

Spring 2010



# ORACLE

**The Institute of Sheet Metal Engineering**



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*The ORACLE, mouthpiece of the Institute, speaks for and to the world of Sheet Metal Forming & Pressworking by way of featuring News, Views and Topics around the Industry*

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# ISME HONORARY SECRETARY'S NOTES

The [Gold Medal Award](#) to Professor Carl Chinn proved to be a very entertaining and prestigious event held at the Molineux Stadium. Over 70 members and guest's heard Carl give a passionate and compelling talk about the Industrial Heritage of Birmingham and the Black Country. He was delighted to receive the Gold Medal and the Institute gained useful publicity and provided an entertaining event for its members. We were very saddened to learn that Carl's father, Buck Chinn, who accompanied him to the event passed away in April.

Also at the Gold Medal evening the Institute presented "[The Edward West Award](#)" to Honorary Treasurer, Josie Stevenson. This award is given for outstanding service to the Institute. Josie has provided treasury services at no cost to the Institute, through her company MPPS Ltd., for several years and is always a major supporter of all our events and [The Oracle](#).

Entries for this year's [Skills Competition](#) have already exceeded last year's and with the generous support of E.ON hosting the event at their Ratcliff on Soar facility a top class day is in promise.

The media was dominated for several weeks by the Election Campaign with the leaders all seeming to agree that UK Ltd. must increase its manufacturing base although the ways they plan to do this weren't at all clear to me. It was good to hear that 250,000 apprenticeships were to be created but I was never clear where these young people were going to get jobs at the end of their training. By the time you are reading this we will know the make up of our new government but I'm afraid that whoever gets in the lip service to manufacturing may be forgotten again but I sincerely hope not. In the meantime, the good companies will continue to prosper, often in spite of the politicians and your Institute will continue to be a valuable source of information and contacts to its members.

As a demonstration of our commitment to the future of our Industry, your Council took a decision



to arrange for an ISME Pavilion at the forthcoming [SUBCON SHOW](#) at the NEC. An invitation to take part was extended to all [Corporate Members](#) and as you will see later in this issue of [The Oracle](#) five Pressworking Members have taken up the offer.

For the Institute this represents something of a change of direction in providing a commercial opportunity for Corporate Members alongside the Institute's technical information booth. Additionally [Subcon](#) will give us a chance to reach those in the Industry who can benefit from membership of the Institute.

Bill Pinfold  
ISME Hon Sec  
May 2010

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"Why not visit the Members Only area of the ISME Web Site via the log in page? You can post news, open discussions or ask for assistance. Oracle is also available to read in Pdf format. If you have forgotten your User Name and Password email [ismesec@gmail.com](mailto:ismesec@gmail.com)."



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# TOOLING BY DESIGN

## BY PETER ULINTZ

### HIGH-STRENGTH ENERGY CRISIS

Last month a reader submitted a question regarding press tonnage calculations. The reader had commented, "On several occasions we had to move our dies to a larger press because the press we selected did not have enough power. In fact, the press slowed down noticeably during production. When we moved the die to a larger tonnage press the problem went away. "His concern was that his engineers were using incorrect formulas when calculating the required press forces.

As it turned out, the force calculations that were used had some flaws; primarily, not including the force required to counteract the draw pad forces. Nor was the reduction in available working force (de-rated tonnage) considered as the distance above bottom of the press stroke increased. Still, the inaccurate calculations were close enough to get the job assigned to a press with adequate tonnage capacity. Why, then, does the company continue to have problems (i.e., slowing down of the press) running this particular job? And, why does the problem go away when the die is moved to a press with greater tonnage capacity?

Simply stated, this company has an energy shortage. If they plan to deep draw similar parts from higher strength materials or some of the new advanced high-strength steels (AHSS), they will find themselves in the midst of a full blown energy crisis.

The tonnage rating of a press is the maximum load that can be exerted in continuous operation without causing damage to the machine structure or its drive system. The energy rating of a press deals with the product of the applied press load and the distance

through which the load must be applied. Since energy is expended with each stroke of the press—and this energy must come from somewhere—attention should be focused on the main drive motor and the flywheel.

The main motor is the only source of energy for the stamping press. The motor must have sufficient horsepower to supply the demands of the entire stamping operation. The press flywheel, by virtue of its mass and rotational speed, serves as the energy storage device. The energy in the flywheel is expressed as in.-tons of torque. In combination, the flywheel stores and delivers the required work energy while the electrical motor restores depleted energy by maintaining flywheel speed and avoiding excessive slowdown.

Deep-drawing operations consume large amounts of press energy due to their long working distances, sometimes beginning several inches above the bottom of the press stroke. For example, pushing 50 tons through 1 in. of deep drawing would require 50 in.-tons of energy while a 3-in. deep draw requires 150 in.-tons of energy.

The table describes four mechanical presses, specifying tonnage and energy capacity. Referring back to the previous example, every machine listed in the table has an adequate tonnage rating to carry out the 3-in. deep draw (50 tons is required). However, only one of the presses has enough energy (150-in. tons is required). This company literally has an energy shortage. Only one of the four machines actually has enough energy to run the job.

Tonnage	Drive System	Strokes/min.	In.-tons*
110-ton	Non-Geared (Flywheel)	80	50
110-ton	Single-Geared	40	130
150-ton	Non-Geared (Flywheel)	80	70
300-ton	Non-Geared (Flywheel)	60	300

**\*Check with your press manufacturer for specific values**

Unfortunately, most stamping companies don't consider energy requirements in their press-selection process, even though the data is readily available from the manufacturer's technical specifications. Omitting the energy data column (in.-tons) from the table would surely lead to the improper selection of a stamping press. Most stamping companies would not select a 300-ton press to run a stamping process requiring only 50 tons of force when three other lower cost (lower-tonnage) machines also are available.

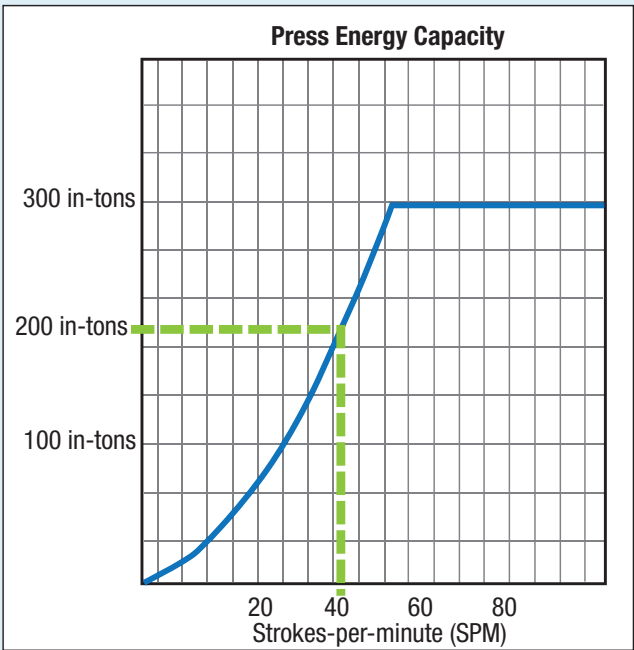
What happens when the customer changes the part material to a higher strength steel grade? Let's assume that the material change will require 80 tons of force working through the same 3-in. distance. This would require a machine with 240 in.-tons of energy. Again, all four machines are within the rated force capacity, but only one has enough energy.

Or does it?

Stamping high-strength steels requires higher blank holding forces and punch forces that result in increased frictional forces and interface temperatures. When interface temperatures reach a critical point, lubrication breakdown and other forming- and die-related problems can arise. During a production run, it would not be uncommon to reduce the press speed in order to lower the process operating temperatures and eliminate thermal-related forming problems.

Notice that the energy data for each of the machines in the table relates to specific operating speed, reported as strokes/min. (SPM). When the press speed is reduced below a critical point, available energy can diminish rapidly.

The illustration above represents the energy curve for the 300-ton press in the table. This machine has full-rated energy at 60 SPM. If press speed were reduced to 40 SPM to reduce the amount of heat being generated or to mitigate other forming-related problems, the available energy drops to less than 200 in.-tons.



This company now is in the midst of an energy crisis. They have plenty of machines with the required tonnage rating but none have the necessary energy capacity. This supplier soon will discover that they cannot produce these parts for their customer.

If the words "energy crisis" aren't enough to turn your attention to the energy capacities of the machines in your press shop, especially if you plan to stamp any advanced high strength steels, maybe "breach of contract" will.

METALFORMING / MAY 2010

Peter Ulintz has worked in the sheetmetal-forming industry since 1978. His background includes tool and die making, tool and process engineering, engineering management and product development. Peter also operates the website ToolingbyDesign.com, a source for the transfer of modern metalforming and tool-and-die technology, and which promotes the use of "Performance-Based Die Engineering Strategies."

Peter speaks at PMA seminars and roundtables focusing on tool and die design, die maintenance, deep drawing, stamping simulation, tooling for stamping high strength steels and problem solving in the press shop.

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# ATKIN AUTOMATION TO SHOW NEW COST REDUCING PRODUCTS AT MACH 2010



Thetford, Norfolk: Atkin Automation will be exhibiting three new products on its stand at MACH 2010 [4860 - Hall D] to be held at the NEC, Birmingham, from 7 – 11 June 2010.

Atkin Automation has an international reputation for its range of specialist high performance coil handling and processing products, and its new Smart Roll Feed will be on show for the first time. This features a number of in-built safeguards which provide operator confirmation that it is safe to commence feeding, thereby preventing expensive damage to tooling.

Companies which already use Atkin Automation's transformer core lines will find the upgraded system software of particular interest as it provides greater productivity and product options from existing equipment.

Also on show for the first time will be the Sandsun range of quick die change elements, for which Atkin Automation has recently been appointed the exclusive UK supplier.

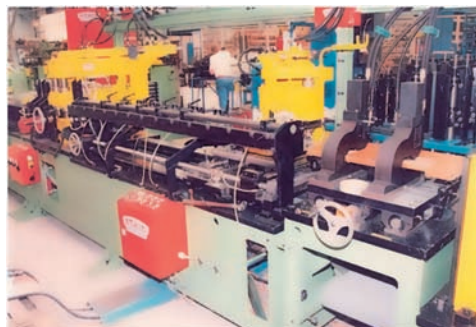
A quick die change element can be used in a wide variety of machine engineering applications for a SMED (Single Minute Exchange of Dies) and facilitates a sub 10 minute tool changeover.

SMED is a method of reducing press down time during product tooling change-over, and it enables a single press operator to complete the entire process. Importantly, system hydraulics enable quick and consistent clamping after the SMED has been carried out.

At a typical system cost of £5,000 ex vat [8 clamps, one power unit, 2 die arms], the pay-back period can be very short for many factories where current production line costs are often upwards of £800 per hour.

Atkin Automation Managing Director Chris Ward is cautiously optimistic about the coming months, saying:

"We have seen a number of encouraging signs of sales growth since the beginning of the year, but it is still a little spasmodic. The new products which we will be exhibiting at MACH 2010 will help manufacturers take cost out of their production processes, and our customers are telling us that such reductions are vitally important to industrial recovery."



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# ISME GOLD MEDAL AWARD DINNER

## PRESENTED TO PROFESSOR CARL CHINN MBE

### HELD AT WOLVERHAMPTON WANDERERS F.C MOLINEUX STADIUM, INTERNATIONAL SUITE

### ON THURSDAY 18TH MARCH 2010

With 74 in attendance ISME graced the Molineux for an enjoyable evening making the special award to Professor Carl Chinn.

Our Chairperson Professor Diane Mynors opened the evening by welcoming the guests who included representatives from West Midland Companies, Regent, Hadleys, Sertec, HT Brigham, Jenks & Cattell, Midland Power Press Services and A4e.

After dinner presentations were made to new member Jenks & Cattell with an honorary member award to former ISME Chairperson Josie Stevenson. Josie a director of Midland Power Press Services was Co-opted on to the ISME council in September 1998, Chairperson in 2000-1 and treasurer in 2002. Josie with her MPPS staff continue to maintain the ISME financial accounts.



With previous winners of the ISME gold medal being Lord Heseltine, Sir Digby Jones and Bentley Motors Body in White Team, Diane had the honour of presenting the Gold Medal award to Professor Carl Chinn reading the citation;

Carl is a born and bred Brummie historian who throughout his working life has been a leading figure in trying to retain the manufacturing industries in and around Birmingham and the Black Country. These industries over the years have been world leaders for their skills and products. The Gold Medal award is for his commitment, enthusiasm and support for our manufacturing heritage.

Carl is very proud of our local manufacturing sector and with his enthusiasm over the years he has supported Birmingham and Black Country Industry through some torrid times.

Professor Chinn responded and gave a passionate speech about the 'Workshop of the World' the importance of manufacturing in Britain from the 1760s onwards, with a West Midlands focus.

An excellent evening was had by all with Bill Pinfold ISME Secretary thanking the Molineux staff and our guests.



*Professor Carl Chinn MBE receiving the Gold Medal from the Institute Chair Professor Diane Mynors*





# IT'S SHOW TIME

## I.S.M.E

## at SUBCON 2010

The Institute of Sheetmetal Engineering is launching a new venture with five of its Corporate members by providing an ISME "Best of British" Pavilion at this exhibition for the subcontract section of industry. It is expected that attendance at the Show will prove beneficial to those Corporate members taking part as well as providing an excellent opportunity for the Institute to recruit new members both Individual and Corporate

**DETAILS OF THE 5 CORPORATE MEMBERS  
FOLLOW ON THE NEXT PAGES**

# Subcon 2010

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# H T BRIGHAM

## SEIZES OPPORTUNITY TO EDGE AHEAD

H T Brigham has a 62 year heritage of manufacturing in the West Midlands and supplies a range of industry sectors worldwide, including the automotive and construction markets, with high volume pressed metal components. The recent recession has encouraged the company to examine its processes internally in order to forge ahead and improve profitability.

### Opportunity

During summer 2009, the company made a strategic decision to invest in a new power press in order to maximize the potential of a new market opportunity. In addition to this, having received funding from the West Midlands Manufacturing Advisory Service, the company embarked on an intensive lean manufacturing programme.

The pressworker has been working closely with TJW Limited, a hands-on continuous improvement business consultancy based in Warwickshire. The initial aim of the project was to implement lean manufacturing principles, such as 5S and Single Minute Exchange of Dies (SMED), to maximize the productivity of the new press by reducing changeover times and consequently improving performance.

However, it soon became apparent that the benefits of implementing such a scheme should not be restricted to the operations surrounding a single press. A manufacturing improvement programme would be executed across all departments, from enquiry receipt through to final despatch, in order to streamline processes, improve overall efficiency and enhance service to customers.

### Success

The progress of the project so far has been successful. The enquiry, costing, quotation and order processing stages have already been addressed and have benefited from the streamlining process, with many non-value adding processes being eliminated. Employees, although somewhat apprehensive at first, have adopted an open minded approach to any suggestions for improvement and have welcomed the subsequent time and cost time saving benefits which soon became apparent.

Consultant, Trevor Wing, who has 12 years experience of implementing lean manufacturing processes in SMEs, commented, "Working with H T Brigham is refreshing because although they are a traditional presswork company, the willingness to embrace

*change has enabled an open approach to identifying opportunities for improvement. The initial benefit of working on the office based processes is that it has already enabled a more responsive approach to customer demands".*

### Future

With the initial engineering and administrative processes addressed, the main focus of the project is now to improve the performance of the new press on the shop floor by embedding 5S principles in the area; Seiri (sort), Seiton (straighten), Seiso (shine), Seikaisu (standardise), and Shitsuke (sustain). The implementation of these 5S and SMED principles is expected to reduce tool and coil changeovers by up to 50%.

Trevor said, "The streamlining process throughout the business will enable H T Brigham to improve customer service, quality, cost and delivery; the fundamentals of lean thinking".

Managing Director, Barry Smith added, "From the outset of this project, it was clear to see that our workforce were right behind it. Their open minded attitude has been exactly what we had hoped to see and it has been instrumental to the success of this programme. I believe that with such a proactive and committed workforce, achieving these benefits will give H T Brigham the competitive edge it needs to stay ahead in the marketplace."

**For more information on H T Brigham, please contact Andrew Essom, Technical Sales Manager ([aessom@htbrigham.co.uk](mailto:aessom@htbrigham.co.uk)), visit [www.htbrigham.co.uk](http://www.htbrigham.co.uk) or come and see us on stand D32 at Subcon 2010.**



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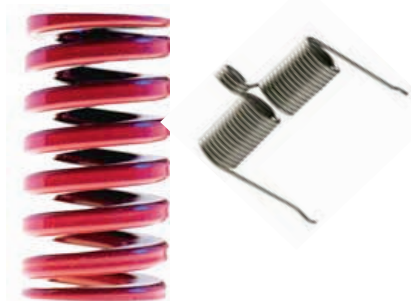


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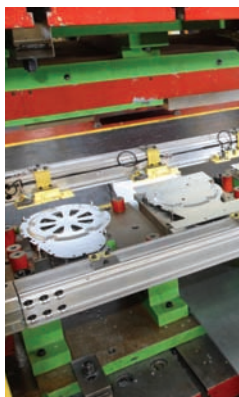
Where new tooling needs sourcing or modifying, or components or assemblies require treatment such plating or painting, Millennium arranges for these processes and manages quality and delivery.

Millennium Pressed Metal is an "owner" managed business that means customers are dealing directly with the decision makers. It has a young, progressive management team who operate an "open door" policy to customers and employees alike. The Millennium team is committed to giving customer satisfaction by providing a first class, on time delivery of quality products to customer in the UK and overseas.

**Millennium Pressed Metal Limited**  
**Unit 2, Castle Mill Works, Birmingham New Road,**  
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# SERTEC GROUP HOLDINGS LTD

**Sertec Group Holdings Limited is one of the UK's premier manufacturers of presswork and welded assemblies for the automotive industry.**

Now 47 years young, the company has seen many changes throughout it's history and the current downturn in automotive fortunes is yet another challenge for the Birmingham based supplier, as it is for manufacturers nationwide.

But the company's world class expertise and strong management has meant that whilst tough decisions have had to be made, the company is buoyant in its outlook for the future.

Diversification and acquisition has always played an important part in Sertec's plans and recent times have seen important moves in both strategies.

Two years ago Sertec Energy Ltd was founded to develop and manufacture highly efficient solar panels for the renewable energy market. Resellers have been contracted and panels are already being manufactured in large numbers with expansion plans in place for the near future.

Sertec has now completed the restructuring of its latest acquisition MRX Automotive and has renamed the company Sertec Tube and Cylinder Ltd (STC). The new company launched on 1st October 2009.

STC manufactures manipulated tube and assemblies and deep drawn cylinders, from mild and stainless steel. This is demonstrated in the production of exhaust tailpipes and bright trim, brake and suspension actuators and air bag propellant canisters – just some of the many parts supplied to the automotive sector.

Sertec CEO Graham Mosedale is delighted with the restructure. "This acquisition has opened up new markets for our company and to be able to offer a new range of part capabilities to both new and existing customers has given us a fresh impetus."

The factory is based in Smethwick in the West Midlands and the reorganisation has seen three sites consolidated into one, the streamlining of the workforce through redundancy and a complete review of the shop floor.

Sertec Tube and Cylinder customers currently include exhaust manufacturer Tenneco Walker, Jaguar Land Rover and commercial trailer manufacturer Arvin Meritor.



*Graham Mosedale, Sertec CEO.*

# THE SCIENCE OF FORMING

BY STUART KEELER

## MATERIAL PROPERTIES FOR VIRTUAL METALFORMING

Virtual forming (computerized die tryout, computerized metalforming, etc.) is revolutionizing the sheetmetal industry. The advantages these programs offer are numerous, including time and cost reductions for die design/tryout and improved stamping quality.

Many years ago, a popular slogan was applied to manufacturing products, cuisine and personal lives: GIGO or Garbage In Garbage Out. The implications were well understood and most people reacted accordingly. Then computers became popular and the meaning of GIGO changed to Garbage In Gospel Out. Since computers cannot lie, the output was taken to be the truth. Unfortunately, virtual forming has become a major victim of GIGO. This month's column explores some GIGO problems associated with material property inputs.

Drop-down menus are a common method for telling the computer which metal and grade should be used for the analysis. Click on AKDQ (aluminum killed draw-quality) or the more current FS (forming steel) or DS (drawing steel) and a set of typical properties are sent to the program. In contrast, many dies actually create stampings from alloys with a formability property range from  $-3\sigma$  to  $+3\sigma$  of the typical value. Forcing the computer to use only the typical property rarely provides a meaningful analysis.

For example, one key material parameter needed for virtual forming is the work-hardening exponent or  $n$ -value. For AKDQ steel, this  $n$ -value can range from 0.18 to 0.23, yet a change of 0.01 can shift a stamping between make and break. For an accurate forming analysis, the  $n$ -value of the intended production material must be entered—not a typical value. An important advantage of virtual forming for die tryout is running the analysis with four different  $n$ -values. These values are the  $-3\sigma$ , typical,  $+3\sigma$ , and production to gain an insight of how  $n$ -value influences the final stamping. Changing the  $n$ -value requires only a simple keyboard entry. With hard tooling, one must find or order four coils of material with the desired properties and run statistical evaluations of all four coils.

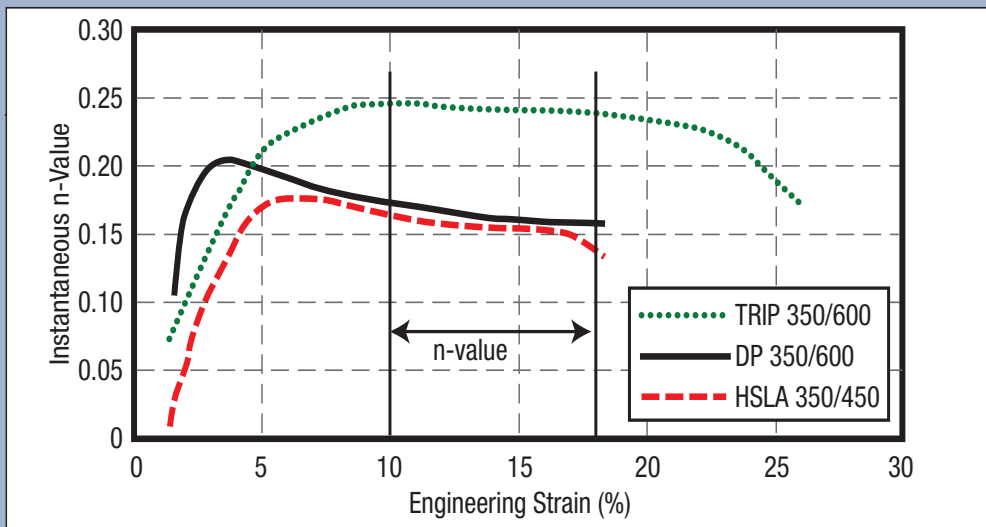
Selecting one high-strength low-alloy (HSLA) steel from the drop-down menu also enters a single  $n$ -value. This assumes that the  $n$ -value is relatively

constant over the full range of deformation. The  $n$ -value is calculated between the strain values of 10 percent and uniform elongation/maximum load. (This steel is shown as the dashed line in the graph with an approximate  $n$ -value of 0.15 within the indicated measurement strain range.)

In contrast, two relatively new advanced high strength steels (AHSS) have  $n$ -values that change with strain. One now must compute instantaneous values of  $n$  that show the  $n$ -value for different amounts of strain. The first AHSS is dual phase (DP) steel (solid line in the graph). Note the early increase in  $n$ -value to a value of 0.2. This higher  $n$ -value at low strains is effective in resisting the formation of localized strain gradients. However, this increased  $n$ -value is exhausted before reaching 10 percent strain. This means traditional tensile samples of the HSLA and DP steels will have approximately the same  $n$ -values and the computer will not recognize the stretchability improvement of the DP steel. The results of a computerized die tryout will suffer a GIGO error. However, the solution is quite simple. The computer analysis program must be capable of accepting the true stress-true strain curve, which captures any change in  $n$ -value over the entire range of deformation.

The forming limit curve or maximum allowable stretch (strain) also depends on the  $n$ -value. Here an  $n$ -value at a large deformation or plateau strain is required. The two curves shown in the graph have the same high  $n$ -value. This means the forming limit curves for these HSLA and DP steel coils will be identical. This was confirmed by experimental determination of the actual forming limit curves.

The second AHSS is the transformation induced plasticity (TRIP) steel, beginning to gain applications in the automotive industry. If the initial higher  $n$ -value of DP steel is so beneficial, why not create steel that keeps regenerating the higher  $n$ -value over a wide range of deformation? The TRIP steel (dotted line in the graph) is designed to accomplish this major improvement. Now the  $n$ -value not only changes with strain, but has an increased value as traditionally measured between 10 percent strain and uniform elongation. Even here, the measured value is an average  $n$ -value between the two measurement points and still provides no information about the changing  $n$ -values outside that range. Again, the



**Graph of instantaneous values of n for three 50-ksi (350-MPA) higher strength steels. Courtesy of WorldAutoSteel AHSS Application Guidelines**

true stress-true strain curve would capture the variable nature of the n-value for use by the computational program.

Unfortunately, the TRIP steel has another problem. The properties of the as-received TRIP steel are not the properties experienced by the stamping during the forming operation. The increase in the instantaneous n-value is a function not only of initial steel composition and processing, but also the strain path, strain history, forming speed, temperature and other production factors. Therefore, the instantaneous n-value and the forming limit diagram depend on the actual deformation, which changes not only from part design to part design but also with location within the part. Thus, capturing the actual property levels active during deformation is a problem still unsolved, which makes output of TRIP steel analyses questionable.

Most aluminum alloys have a comparable problem. Their n-values are not constant but decrease with increased deformation. Therefore, n-value data often are presented as 0.35 (0.22), where the first value is the initial n-value and the second number in parentheses is the average value over a wide range of strain. Other metal alloys have their own set of property idiosyncrasies. One must understand the input to the computer program to assess the validity of the output.

The correct properties for virtual forming and other analyses depend on the accuracy desired for the final stamping. Springback prediction requires much more accuracy of input properties than does designing a stamping to hold water. The need for accurate properties extends to troubleshooting and press shop areas other than virtual forming. Therefore, discussion of accurate properties continues next month. Topics include blanked-edge damage, local elongation, strain-rate hardening and friction.

Stuart Keeler (Keeler Technologies LLC) is best known worldwide for his discovery of forming limit diagrams, development of circle grid analysis and implementation of other press shop analysis tools. Stuart's sheetmetal forming experience includes 24 years at National Steel Corporation and 12 years at The Budd Company Technical Center, enabling him to bring a very diverse background to this column and the many seminars he teaches for PMA. His most recent project is technical editor of the AHSS Application Guidelines—Version 4.1, which



now is available for downloading free from [www.worldautosteel.org](http://www.worldautosteel.org).

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# AP&T AUTOMATED FOR FLEXIBLE PRODUCTION

*Stand-alone presses transformed into four-press line at C&K Johansen.*

At deep-drawing expert C&K Johansen in the Danish town of Horsens, flexible production is key to being able to quickly provide service to customers, who come from a number of different production industries. Previously, the majority of production usually entailed manual operation of stand-alone press cells. But, when the company partnered with AP&T and set its sights on the future, many new possibilities for automated production came into view.

C&K Johansen has been a well-respected name in deep drawing for over 40 years and AP&T has been delivering sheet metal forming equipment to the company almost as long. Flexibility has always been an important aspect, with cycle time taking a back seat for the company since they work with small and medium-size series. For this reason, manual press operation was the right way to go.

"In the end, it's our customers who decide what we need to produce. So, it's important not to chain ourselves down with an automated solution that limits us," says C&K Johansen President Peter Møller.

## Many operations

But, when the company updated its machinery with two new manually-operated hydraulic presses from AP&T, they chose a new route. It was not uncommon to have 10-15 operations per part and the large amount of manual handling became a problem when it was hard to find skilled operators who could handle operations in many customer assignments. AP&T then suggested combining the two new presses with one of the existing hydraulic presses to form an automated press line that both increased quality and reduced handling cost per manufactured part.

## Flexible mix

The press line had to provide a flexible production solution that made it possible to mix automated handling with manual operation if so desired. Three AP&T SpeedFeeder press robots were added to serve the three presses. Later, a fourth press was added to the line, which now can produce products with over 10 operations, including various installations, right from coil.

## Faster with fewer operators

"The advantages are obvious. We only need one operator for four presses and the production rate is three to four times faster than with manual handling, if you count intermediate storage," says Peter Møller. "This has a big impact on manufacturing cost and, in the end, the ability of our customers to become more competitive."

For example, today, C&K Johansen has a total of seven hydraulic presses with different levels of



*Customers decide. Flexibility is a must when customer requirements govern operations and President Peter Møller is pleased with the versatility of the new four-press line.*

clamping capacity of up to 1,000 tonnes. With the AP&T automations that have been installed in the production, this is the equivalent of approximately 19 manually-operated hydraulic presses.

## Different layout

An important challenge was to physically find room for the press line in C&K Johansen's production plant. AP&T came up with the idea of arranging the four presses in a U shape. In addition to saving room, it also provides a better overview. Most importantly, the press line is now more flexible.

"The configuration is very flexible and enables us to manufacture a part with, for example, automatic handling in presses one and two, while presses three and four are operated manually if the customer's product require such," states Peter Møller.

## Long partnership

It was not by chance that AP&T was entrusted to further develop the production environment of C&K Johansen. Positive experiences from many years of working with AP&T were the deciding factor.

"We've seen many suppliers in C&K Johansen's 100-year history. Our experience is that AP&T's solutions are the best and also generate the lowest costs in the long run. Thanks to our long-term relationship, they know our business and what we need," says Peter Møller.

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# AMADA PROVIDES LIGHT RELIEF AT DEXTRA

***December 2009: Rupert Martin, Group Chairman at leading UK lighting manufacturer, Dextra, explains how six new high functionality Amada press brakes have eased set-up times and helped the company extend its lead over the competition.***

At Dextra we have always looked to invest in the company's future by adopting the very latest technology. We are the largest privately-owned luminaire manufacturer in the UK and as a matter of principle we have no machines at our facility in Gillingham, Dorset older than seven years. We work two shifts a day plus some overtime so after seven years our machines have worked pretty hard.

The latest machines facing recent replacement were our range of Amada HFE press brakes. We have used Amada equipment at Dextra for a number of years and although the HFE models had served us well, machine tool technology moves on so fast. We knew that upgrading to the latest Amada HFP models would help reduce set-up times, principally through the use of more advanced software and a bend angle measuring system to assess fold accuracy and transmit any necessary adjustments to the Amada AMNC-PC control.

At Dextra, we wanted this investment to change the culture, so we decided that the press brakes must be programmed offline and be easy to set-up and operate. This would maximise available time on the press brake for the actual bending of parts. Too much time is spent setting up press brakes, loading programs, finding what tools are used and where they need to be positioned.

The next step is the introduction of the offline programming system. The SheetWorks and Dr Abe Bend system takes the company's 3D product designs and generate the bending program and tool layouts automatically. The

software also 'nests' tool layouts to minimise the number of machine set-ups required to produce a range of parts – again minimising machine downtime.

With a single swipe of a barcode, programs can be uploaded to any of our six new HFP press brakes. This also calls up tooling data, while the tool navigation function shows the operator where to place the tools along the 2m bed, which is great as many of our parts are fairly complex, often featuring special shapes and curves. The end result is reduced set-up times for new and repeat jobs.

This is essential as we currently have a product portfolio that extends beyond 5000 different items ranging in value from £6 up to £200. With batch sizes typically quite small at 1000-off maximum, it is vital we have short set-up times.

As the HFP is connected to our company network the program and set-up data become a company asset, therefore we're not reliant on operators filling in set-up sheets. All the data is readily available to retrieve on any of the HFP machines.

Another bonus is that the easy-to-use AMNC-PC control allows even the least experienced of operators to set-up and bend components, freeing up valuable time for more experienced employees to utilise their skills more effectively. It also provides compatibility to our existing Amada EML, EM and Acute blanking machines. All the machines now share a common database so that the latest process monitoring software can be used.

Again this is a real advantage as at Dextra we operate a Just-in-Time (JIT) delivery system for our customers. Around 80 per cent of what we manufacture during any working day is shipped out in the evening. This is one of our chief differentiating factors as our competitors often quote 6-8 weeks delivery.





JIT means we can keep our warehousing levels to a minimum and spend more on new technology, ultimately making us more competitive.

This is great news for us because although we've had a good year considering the recession, it is important we continue to lead the field. We are constantly introducing new products with wide market appeal, such as our recently launched energy-efficient luminaries, but optimised and efficient manufacture has an equally important impact on the bottom line.

Of course it goes without saying that greater speed does not mean less quality. We have many high profile customers in sectors that range from supermarkets, education establishments and government departments through to commercial and industrial facilities, as well as domestic households. Quality is paramount to our reputation.

In summary we find all Amada machines to be good commercial systems that are both reliable and fast. Our experience of using Amada is extremely positive which is why we didn't look anywhere else when deciding to replace our HFE press brakes. The order was for six machines – and despite a turnover at Dextra of £50 million – it represented a significant investment in anyone's book. However, Amada have always looked after our requirements and I firmly believe that loyalty works both ways.

For further information please contact:

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**For more information on how to get involved in competitions, get in touch with the WorldSkills UK contact centre:**

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