewi.org> ■