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Decal Cutting

At TECNARGILLA'99 the engineering team of data M introduces a new version of its decal cutting machine.

This system works fully automatic and cuts up to 50 sheets with a moveable perforating unit. Hereby the cutting contour can be as complex as the user needs it. First the user draws the cutting contour by means of a marking pen – anything else is done by the integrated vision system having a camera system mounted above the perforating unit. The computer control unit - especially developed by data M - guarantees the highest rate of accuracy and allows for multiple cuts without deviation from the original cutting line.

Optionally, interfaces like HPGL or DXF are available in order to import data from CAD systems or software programs like Plate Scribe.



In the new version PostScript files can be imported as well, which allows the user to read also 'MAC-files'. ■

data M Online or on CD-ROM

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 represen-

tative 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 email us for more detailed info on our products or services:

Fax: +49-8024-640300

email: sales@datam.de

Name _____

Company _____

Address _____

Phone _____

Fax _____

email _____

Decal Cutting Machine

- Integrated Vision System for Path Detection
- Automatic Optimisation of the Cutting Sequence
- Cuts 35 Sheets simultaneously with high accuracy

Heat Release Decal Application Machine

- Vision System for centering Decals
- Automatic Correction of Form Tolerances
- 6 NC-Axes for automatic Decal Transfer to asymmetric and irregular Shapes

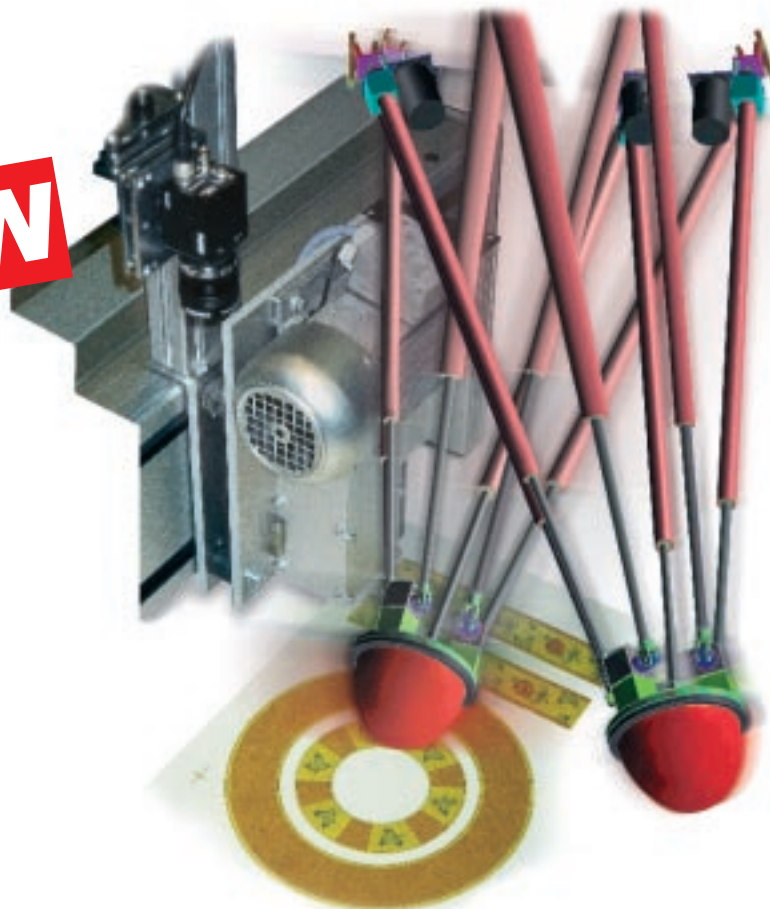


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Heat Release Decal Application Machine with 6 degrees of freedom!

A new concept for the application of heat
release transfers.

NEW



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data M Engineering

The industrial use of heat release decal application machines is still characterised by one restriction: size and position of both the decal as well as the article which has to be decorated. Both have to fit within predefined tolerances. Only then it is possible that a silicone pad moves a decorative transfer precisely onto, for example, a ceramic plate. The practical operation has revealed that the actual positioning of the decal deviates from the target position due to many factors. These include inaccuracies from cutting the decals to size, as well as positioning deviations during transfer movement. Also, deviations from original size or position of the article have to be taken into account.

Even with increased expenditure, such as costly centring and positioning devices

or correct sized and cut decals, the accuracy cannot be guaranteed as tableware products are not always dimensionally consistent. Deviations in roundness, diameter or flatness cannot be compensated, nor can the influence of air moisture on the dimensions of the decal backing paper.

Until now ...

The New Heat Release Decal Application Machine developed by data M Engineering is able to handle these restrictions.

The silicone pad is moved by a hexapod mechanism, consisting of a triangular arrangement of linear axes. This results in 6 degrees of freedom and allows an

data M

at the
TECNARGILLA 99

You can find us
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- ▶ absolute free 3-dimensional movement, contrary to conventional decorating machines.

A control unit, based on a Pentium processor with a Windows operating system, controls the most complex movements of this decal application unit. Each of its six legs has a digital electric drive and allows for the highest positioning accuracy. Due to the free moving silicone pad, neither article or decal has to be aligned. The silicone pad is able to compensate for every possible misalignment by respective movements. Previous

clumsy alignment devices are now obsolete. The actual position of decal and article is detected by 3 cameras integrated in the machine. The control computer then converts these signals and sets the machine into motion, in order to put the decorative transfer precisely onto the article. Two cameras take the actual position of the ceramic decal whilst the other one takes the position of the article. If the article, e.g. a plate does not meet the tolerances allowed, it will not be accepted and will be sorted into secondary stacks. Due to integrated vision systems, this type of machine

opens totally new fields of application. In addition to optical quality inspection, particularly non-symmetrical objects, elliptical or polygonal plates can be decorated without any offset.

Thus, tasks which had to be performed manually can now be mechanised using this type of decorating machine. It has a competitive cost performance ratio due to the relatively small number of moveable components used and a considerable utilisation of modern software technology. ■

data M Engineering is growing

The developer of industrial vision systems and technical solutions for the ceramic decorating industry is growing.

machines with integrated vision systems, based on standard PCs with all their advantages.

software solutions. data M is working for major european companies.



Main working domain of data M Engineering, however, has always been the development of integrated vision systems for the ceramic decorating industry. It started with a machine for cutting decorative decals and was continued with the development of decal alignment units (positioning devices with integrated vision system) and customer specific solutions like optical quality inspection systems.

Today, a large and increasing number of porcelain manufacturers are working

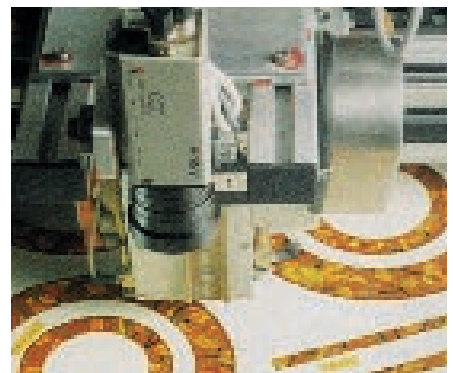
End of June data M Engineering moved into larger facilities at the village Valley. Valley is located in Upper Bavaria, about 25 km south of Munich. With approximately 1.000 square meters office space (shared with its sister company data M Software)

Examples for these activities are a fully automatic working inspection machine for turned parts (COPRA® Roll Scanner) or a laser based sensor for detecting angles on bending press brakes.

data M Engineering

and about 150 square meters mechanic shop floor data M's engineers and mechanics around the founders Andreas Bachthaler and Albert Sedlmaier will have the space they need for development and future support of its customers.

These devices have found a broad usage in industry. They are being sold mainly to so-called OEM manufacturers and – of course – to the "sheet metal" customers of the sister company data M Software GmbH.



Decal Cutting Machine

The expandable building also offers some space for a future growing. Since its foundation in 1991 data M Engineering hasn't been growing extremely rapid but continuously – and has got its fixed market position.

Furthermore data M Engineering is developing customer specific hard- and

with devices or solutions from data M Engineering.



COPRA® Roll Scanner

"The expansion into larger facilities and the investment into a modern manufacturing system is a signal to our customers that our past strategy has been the right one and that we are willing to continue this way also in the new millennium" Andreas Bachthaler, managing director at data M Engineering states. ■

One of its working domains has always been the development of computer controlled



Retrofit Possibility for Existing Heat Release Machines

A cost intensive area in the production of porcelain is the decoration of the white-ware itself.

Automatic decal application machines, which are able to achieve significant rationalisation in this area, have been on offer for a few years.

The process of heat release presumes that both the article to be decorated and the decal itself are within the given tolerances and that the position of both, in relation to each other, always stays the same. It is precisely at this point where the problems start – in the first instance, with decal fit.

From removing the decal from the magazine and placing on the vacuum table, to the transfer to the article itself by means of a silicone pad, a whole range of size deviations can accumulate. These can be solved by using a decal positioning system developed by data M, which recognises the position of the decal with the help of two video cameras and compensates the positioning faults.

A tripod shaped positioning table is used to position the decals themselves. This means that the positioning table, despite its small size of only 400 x 400 x 110mm (W x D x H), can lift vertically the complete weight of the pad up to 15kN. The vacuum table can be directly mounted onto the



Decal Aligner with Industrial PC and Cameras

positioning table and the pad can, therefore, pick up the aligned decal without any in-between steps.

In order to adapt existing heat release decal machines easily, the decal positioning system uses an SPS interface, which coordinates each individual sequence of events.

Technically, the positioning system is a machine in its own right, which, by means of the SPS interface determines whether an existing decal is in place or whether the cycle has been completed and the positioning

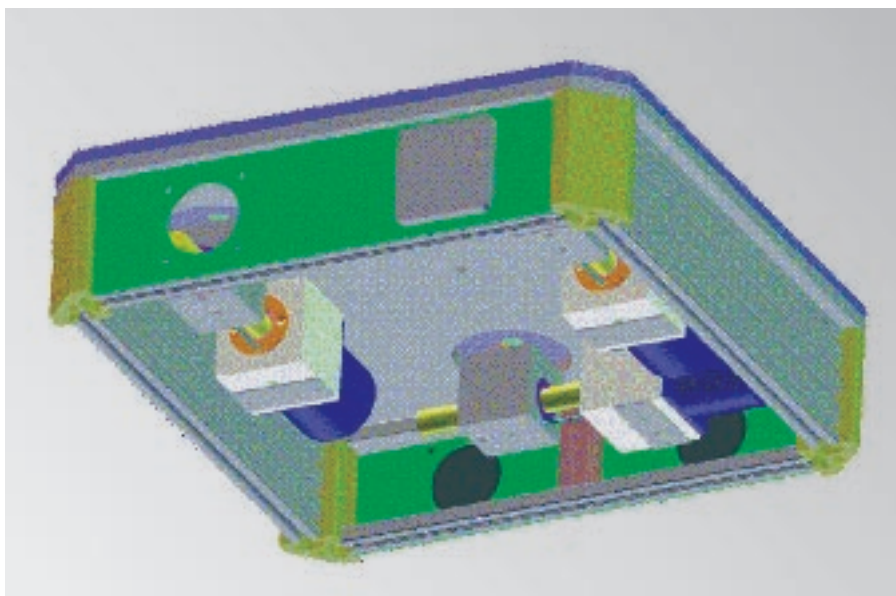
table can be returned to its starting point. Conversely, the heat release machine must know whether the decal has been collected or a new decal can be put down. ■

Expansion for In-Line Quality Control Available

There is also an expansion to the described system on offer, which enables you to measure the articles themselves.

As a result, roundness and size accuracy of the plate can now be determined. With this information the decal can be placed in the center of a plate even if the plate is not perfectly round (and therefore not perfectly centered) but still within acceptable tolerances. This is achieved by the installation of another camera and corresponding software.

This leads to an achievable accuracy, better than $\pm 0.1\%$ of the measurement area. The sorting of the articles can also be coordinated via this equipment. ■



Bottom side view with the tripod mechanism and the three linear axes with stepping motors (blue)