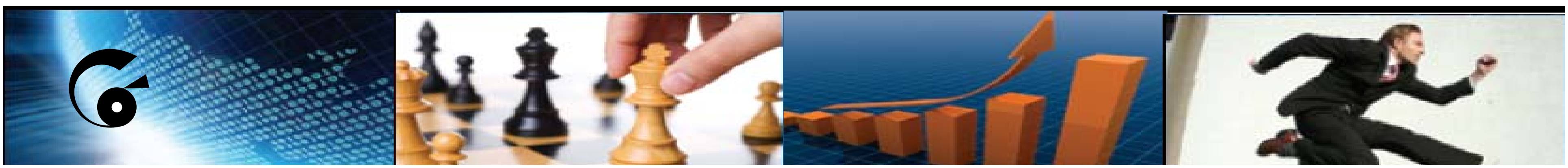
GAA 2008 Leadership Summit

September 9-11, 2008 - Parsippany, New Jersey

CREATING BUSINESS OPPORTUNITIES IN GRAVURE

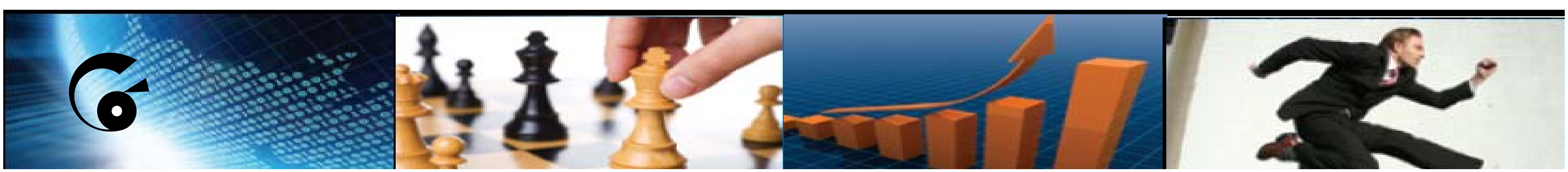
Dr Anders Bjurstedt



First, greetings from Spain!

Professor Bob Chung, the gravure professor from RIT, and I met on Monday this week during a scientific conference on media and print technologies in Valencia, Spain

In June 2007, Bob was also the faculty opponent in the public hearing of my dissertion in Stockholm



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Bob at work as the faculty opponent

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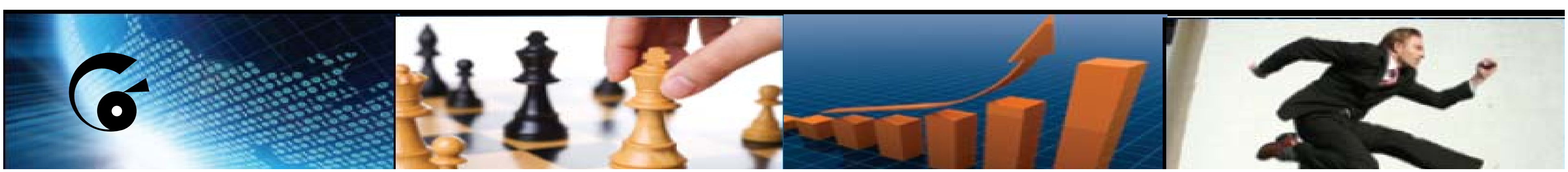
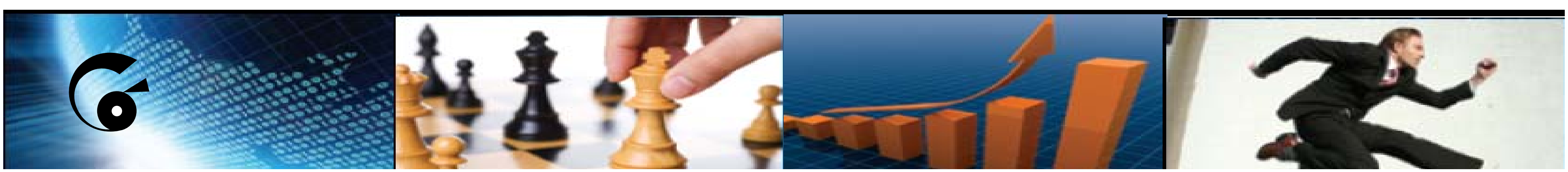
AGENDA

- ***A scientific analysis…….??***
- ***What are the problems as perceived from ”an outsider”?***
- ***Publication markets and technology***
- ***Some possible answers….. and ideas!***
- ***Q and A***



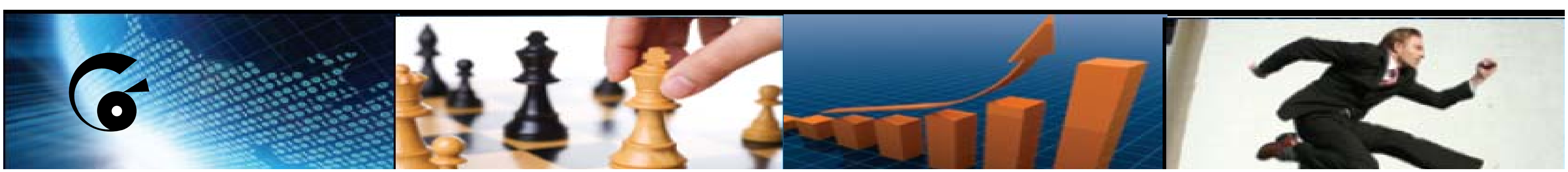
THE QUESTION OF TODAY

- ***A political correct presentation (PC) ….. or a non-political (NPC) ???***
- ***Not much of environmental issues – if you are not on top of those - you are out anyway…***
- ***How to make gravure more competitive to HSWO or do we accept the current situation as it is??***
- ***Indicating that publication printing is my main interest!***
- ***But, all gravure disciplines are suffering from the same problem….. back to that point later…***



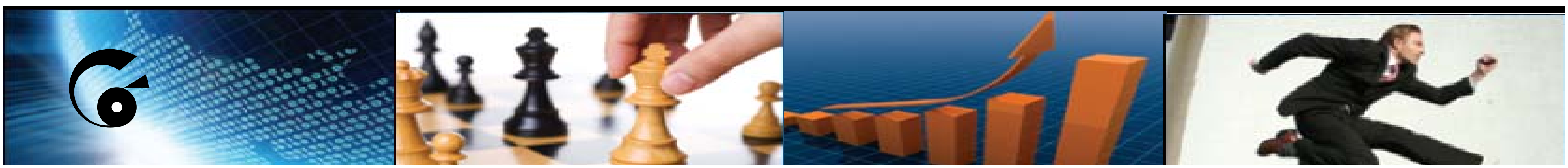
WHAT ABOUT ME?

- ***By default a publication gravure printer and still an optimist!***
- ***I have been in this business since 1967…... a few years later the first of many visits to the US gravure industry***
- ***In 1986, at GRI Conference in Key Biscayne I presented a similar theme as today ☺***



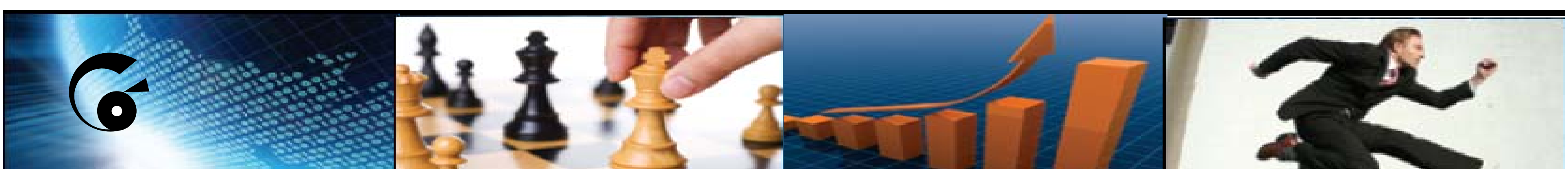
IT IS TIME TO TURN REALITY INTO SCIENCE!

Excerpt from my doctoral thesis

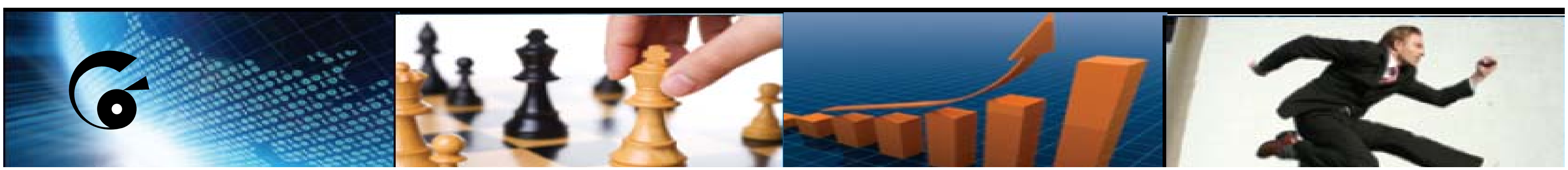


FIVE RESEARCH QUESTIONS

- ***How has the European publication market changed between 1986 and 2006***
- ***How has the balance changed?***
- ***What have been the main driving forces?***
- ***Is gravure a printing process suitable only for very large runs, for huge volumes and large markets?***
- ***How can the competitiveness of publication gravure be improved?***

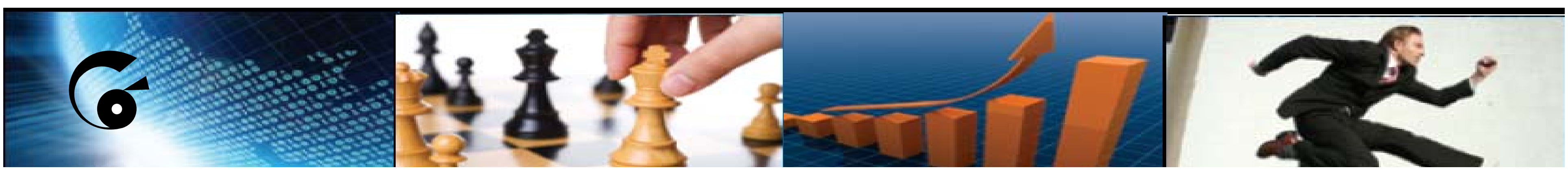


IS GRAVURE A PROCESS ONLY FOR LARGE RUNS, LARGE MARKETS AND HUGE VOLUMES?



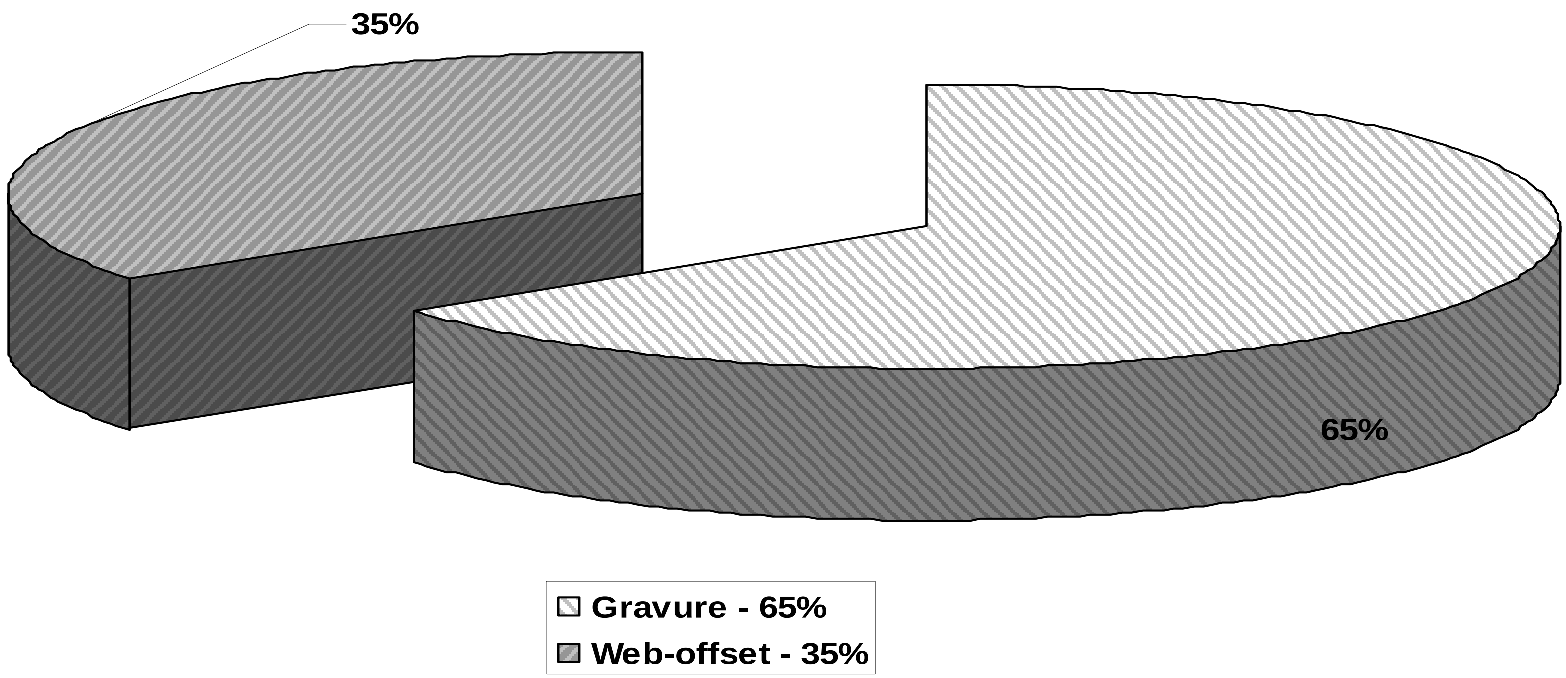
WHAT DO TEXTBOOKS AND CONFERENCES SAY?

- ***GAA Gravure Manual from 2003 does say so!!***
- ***Also Dr Kipphan's "Handbook of Printed Media"***
- ***All major European textbooks used in education confirm this perception***
- ***The Comprint Conferences - from 1987 in Vienna until Lisbon in 2002 - the same message has been communicated***
- ***This perception has indeed been self-fulfilled!***

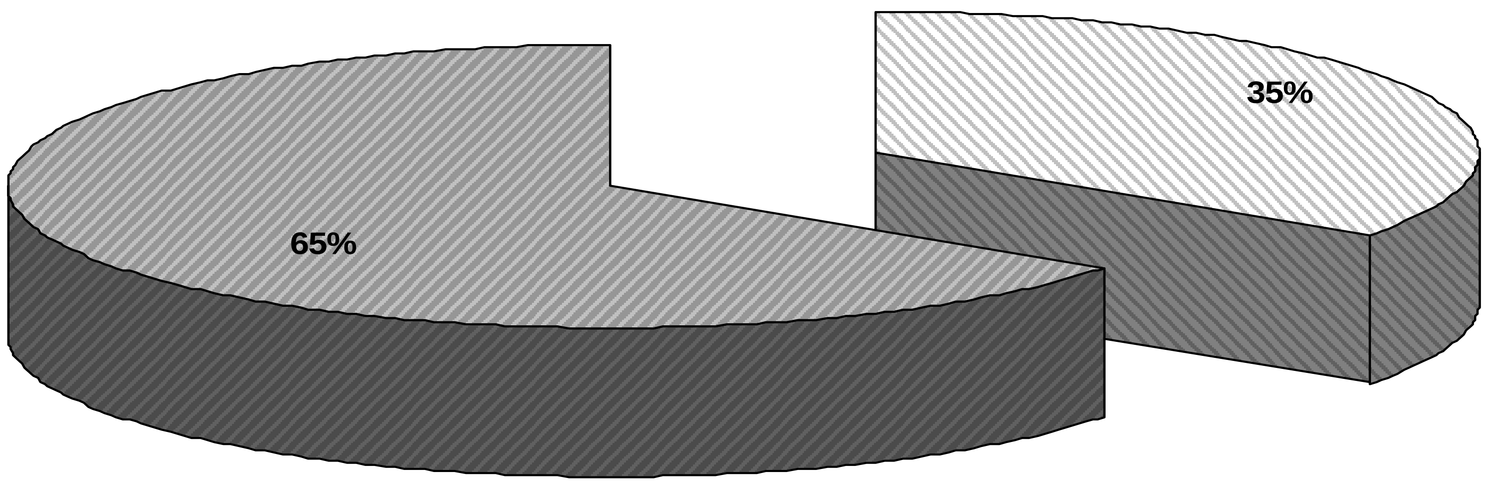


HOW HAS THE BALANCE CHANGED?

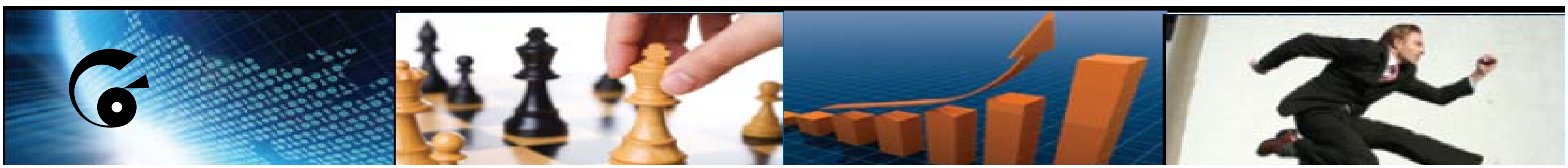
MARKET SHARES 1986
EUROPEAN PUBLICATION PRINTING
BY PAPER CONSUMPTION (TONS)



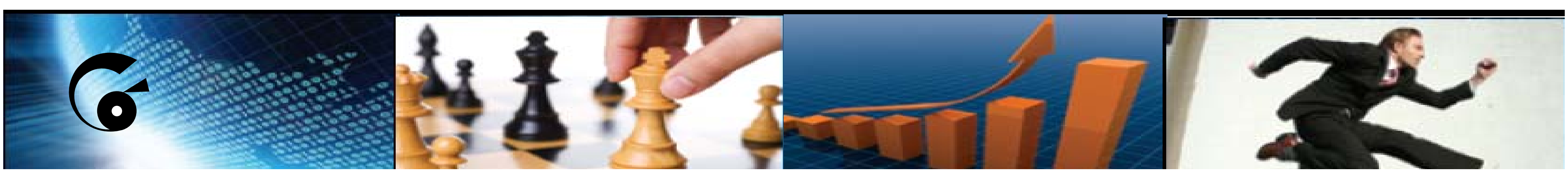
MARKET SHARES 2010 (estimated)
EUROPEAN PUBLICATION PRINTING
BY PAPER CONSUMPTION (TONS)



Gravure < 35 %
Web-offset > 65%

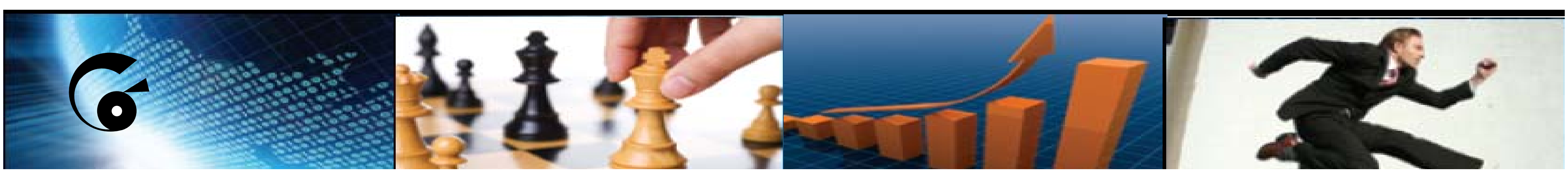


HOW CAN THE COMPETITIVENESS OF PUBLICATION GRAVURE BE IMPROVED?



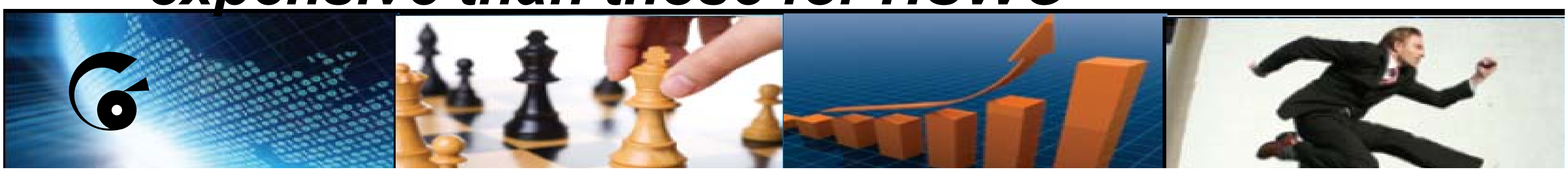
A NEW STUDY

- ***During 2006, manufacturing data from the European publication printing industry were collected again (first time since 1986)***
- ***Compatible with those of 1986***
- ***Cost estimations of printing signatures in:***
  - ***48, 64 and 96 pages in standard A4 (US letter size) format***
  - ***print run 350.000 copies etc.***



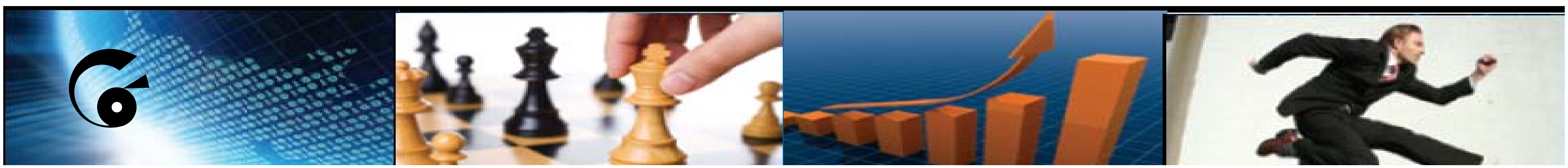
WHAT WAS THE OUTCOME?

- ***The break-even levels for 32 -64 pp have increased substantially since 1986***
- ***Some of the reasons are the following:***
  – ***The new high speed gravure presses with automated cylinder handling have not improved the situation***
  – ***Conventional cylinder processing is only slightly faster than in 1986 (direct digital engraving and no wet proofs)***
  – ***Gravure paper grades have become more expensive than those for HSWO***



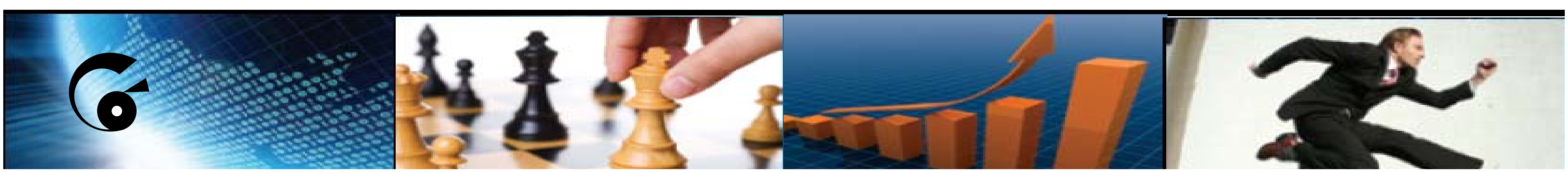
HOW CAN THE COMPETITIVENESS OF PUBLICATION GRAVURE BE IMPROVED?

ONLY BY CREATING NEW BUSINESS OPPORTUNITIES…….



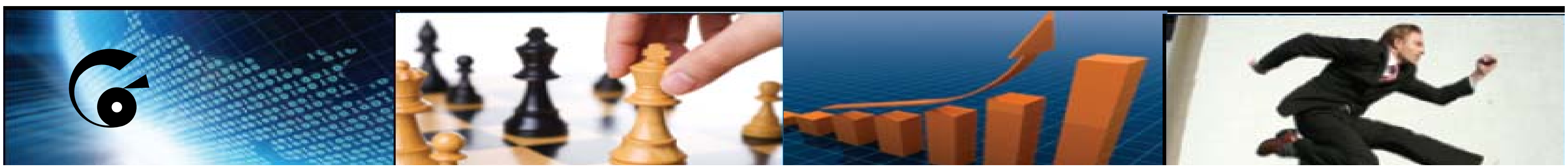
HOW DO YOU CREATE NEW BUSINESS OPPORTUNITIES?

WELL, IN THE MEDIUM TO LONG TERM BY DEVELOPING NEW TECHNOLOGIES.......



HOW DO YOU CREATE NEW BUSINESS OPPORTUNITIES?

WELL, IN THE SHORT TERM BY COMBINING WELL-KNOWN TECHNOLOGIES IN A NEW WAY.......!! BUT, FIRST SOME BACK-GROUND INFORMATION



BACK GROUND INFORMATION

Using (as of August 2008) the Google Search Engine

- ***Search word: offset – 211 million hits***
- ***Search word: web-offset – 18.7 million hits***

Rather impressive?

- ***Search word: rotogravure – 432 000 hits***
- ***Search word: Tiefdruck (in German) – 200 000 hits***
- ***Search word: Rotocalco (in Italian) – 13 600 hits***

Less impressive!

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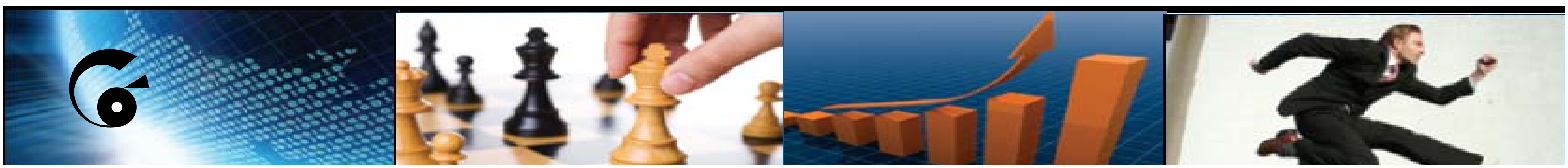
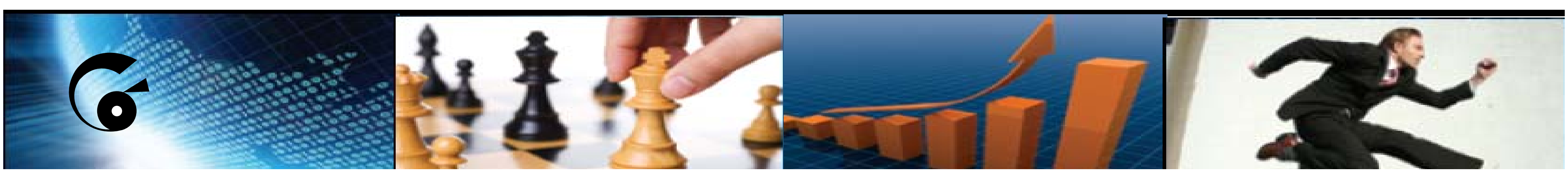
THE SITUATION IN THE PUBLICATION PRINTING MARKETS



THE EUROPEAN MARKET

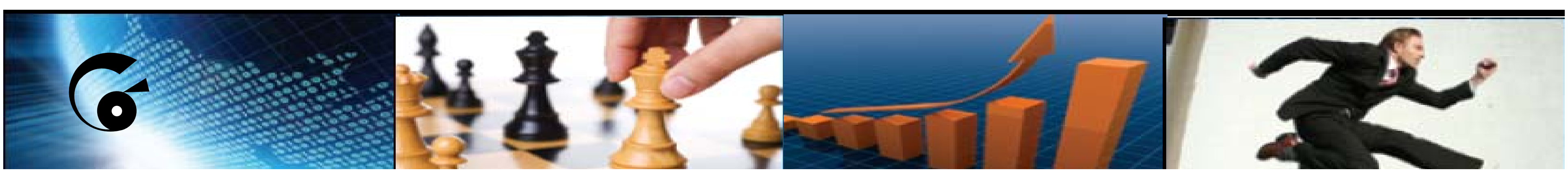
- *In 2006, estimated to US$ 55 b (~ € 37 billion) of publishing and printing activities*
- *Publication printing (incl. paper, ink and added value) – 40% or 14-15 b€ (est.)*
- *The paper consumption was about 12.5-13.0 million tons indicating a growth of almost 100% in 20 years*

Source: Cepi 2006/2008



BUSINESS OPPORTUNITIES IN PUBLICATION GRAVURE?

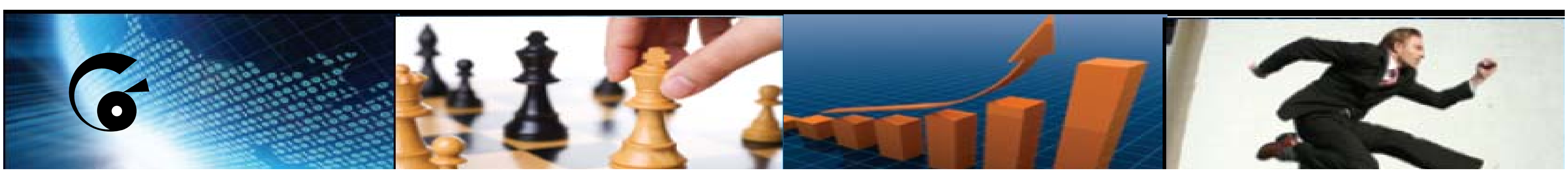
- ***Let us first have a look at the European publication markets! What available segments?***
  - ***Magazines***
  - ***Catalogues***
  - ***Inserts, flyers and other commercial products***
- ***Similarities with the US market?***



IS THERE A FUTURE FOR THE EUROPEAN PUBLICATION PRINTING INDUSTRY?

A study of the European publishing markets and the effects of important techno-economical factors 2007-2010

This paper was presented at the 2007 TAGA Conference in Pittsburgh, PA

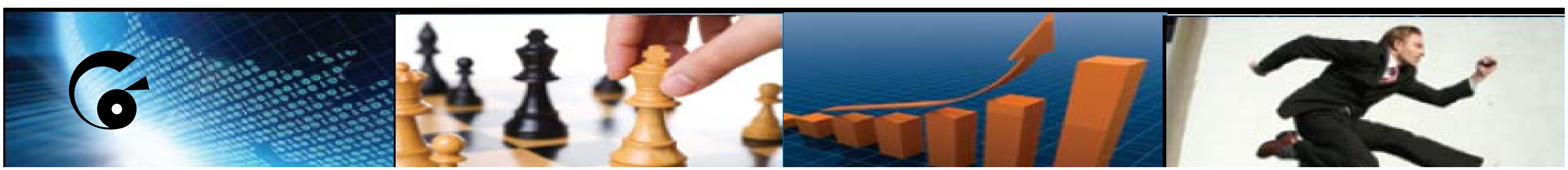


IS THERE A FUTURE FOR THE EUROPEAN PUBLICATION PRINTING INDUSTRY?

Magazine publishers said:

- ***We have a digital agenda***
- ***Our brands are important - business around the brands are growing***
- ***Large titles are declining, but the number of smaller, niche titles is growing rapidly – fragmentation of the market***

Source: 2007 TAGA Conference – Anders Bjurstedt

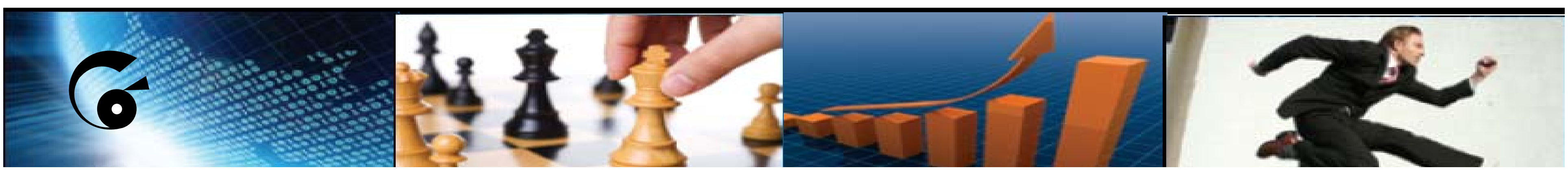


IS THERE A FUTURE FOR THE EUROPEAN PUBLICATION PRINTING INDUSTRY?

Catalogue producers said:

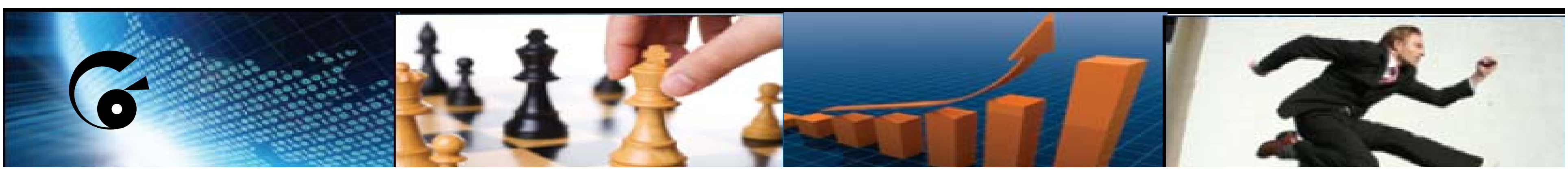
- ***E-commerce is now an integral part of the business***
- ***No longer one thick catalogue, but many more targeted***
- ***Cost of distribution is an area of great concern, particularly postal rate***

Source: 2007 TAGA Conference – Anders Bjurstedt

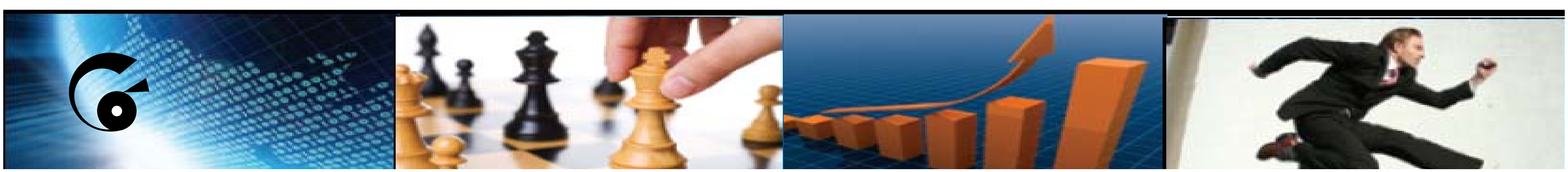


BOTH TARGET GROUPS STATED:

- ***Environmental issues (sustainability) are very important for all concerned - print buyers, publishers and catalogue producers***
- ***Price is the main reason for choosing the printing method and/or printer (supplier)***
- ***Print quality is seen as a commodity….and a must!***

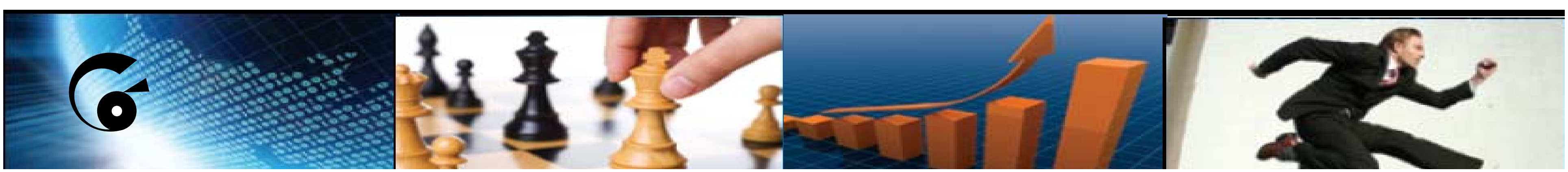


HOW ABOUT TODAY?



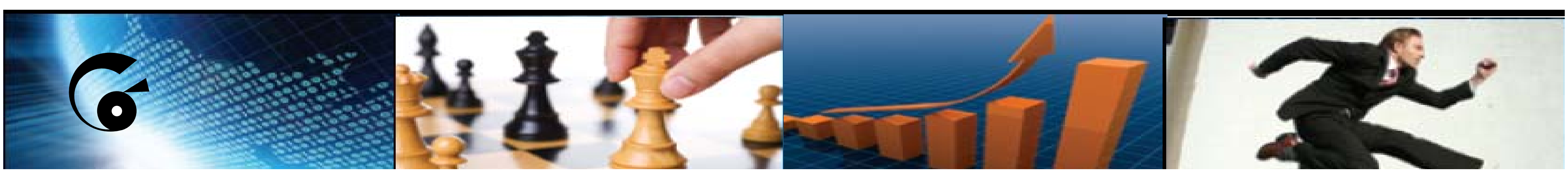
THE EUROPEAN PUBLICATION PRINTING MARKETS 2008

- ***Since 2006 the market capacity has been reduced by one million ton (closure of mills etc.)***
- ***In 2008, gravure printers suggest that there is an overcapacity in publication printing***
- ***Yes, in the longer run market segments........***
- ***A buyer's market! Indeed it is!***



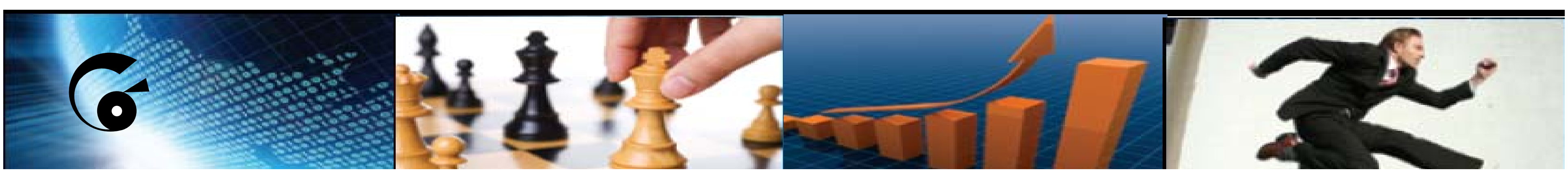
THE PERCEIVED SITUATION

- ***Lack of confidence in the German publication gravure industry, but also elsewhere in Europe!***
- ***In the last 2-3 years, very little capital investments in comparison to the commercial web-offset industry***
- ***Despite efforts – no significant commercial break-through in new cylinder processing technologies***



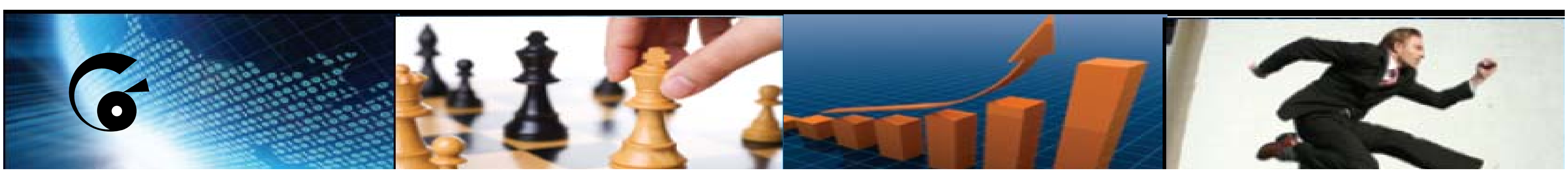
THE PERCEIVED SITUATION ctd

- ***In 1986 – gravure technology was the shining star at Drupa…..***
- ***Three months ago Drupa 2008 closed its doors – publication gravure was hardly visible (even less than in the previous show in 2004)***
- ***The tradional gravure markets are shrinking! Or do we have to redefine the markets?***



EUROPEAN LEGEND

- ***Lack of confidence – in particular in publication gravure!***
  - ***Low esteem in the former stronghold of publication gravure – Germany***
  - ***Trade magazine articles tell about ”Gravure at the end of its life cycle”***
  - ***Reduction of print capacity of 10-15% in the German market (Germany is ~ 40% of the European market)***
  - ***Erosion of print margins (strong pressure on prices)***

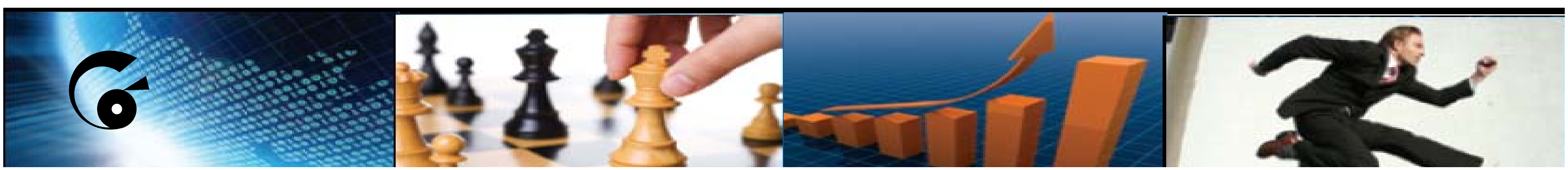


ONE QUOTE FROM GERMANY

"Gravure at a turning point?"

"In commercial printing, the price competition is tough to an extent that in some cases print quality is suffering. Evil tongues suggest that the gravure quality is becoming inferior to that of web-offset."

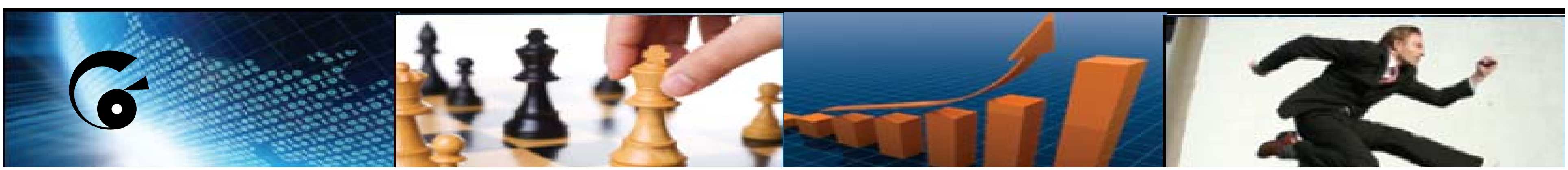
Source: Print & Media (Druck&Medien), November 2007



ANOTHER QUOTE

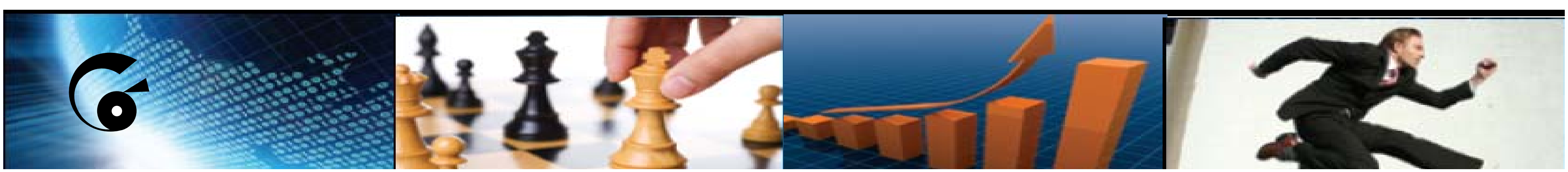
”…. Mr Bernd Rose, CEO, Schlott AG, says at the AM ………… the print products are changing quickly: ,, Smaller specialized catalogues are the new trend; huge, general mail-order catalogoue producers are becoming more specialised, the magazine market is fragmented: more titles but with smaller runs..”

Source: The German Printer (Deutscher Drucker) – No 06 - 14.02.2008



MARKETS ARE CHANGING!

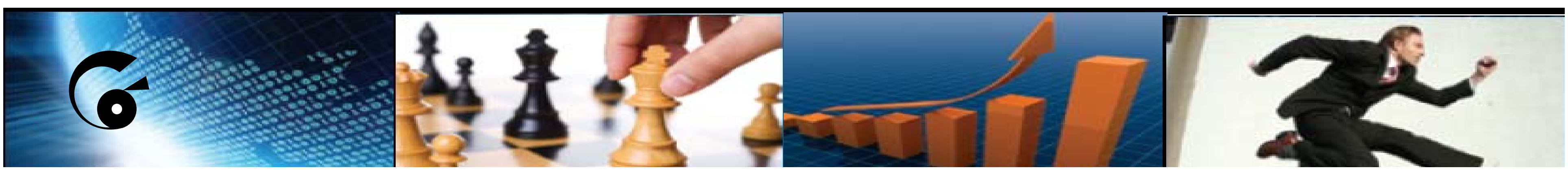
- ***In 1986, an ERA Working Group suggested that the publication printing markets, in particular the magazine markets, were about to change***
- ***Shorter editorial lead-times was given priority***
- ***Advertisers wanted a European colour standard (and ERA to lead the work!) and indeed shorter lead-times for ads***



MARKETS ARE CHANGING!

- ***Decreasing circulations and/or segmentation of magazine titles would ultimately lead to:***
- ***Shorter runs with signatures with pagination (16-64 pp) were about to become the new trend***
- ***In November 1986, this report was presented to the US market at a Gravure Research Institute meeting in Key Biscayne***

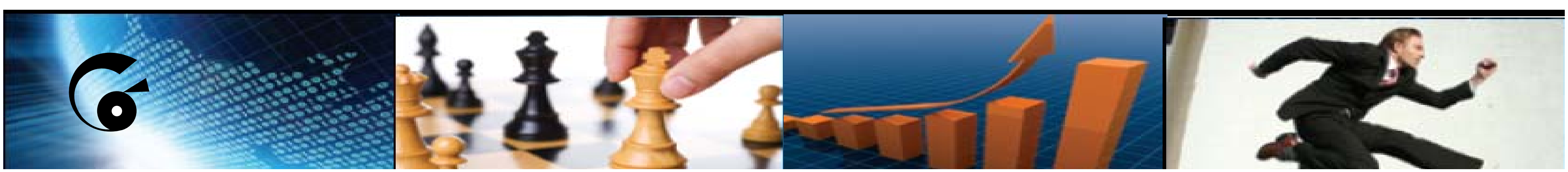
Was this forecast wrong or only badly timed?



MARKET CHANGES!

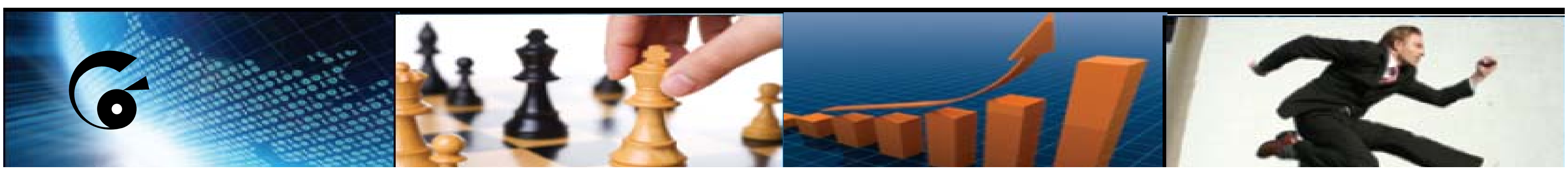
- ***Twenty years later, in 2008, these predictions are very visible***
- ***Advertising volumes are declining***
- ***Catalogues are becoming more fragmented***
- ***How about other segments in Europe?***
- ***It is more or less the same pattern!***

It seems that only the timing was wrong……



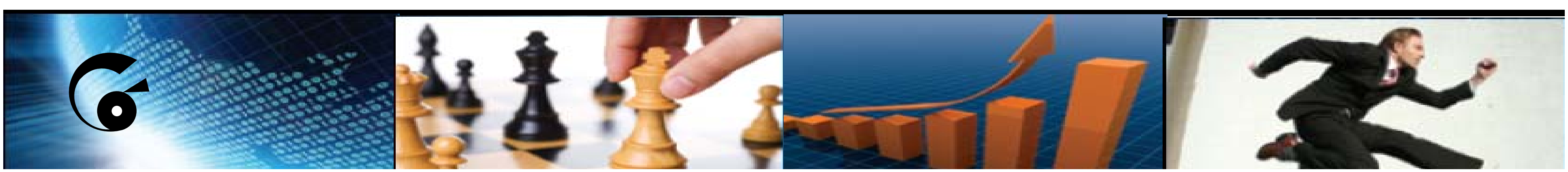
MARKET CHANGES ctd!

- ***Since 1986, the volume of publication printing has more than doubled in Europe, but***
- ***HSWO has taken the front lead, with a 100% increase in volume and on top of this:***
- ***Gravure is loosing its previous dominating position also in Germany***
- ***The volume of long runs have declined leading to strong pressure on prices (and margins) for the larger gravure printers***



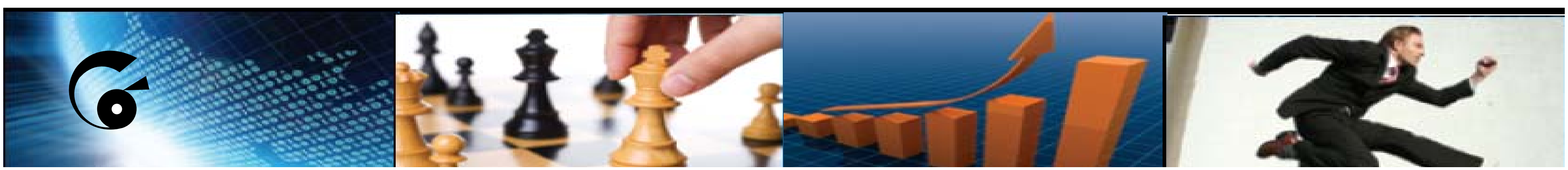
QUESTIONS ABOUT GRAVURE!!

- ***Asking those owners/printers who have left or are about to leave the business***
- ***Why leaving?***
- ***Four main reasons!..........................***



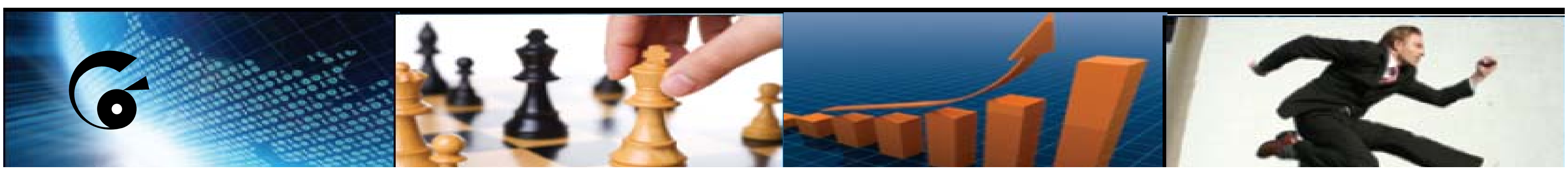
QUESTIONS ABOUT GRAVURE!!

- ***Print markets are becoming more fragmented!***
- ***Reinvestments are too expensive (no alternatives for the small or medium sized print markets)***
- ***Cylinder processing not cost-competitive enough! (Issues also about chrome-plating! - EU commission activities)***
- ***Uncertainty about the toluene issue (again EU commission activities)***



QUESTIONS ABOUT GRAVURE!! ctd

- ***Finally, a former publisher/printer may add – printing is no longer our core business!***
- ***Publishing is the main core business!!***
- ***And, gravure technology is not seen as the state of art!***
- ***HSWO is the state of art!!***



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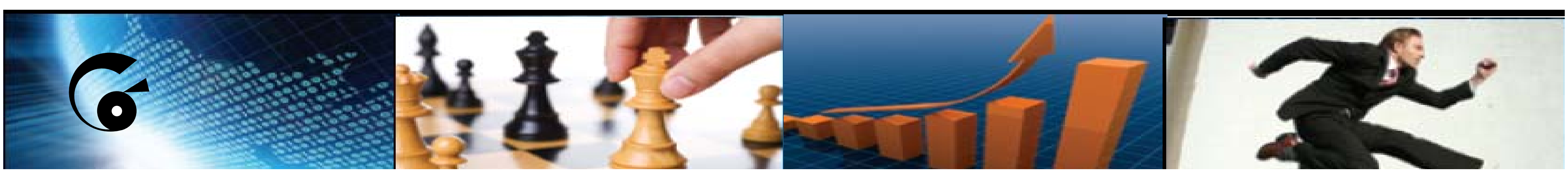
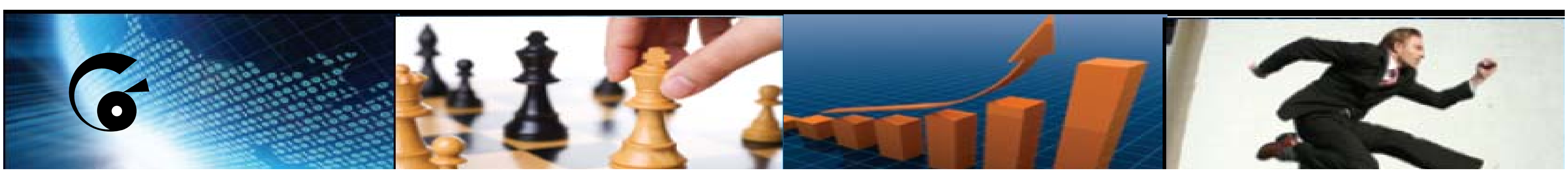
NEW BUSINESS OPPORTUNITIES IN THE SHORT TO MEDIUM RUNS?



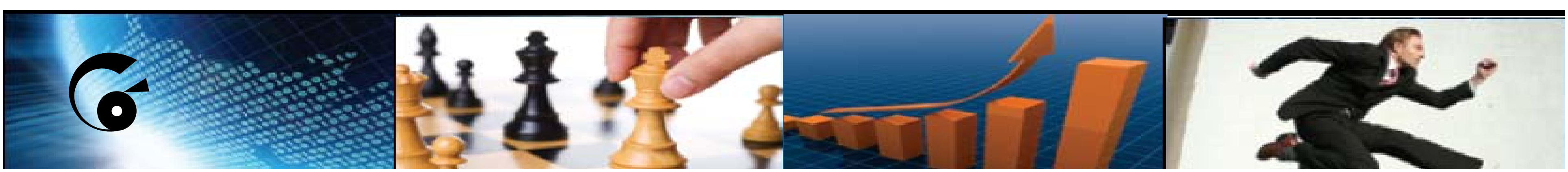
BUSINESS OPPORTUNITIES?

- ***Yes, I believe so.....***
- ***There are many more actors in these segments producing a multitude of titles***
- ***Creating new titles is rather easy***
- ***There are other problems for those publishers - advertising (financing) and distribution (high costs)......***
- ***How about the competition?***



REGAIN BUSINESS MOMENTUM IN THESE SEGMENTS?

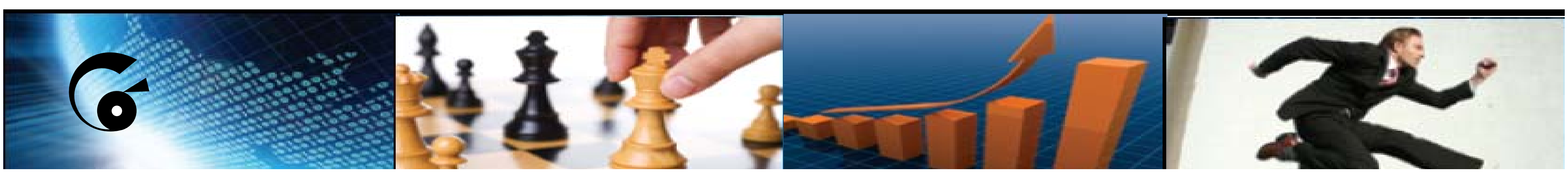
- ***Do we as gravure printers really want to be active in those segments of the market?***
- ***What can we offer to those customers?***
- ***Superior print quality - a third dimension…***
- ***Flexibility in product formats and paper grades***



WHAT IS A SHORT RUN?

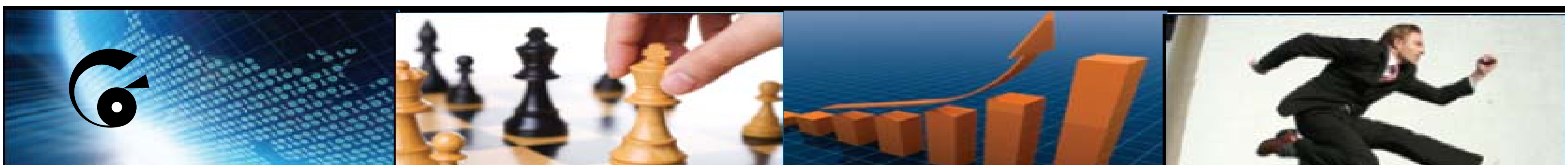
- ***How to define a short run? What is a long run in Scandinavia is probably a short one in the US***
- ***It is very market dependent................................***

but also depending on the pagination (pages in the signature) and hence the annual volumes (in tons) to process



SOME OTHER CONSEQUENCES ?

- *Since 1986, gravure has become much less competitive on shorter and medium runs*
- *Similarly, the Minimum Average Print Run (MAPR) has also increased since 1986*
- *The MAPR is a new scientific rule.....very obvious and important, but up to now unknown! The definition.....??*

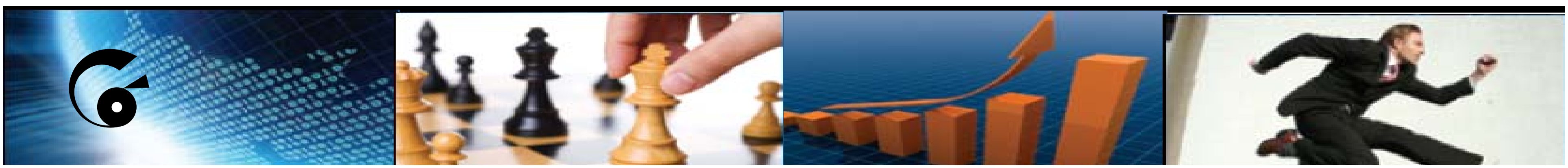


What is the Minimum Average Print Run (MAPR)?

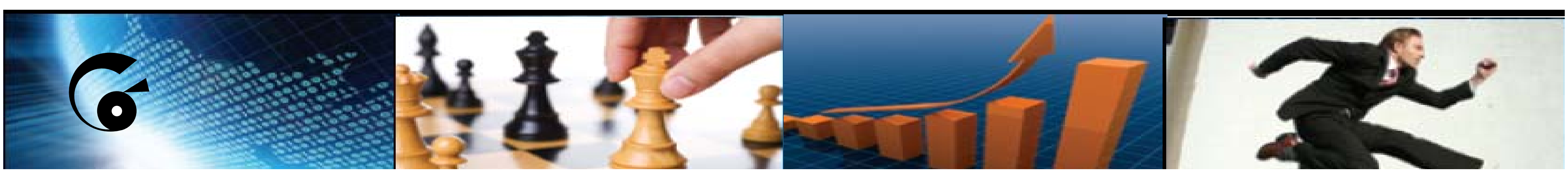
The lowest print run which

- in average -

technically/economically can be produced without having idle press room units



The minimum average print run, possible to achieve in any printing technique, is dependent on the internal lead-time to process eight printing formes - plates or cylinders!

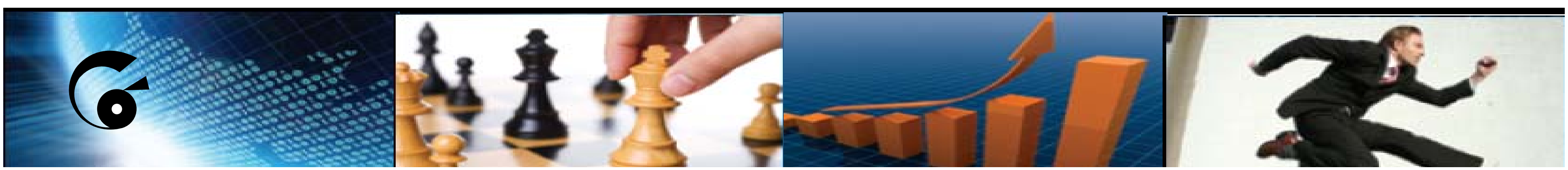


Lead-times (data processing not incl.)	*Eight plates or cylinders*
Computer To Plate (semi-automatic plate loading)	*< 1 hr (1 line)* *< 0.5 hr (2 lines)*
Old mechanical engraving (4 kHz) incl. chrome-plating - manual calibration	*12-14 hrs (1 line)* *6-7 hrs (2 lines)* *5-6 hrs (3 lines)*
New mechanical engravers with 7.5 kHz incl. chrome-plating (fully automated) – updated June 2008	*10.0-11.0 hrs (1 line)* *5.0-5.5 hrs (2 lines)* *4.5-5.0 hrs (3 lines)*
Direct laser incl. chrome-plating (fully automated)	*6-7 hrs (1 line)* *3.5-4.0 hrs (2 lines)* *3.0-3.5 hrs (3 lines)*

COMPARING LEADTIMES 32 PAGE PLATE/CYL. (2.5 m^2 or 250 sq.f.)

1 A4 page = US lettersize

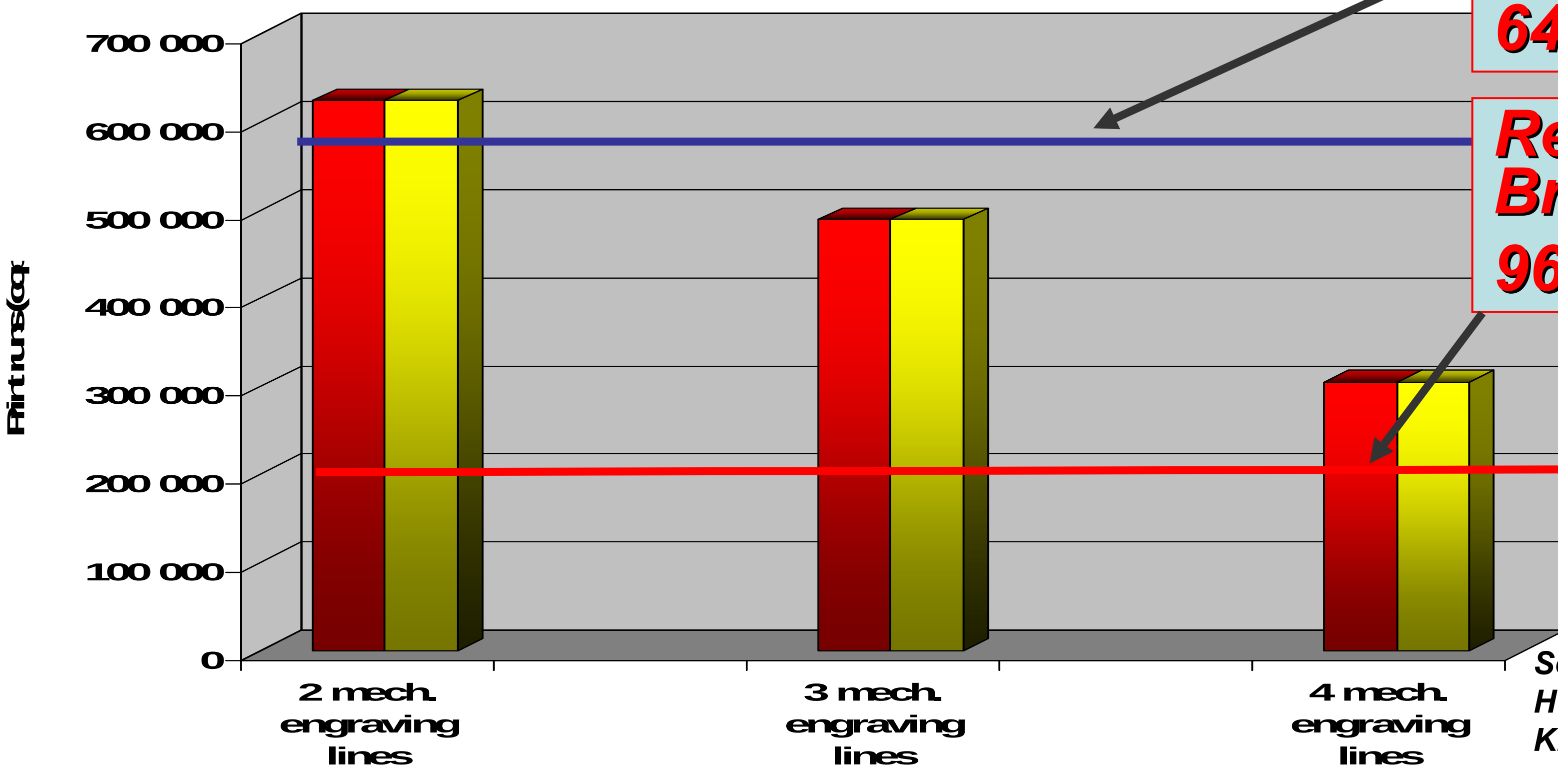
Sources: HGS; MDC; Kodak, Agfa, DNS (2007-2008)



MAPR - 12 RIBBON GRAVURE - ACHIEVABLE IN 2006

Blue line Break-even 64 pages

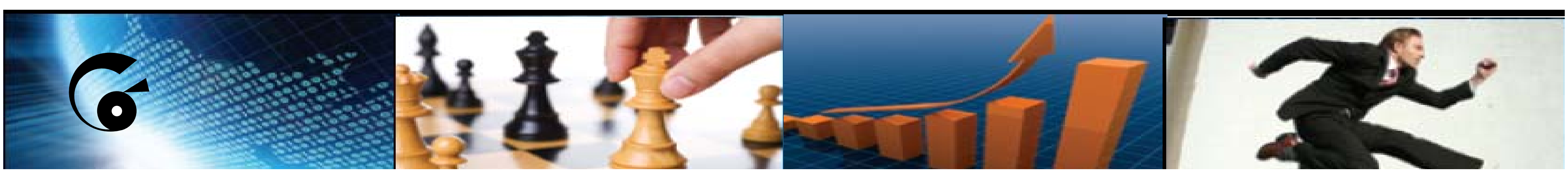
Red line Break-even 96 pages



Sources: HGS/MDC KBA/Cerutti

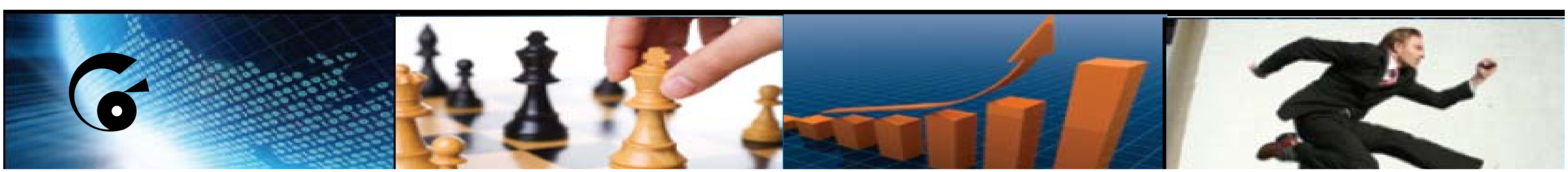
A NEW APPROACH!

- ***Previous diagram is drawn from formulas with a rather high sensitivity***
- ***To be considered as indicative rather than absolute***
- ***Gravure has very high fixed costs incl. cylinder processing***
- ***These facts have a great impact on both the break-even levels and on the MAPR (minimum average print runs) achievable***



A NEW APPROACH!

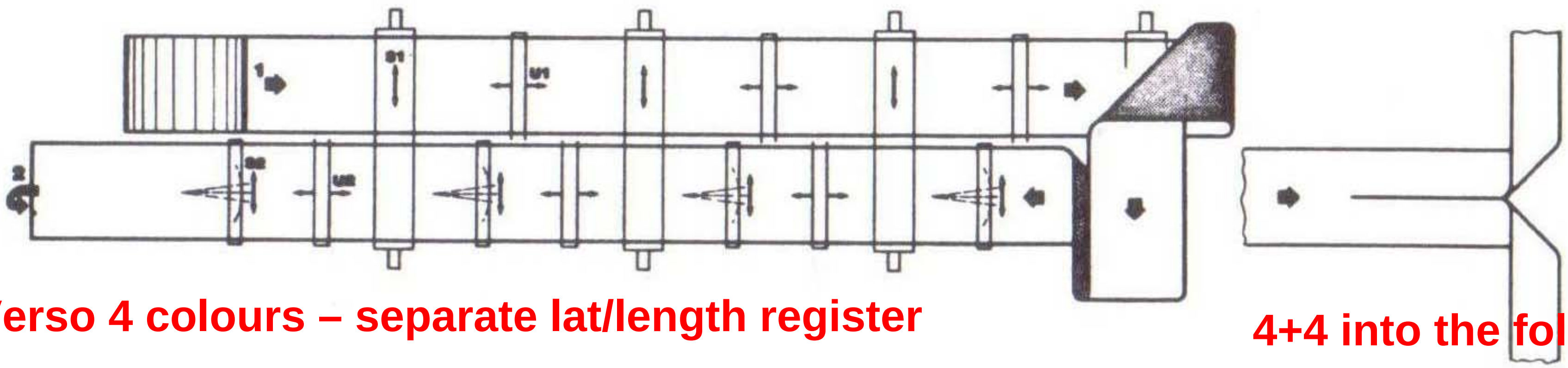
- ***Investments in gravure are non-linear (the difference in a line of 2.5m to a 1.8m might only be 10-15%)***
- ***In 1986 ERA Working Group, the Pony concept was seriously considered***
- ***There are a few installations in Europe and the US***
- ***This concept (now called a Double Ender or DE for short) seems to be forgotten***



DE – web path schematics

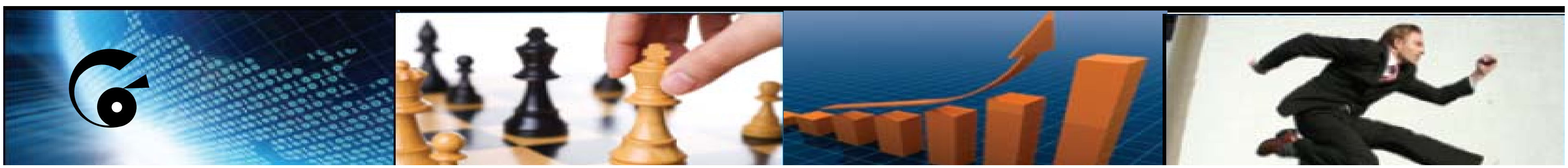
Unwinder – recto 4 colours

Turning the web



Verso 4 colours – separate lat/length register

4+4 into the folder



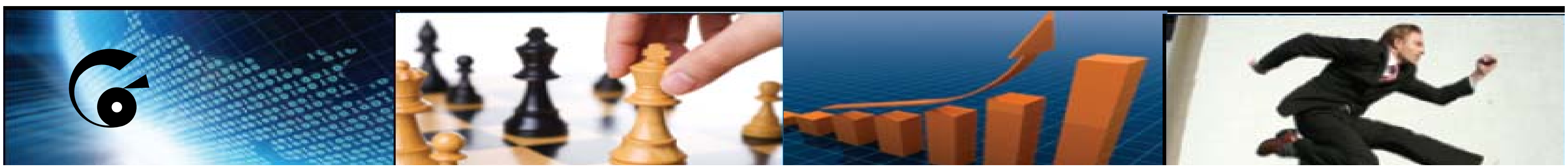
DE PRESS - BREAK-EVEN

A4 (lettersize) page format

no wet gravure proof; same paper grade

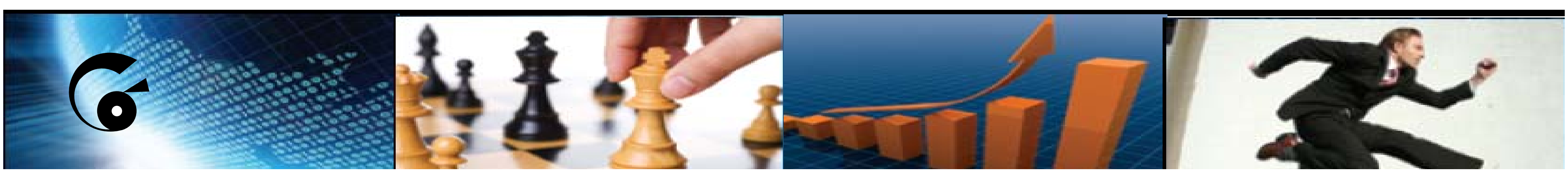
Signatures	HSWO	Break-even (copies)
32 pages	32 p web-offset	100 000
48 pages	48 p web-offset	115 000
64 pages	64 p web-offset	0 [1]
96 pages	64 p web-offset	30 000

[1] Paradoxically - DE is more expensive above 300 000 copies



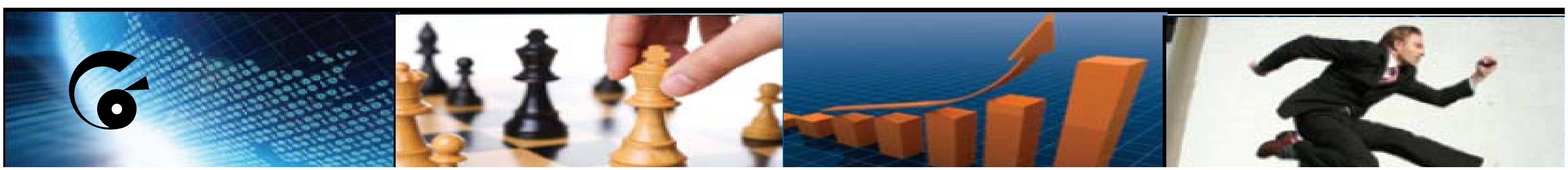
GOOD ENOUGH?
NO – OF COURSE NOT!

- ***What do you want as a publication printer?***
- ***Produce a printed product with a quality which appeals to the customer!***



GOOD ENOUGH?
NO – OF COURSE NOT!

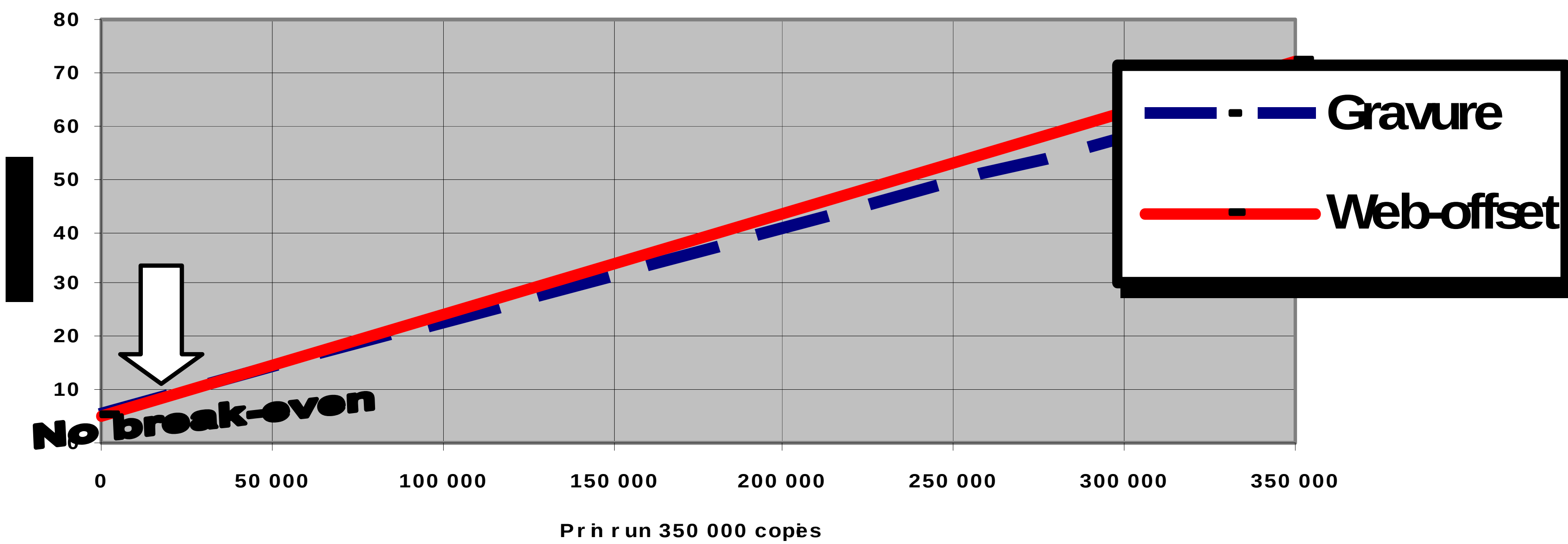
- ***You may use SC grades in gravure and produce at least the same (with continuous tone or photographic image quality) print quality as commercial heat-set web-offset using LWC grades (Investigation from 2006)***
- ***Watch one of the new diagrams computed from the data made available from the 2006 investigation (i.e. a 64 page signature)***

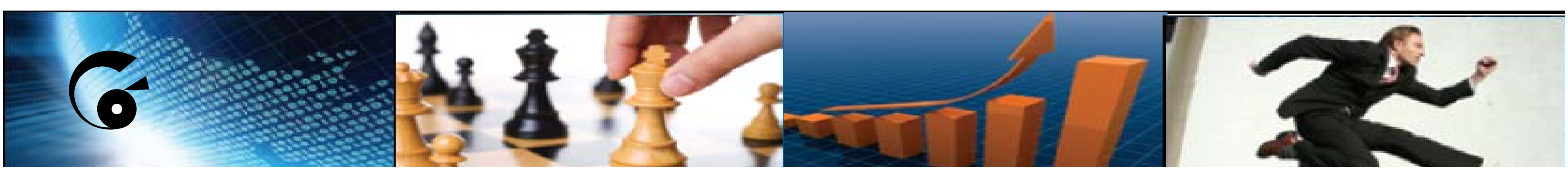


GAA 2008 Leadership Summit

September 9-11, 2008 - Parsippany, New Jersey

64 pages A4 - 2006 - no wet proof
Break-even DE vs. 64 page web-offset
Gravure SC vs. Web-offset LWC

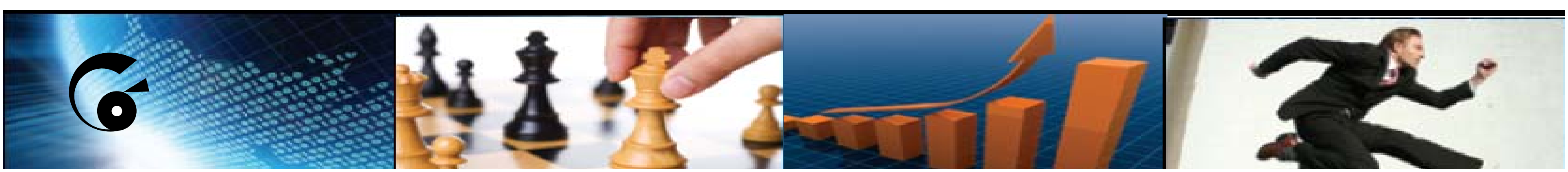




BAT – Best Available Technology - FOR SHORT RUNS IN GRAVURE

- ***The Double Ender Concept using only 4 printing units***
- ***Completely redesigned - compared to existing DE presses***

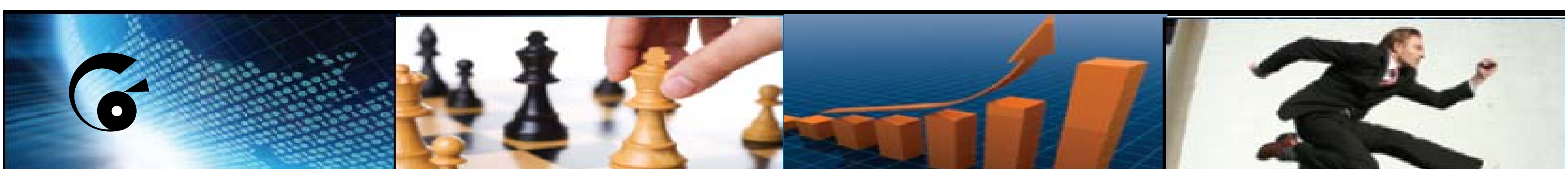
NB. I have no commercial connections (except collecting technical informations) with Cerutti, Hell Gravure Systems or MDC Dätwyler AG!



BAT – Best Available Technology - FOR SHORT RUNS IN GRAVURE

- ***Using the shortest turn-around cycles possible in cylinder engraving, i.e. a dual Direct Laser System***

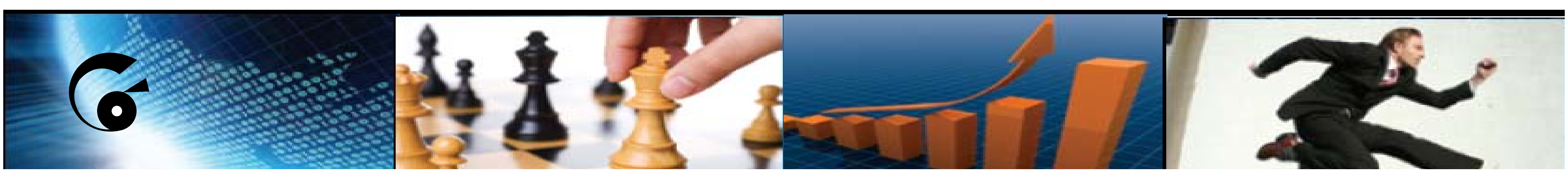
My ideas are strictly scientifically (= mathematics and statistics and no politics) based. There are simulations models developed by myself, proven and accepted in my dissertation!



THE MODERN DE CONCEPT!

- ***Most importantly:***

- ***The same performance (net speed, waste, print quality etc.) as a standard press***
- ***Only four units – fully automated***
- ***Has less footprint than a 64 p HSWO press***
- ***Lower energy costs and emission levels compared with older gravure presses and even new HSWO presses***



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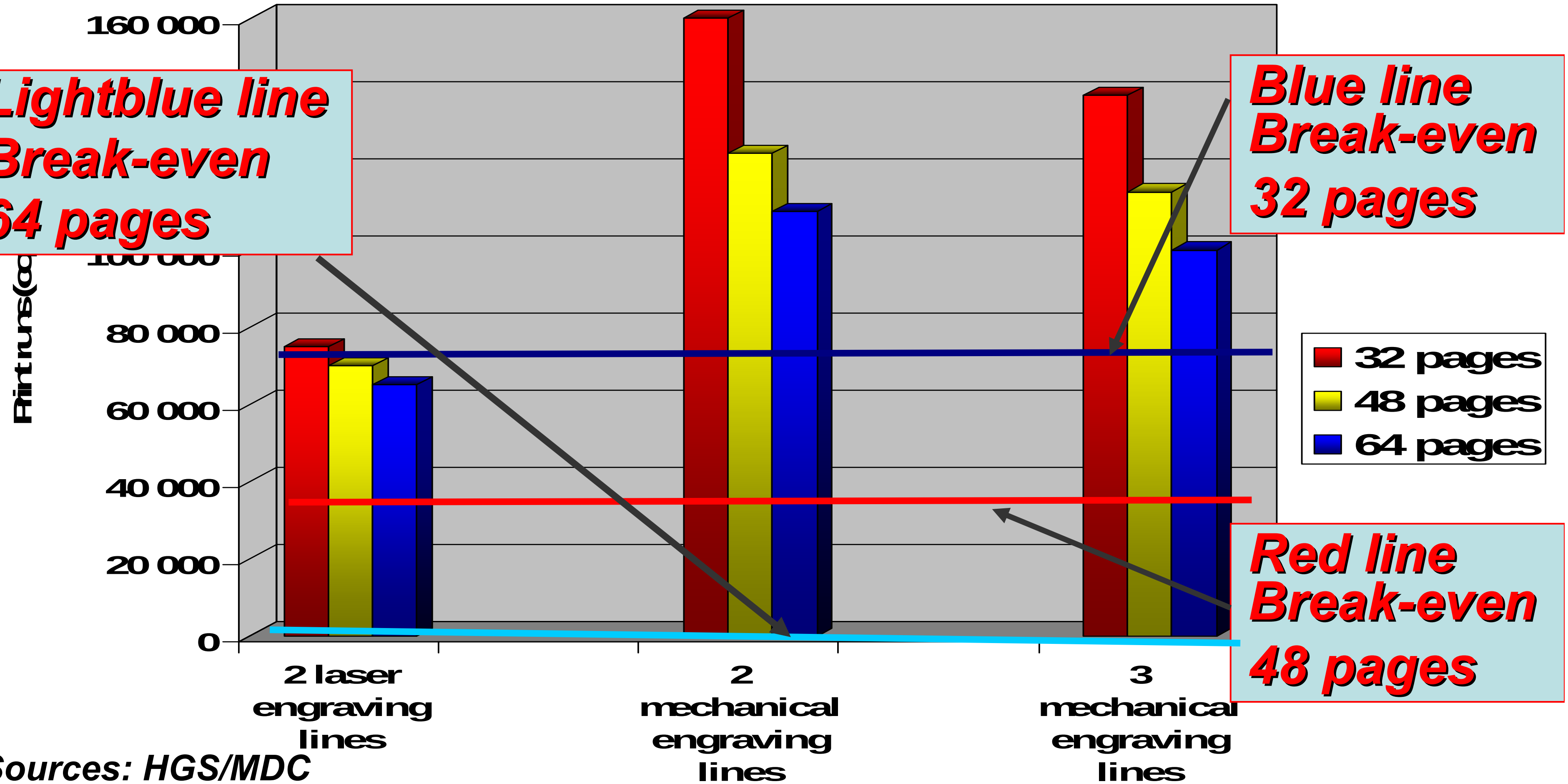
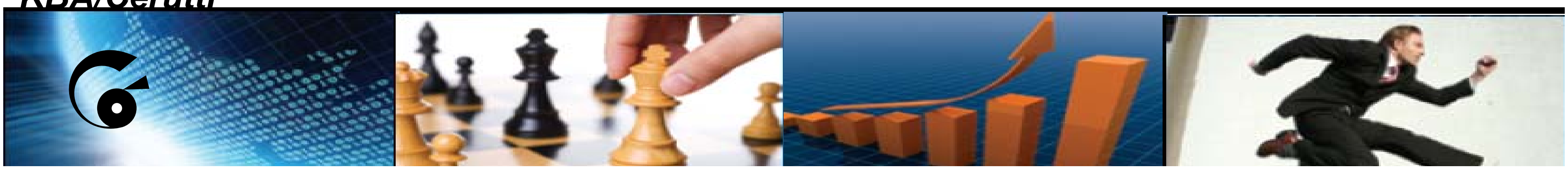


Sources: HGS/MDC KBA/Cerutti



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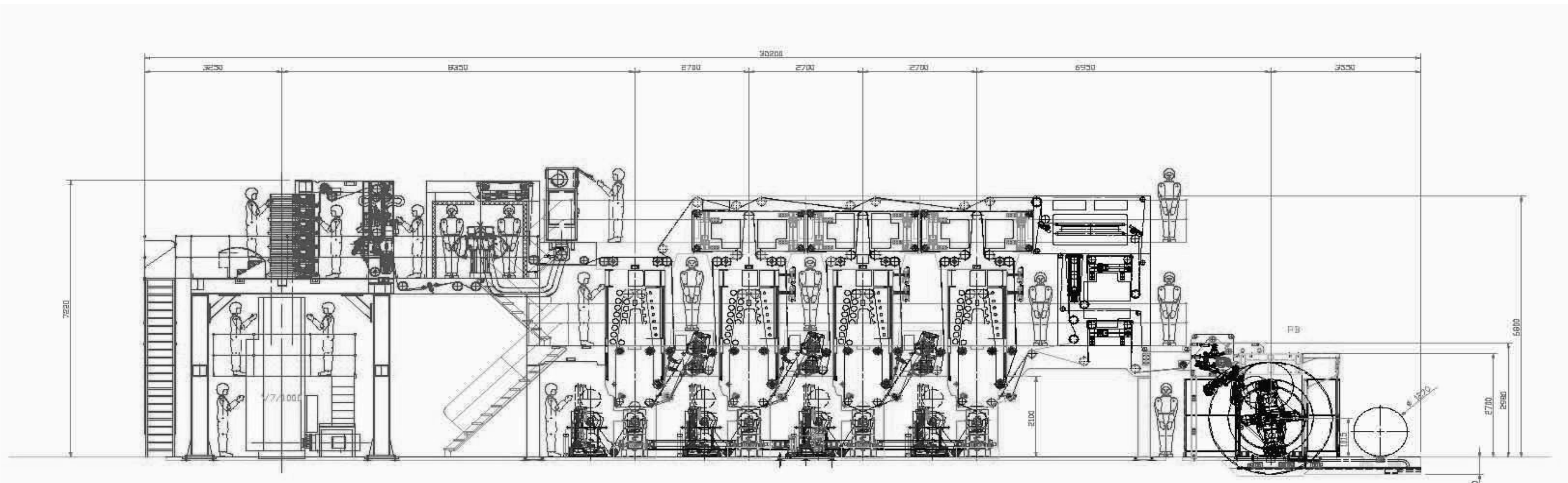
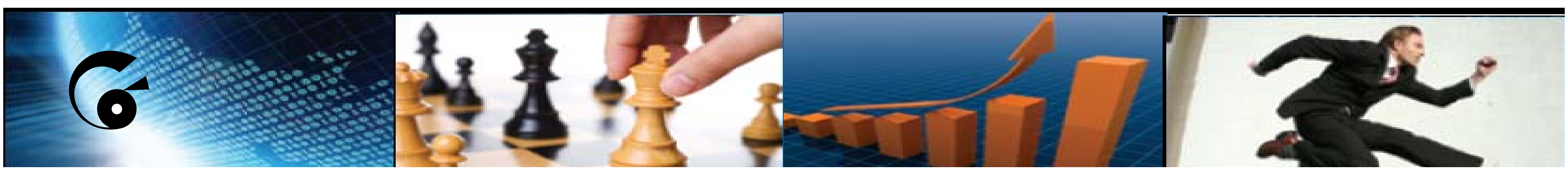
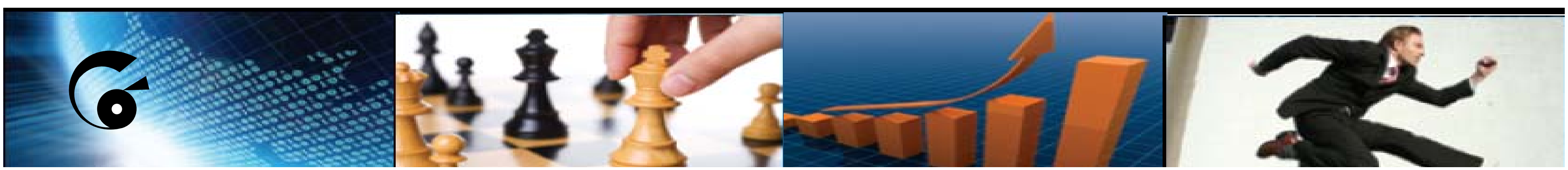
THE MODERN DE-PRESS



A Double Ender (DE) publication gravure press from OMG Cerutti equipped with a KBA 7:7 variable folder - November 2007

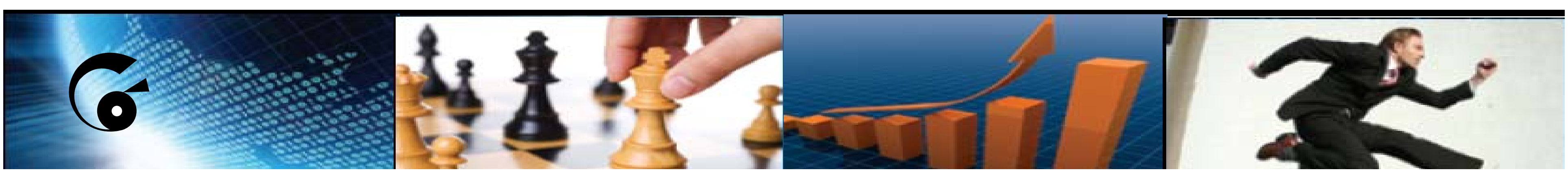


MARKET CHANGES – HOW HAS GRAVURE RESPONDED!



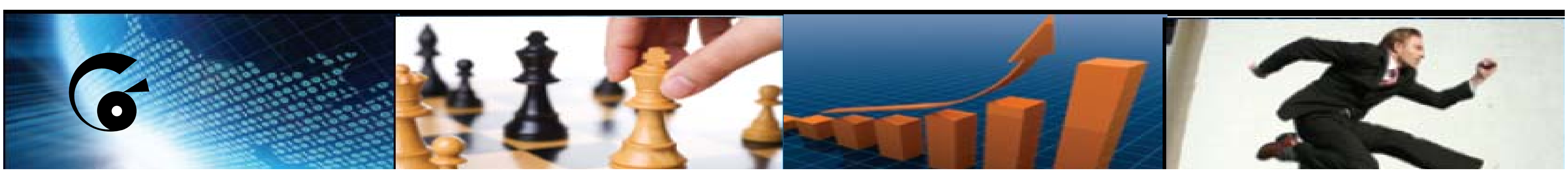
HOW HAVE WE GOT INTO THIS SITUATION – AND CAN WE GET OUT??

- ***Little interest in new technical developments and/or new products among suppliers and sub suppliers***
- ***Suppliers, who may, is abandoning ship.......***
- ***You may remember some of those........***
- ***This makes a bad situation even worse..........***



MARKET CHANGES!

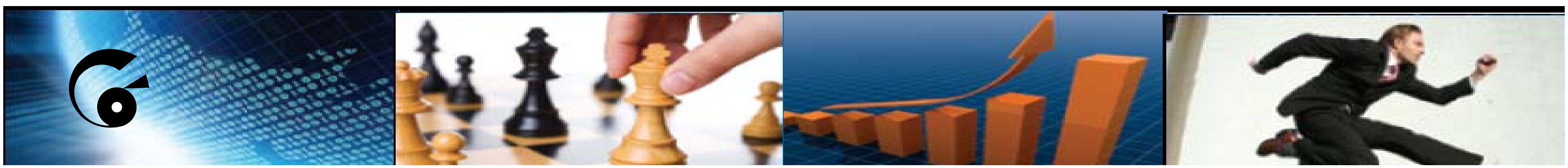
- ***Germany ; ~ 95% of all magazine titles have a circulation of less than 1 million copies***
- ***The few larger runs are TV and Cable-TV magazines***
- ***How about other markets in Europe?***
- ***It is more or less the same pattern!***



WHAT NEEDS TO BE DONE?

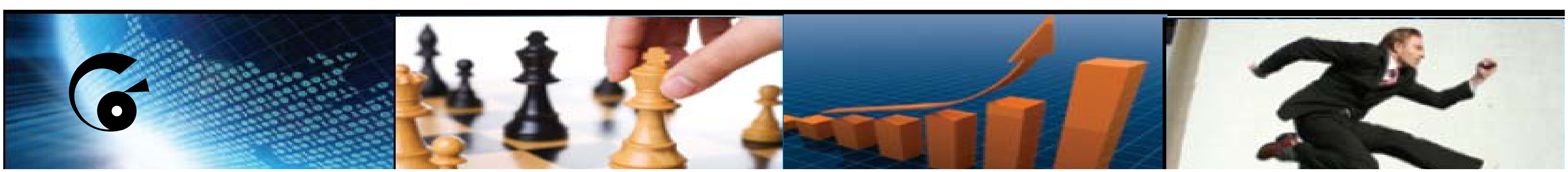
- ***Engraving speed has to both faster and resolution independent (as in CTP)***
- ***Post-engraving processes have to be minimized or eliminated……….***
- ***Ideally no chrome-plating….!***
- ***And that‘s it - no further operations…….***

Why do we process gravure cylinders to last for 10th of millions of revolutions when 95% of the runs are less than 1 million?



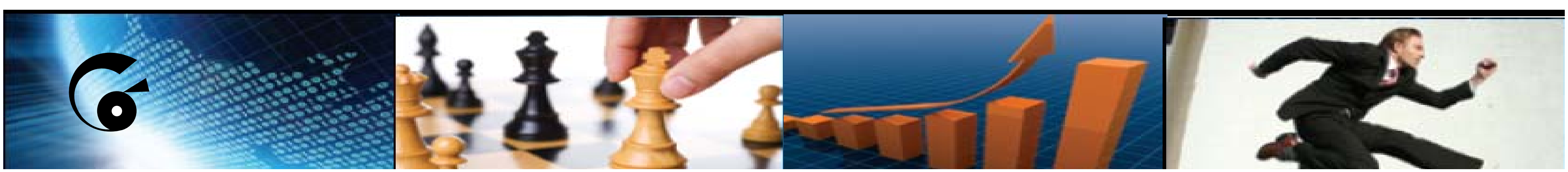
PROCESS RELATED CONSTRAINTS

- *The Minimum Average Print Run in publication gravure has to become independent of the cylinder processing time (like in HSWO)*
- *Ultimate lead-time for 4 cylinders ≈ Time for Make Ready in the press room!!*
- *Corresponds to about 20 minutes per cylinder!*
- *A set of four cylinders in less than 40 minutes (dual lines)!*



WHAT EFFECTS?

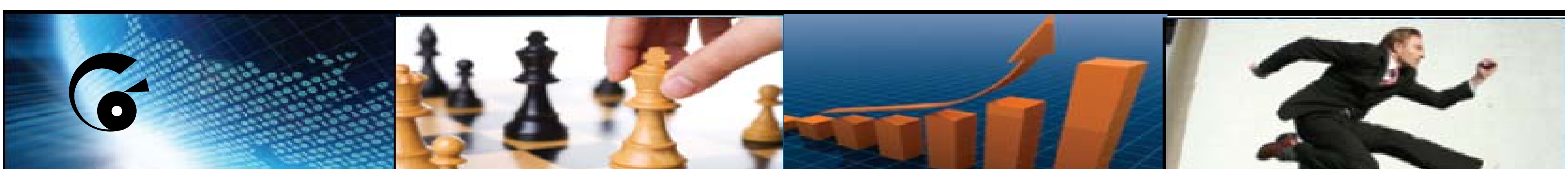
- ***Reduction of the operations needed..............***
- ***Less complicated.............easy to comprehend***
- ***Reduced investments and footprint (area needed)***
- ***Slashing lead-times and processing costs – by 30% or more!! A quantum leap!!!***
- ***Benefits all gravure operations – packaging and speciality gravure as well!***



ANALYSIS OF POTENTIAL SAVINGS?

Publisher's considerations

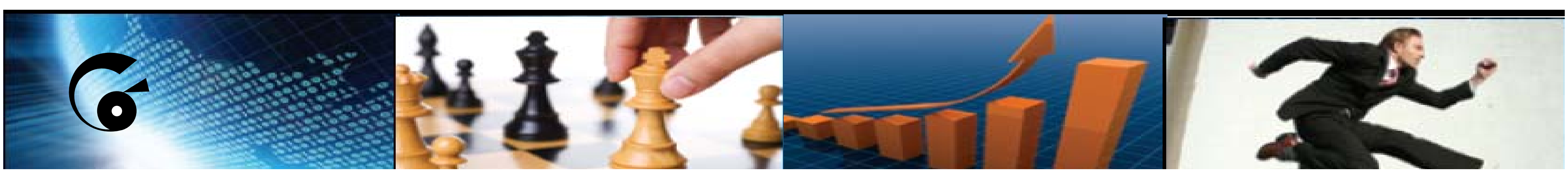
- ***A "greener" concept than HSWO – less demanding on paper grades; less energy; lower emissions***
- ***Short time to market – 3-4 hours after the receipt of digital files***
- ***New format may be introduced (editorial considerations in saving paper) - flexibility in formats and paper grades***



ANALYSIS OF POTENTIAL SAVINGS?ctd

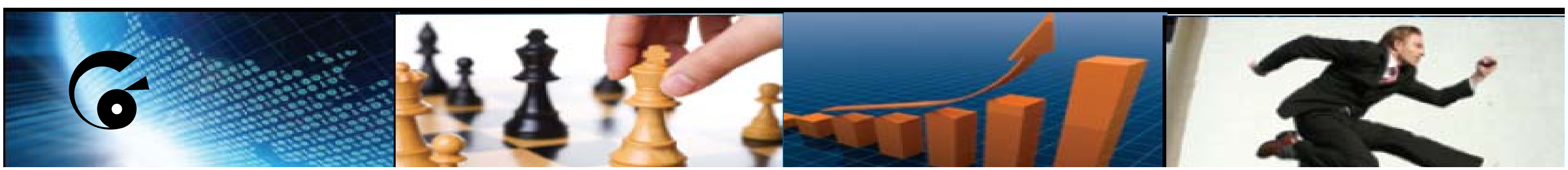
Publisher's considerations

- ***The ultimate print quality – continuous tone printing has returned – a third dimension in image quality compared to lithography***
- ***Higher contrast imaging and maintained gray balance – but still adhering to the present colour standards in the US and Europe***



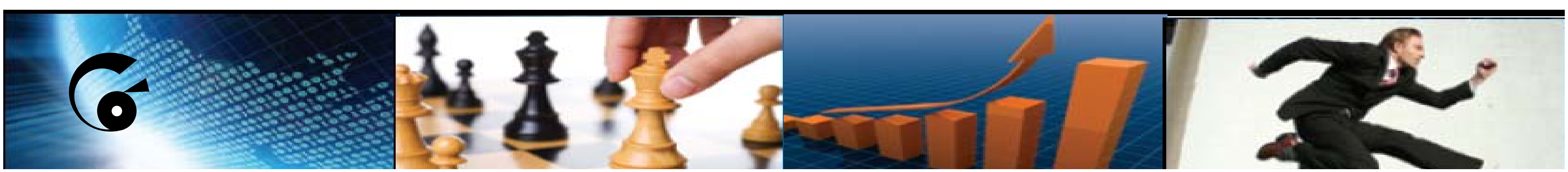
THE GREATEST CHALLENGE?

- ***It is probably not the technical issues ….***
- ***It is rather in the rethinking of marketing and sales……***
- ***How to handle the volume of small orders; like offset printers have to do?***
- ***How to approach these customers?***
- ***How to get away from the present notion of gravure only for long runs, huge markets etc..?***

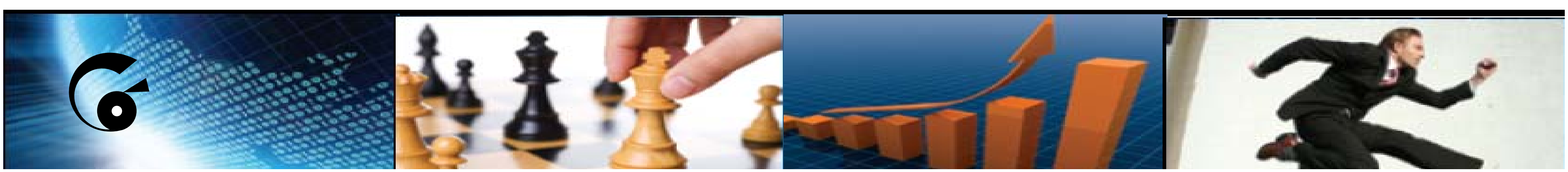


SOME FINAL CONSIDERATIONS

- ***The total investments (DE press and a dual line of direct laser engraving) should be in the same vicinity as a 64 page commercial web-offset press (incl. ancilliary equipment)***
- ***Future developments in laser engraving and/or plating technology may reduce the minimum average print run further….***
- ***Gravure may become the process of choice….***

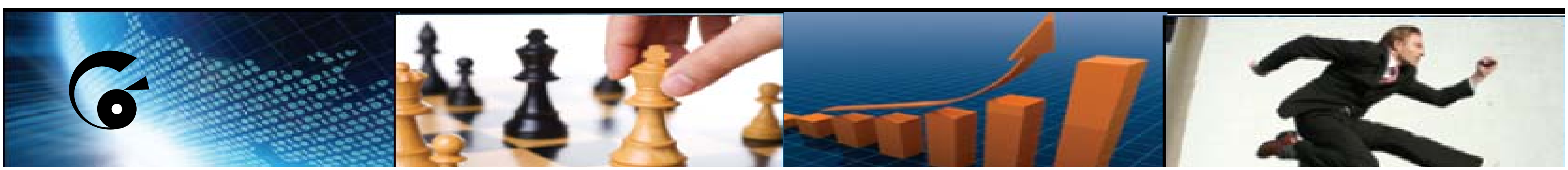


HOW ABOUT THESE BUSINESS OPPORTUNITIES???

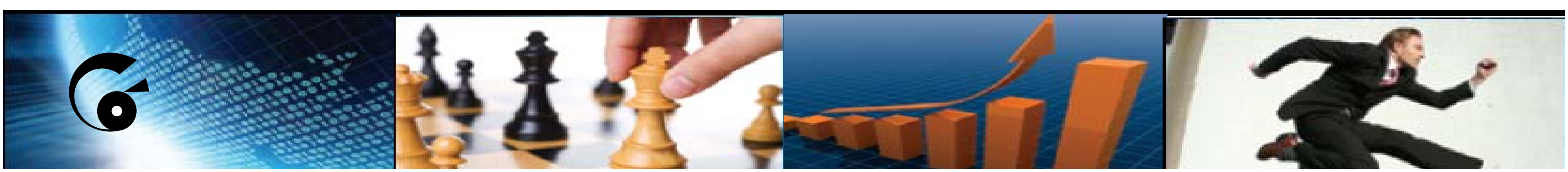


A FINAL REMARK

- ***DO NOT FORGET – COSTING AND PRICING ARE STILL TWO DIFFERENT ANIMALS! (quote from the ERA Working Group in 1986)***
- ***The thesis from Charles Darwin may have to be reformulated!***
- ***It is not the survival of the fittest, but the survival of the most flexible and adaptable (publisher and/or printer)……..who may survive!***
- ***WE DO HAVE A FUTURE….BUT WE MUST ADAPT…***



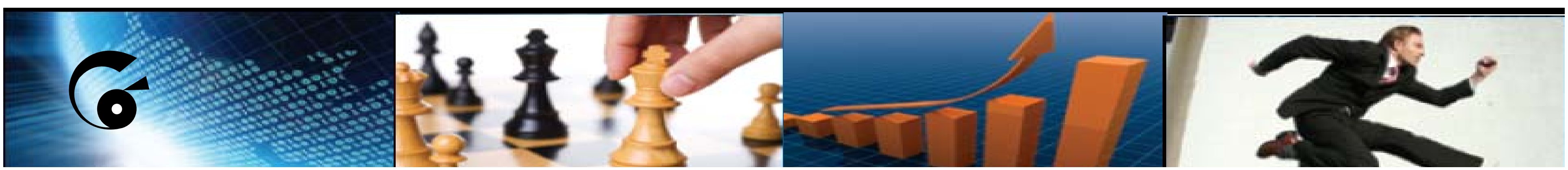
Though this be madness, yet there is method in't! (Polonius; Hamlet Act II, ii)



COMMENTS?

You have to Think The Box

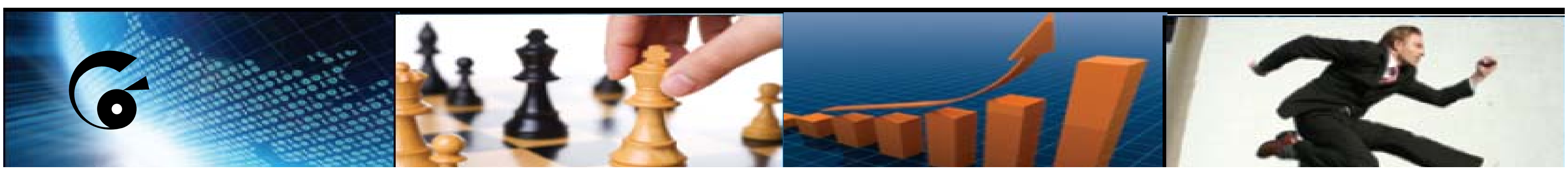
OUTSIDE



THANK YOU FOR YOUR ATTENTION!

ANDERS BJURSTEDT

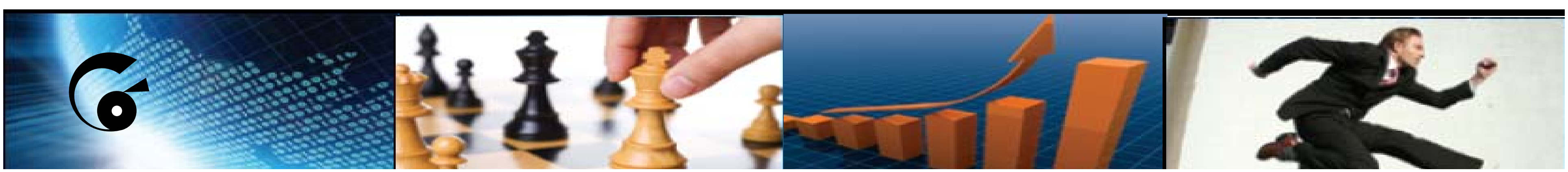
anders.bjurstedt@comhem.se



THE MINIMUM AVERAGE PRINT RUNS IN GRAVURE WITH THE DE – CONCEPT? HOW ABOUT 85 000 COPIES?

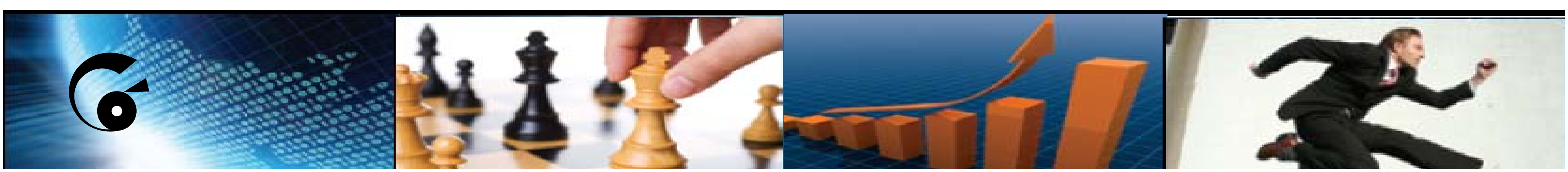
THE SHORT RUN?

- ***One example of a short run (MAPR ~ 85 000 copies) – corresponds to a publishing volume of 50 000 copies – after copy returns***
- ***32 pp signatures - A4 (US letter size)***
- ***Corresponds to annually 12 – 18 000 tons of printed matter (depending on shift mode and paper grades used)***
- ***Some effects will be shown ……..***



THE FINAL CHALLENGE?

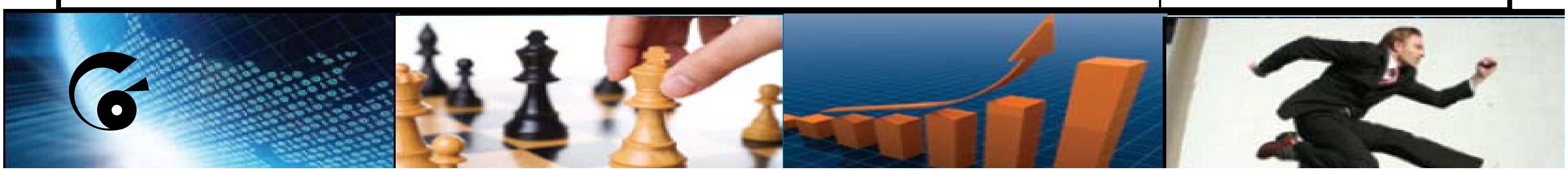
- ***How about the numbers in the next two slides……***
- ***Computed in a simulation model***
- ***ONE DE-press would demand (=consume) more than 13 000 cylinders annually………***
- ***There are not many installations in Europe or in the US with such capacity…….***



MAPR - 85 000 copies
32 pages in A4 format

BASIC INFORMATION ABOUT SHORT RUNS!

No of jobs annually/24/6 shift mode	3 330
No of cylinders weekly (one press only!)	256!!
Paper tonnage – 56 gsm SC gravure	18 300 tons
Paper cost – 56 gsm SC – present value	20 m$
Paper cost – 54 gsm LWC – present value	23 m$



MAPR - 85 000 copies

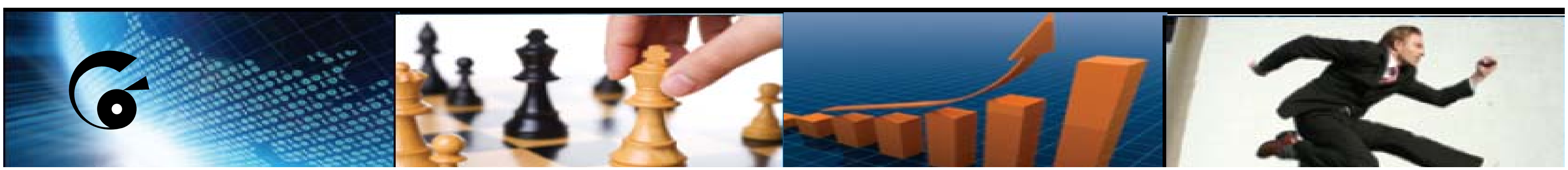
32 pages in A4 format

PRESENT VALUE OF AGGREGATED SAVINGS!

DURATION 12 YEARS; 4% INTEREST RATE

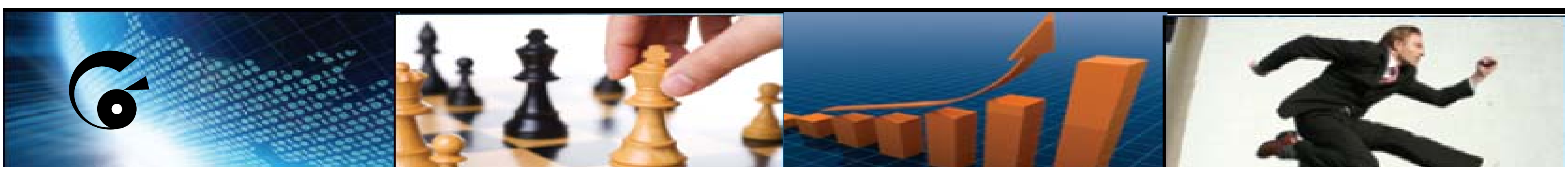
Waste saving - 5% units less than HSWO	8m US$
Gravure can print 50% with SC - saving	18m US$
100% of the products in SC - saving	29m US$

(With 8% interest rate - the accumulated savings are lower)



BAT – Best Available Technology SHORT RUNS IN GRAVURE ctd

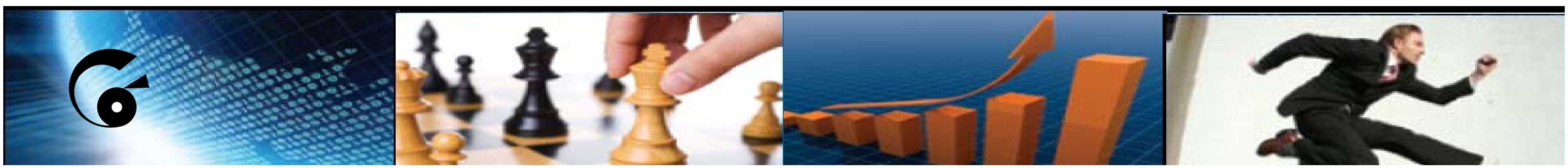
- ***The crucial point in this concept is the job changes!***
- ***Job changes have to be as fast and automated as in commercial web-offset! Integration of the cylinder processing dept. and press room***
- ***The lead-times for processing gravure cylinders have to be shortened……….!***



THE MODERN DE CONCEPT! ctd

- ***But, most importantly:***

- ***Should be considered as a replacement for older presses or complement to existing presses***
- ***Fits nicely into the short runs and medium sized signatures***
- ***Acceptable investment level!***
- ***May be upgraded when cylinder processing has become much faster than today***



THE NEW DE CONCEPT AS I SEE IT……

- ***Automatic loading/unloading of cylinders***
- ***A new webbing up device cuts paper grade changes to a minimum of time and waste***
- ***Printed waste – around 3-4%***
- ***Make-ready waste – around 650-1 000 copies***

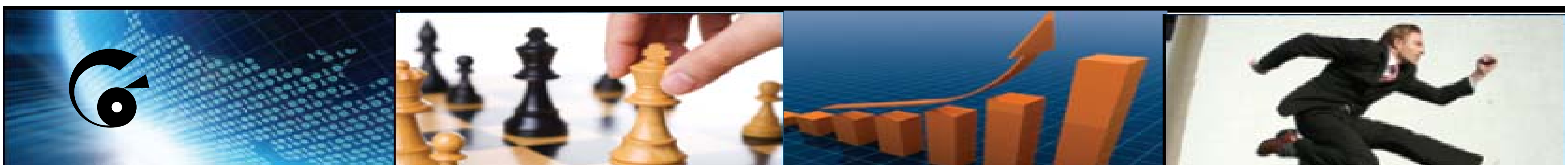
THE NEW STUDY ctd

- ***Including plate or cylinder processing costs (digital data received) (no wet proofing in gravure)*** 1)
- ***paper grades - SC 56 g/m^2 and LWC 54 g/m^2*** 2)
- ***no postpress operations were included***

1) Wet proofs in gravure were used in 1986,

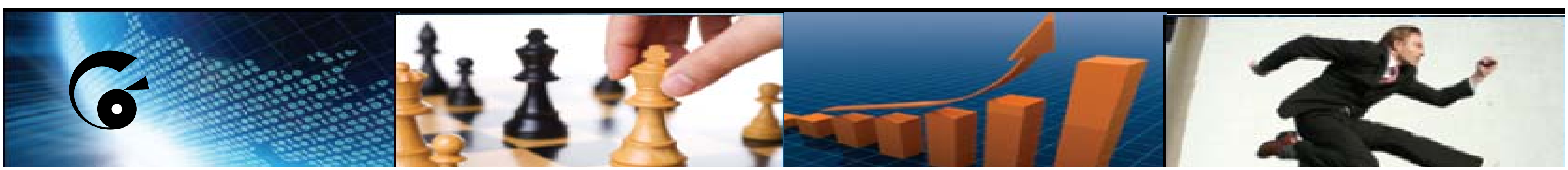
but now this procedure is abandoned!

2) In comparison to 1986 - lower grammage are standard



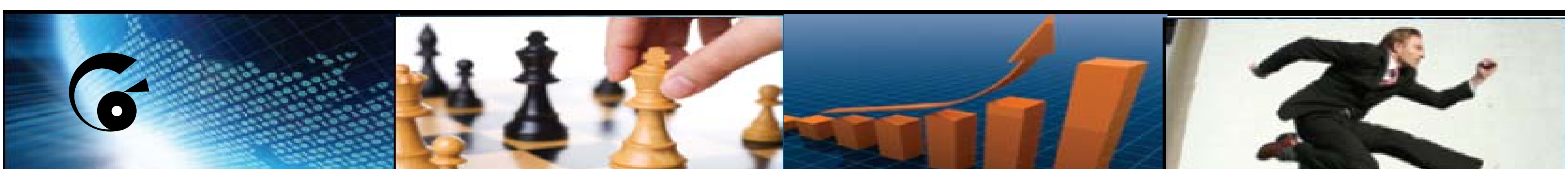
THE NEW DE CONCEPT AS I SEE IT!

- *There are only 4 units – the units are twice the width of the single web – single width reel-stand, single width superstructure*
- *A cylinder width of 2.5-2.7m (=100 #) may print 16/32/48 and even 64 pages in standard A4 (or US letter size or close)*
- *The new design has little resemblance with the older presses used in Germany and the US:*



THE NEW DE CONCEPT AS I SEE IT

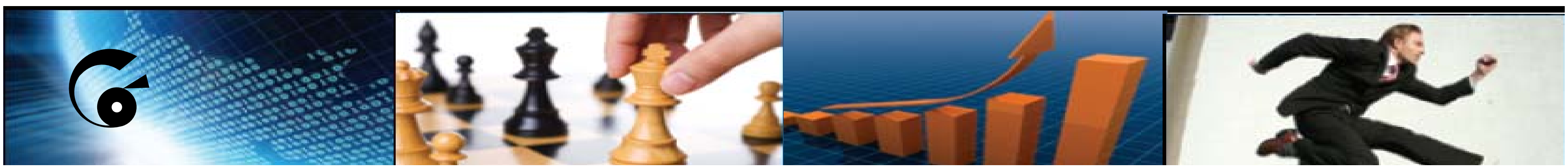
- ***Redesigned; using modern gravure press technology – same performance as the standard***
- ***Low manning (also in Germany) – the same level as in web-offset***
- ***Very fast make ready cycle***
- ***Minimum foot-print!***



PRESS STRUCTURE IN THE US

- ***About 150 gravure presses in operation, of which only 25% are less than 15 years***
- ***Older units hav a low level of automation – high manning standards in comparison to HSWO***
- ***50-60 presses are indeed very old***
- ***In 2010, there might be less than 120 gravure presses in operation***

Source: ERA List of Presses 2007



DRUPA 2008

- ***The second largest challenge is the perception about CTP vs. Cylinder processing!***
- ***Plate making is seen as a very simple and mature process; 25-30 000 CtP units have been shipped***
- ***Very competitive market, Agfa recently announced the closure of its manufacturing lines***
- ***DN Screen is the runner up in this market…***

DRUPA 2008

- ***The PrintCity alliance offers the offset market complete turn-key solutions; sheet-fed, newspapers and commercial web-offset markets***
- ***At Drupa 2008, the alliance shared an entire hall 6!***
- ***The first marketing challenge is how to handle web-offset, including the marketing from KBA, MAN-Roland and Goss***