




Another EMC resource
from EMC Standards

Saving time and money with good EMC Design


Helping you solve your EMC problems

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Saving time and money with good EMC Design — or — The financial benefits of using good EM Engineering



**CHERRY
CLOUGH**
CONSULTANTS LTD



emc STANDARDS

Keith Armstrong CEng, FIEE/IET, Senior MIEEE, ACGI, Eurlng(Gp1)
phone/fax: +44 (0)1785 660 247
keith.armstrong@cherryclough.com
www.cherryclough.com www.emcstandards.co.uk

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Change Record, 25th October 2018

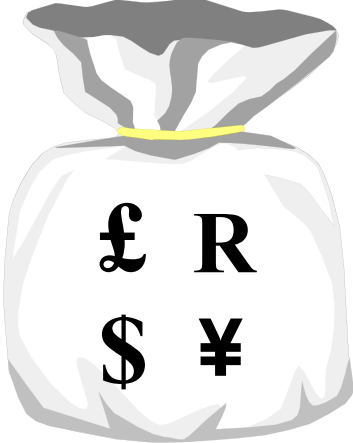
- **First issue: emc4b version 1 (v1)**

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2. Internal and external EMC problems and solutions
3. Its all about money
4. Design and development
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6. Marketing and Sales
7. Financial



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Why care about EMC?

- **All products and services now depend upon the correct operation of electronic technologies**
- **But the correct operation of all electronic technologies depends on achieving EMC (ElectroMagnetic Compatibility) for...**
 - getting technology to market quickly at low cost
 - meeting legal requirements for sales
 - satisfying customers and improving sales
 - reducing warranty costs
 - reducing exposure to product liability claims

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Internal EMC problems

- **Modern electronic technologies**
(e.g. digital, switching power conversion, wireless comm's)
all create more electromagnetic noise
- **But modern electronics are also more susceptible to electromagnetic noise**
 - as chips shrink and clock and data rates increase
- **So most products now *interfere with themselves***
 - this 'internal EMC' delays most projects

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External EMC problems

- **For the same reasons, achieving compliance with legal EMC requirements is increasingly likely to need very significant redesign...**
 - products that don't comply with basic EMC standards (such as those listed under the EMC Directive) tend to be unreliable in real life...
 - causing increasing unreliability, warranty claims, unhappy customers, fewer repeat sales...
 - and the electromagnetic environment is continually worsening
- **Where electronic technologies are used in safety-related areas: EMC is important for safety...**
 - not covered by complying with EMC test standards!

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The solution

- **Good ‘EM Engineering’ practices have now been very well proven over many years, to...**
 - reduce ‘internal EMC’
(often improving functional performance too)
 - make legal compliance easier and quicker
 - improve reliability (reducing warranty costs)
 - help reduce safety risks due to electromagnetic interference, EMI, (reducing product liability risks)...
- but see the IET’s 2017 Code of Practice on “EM Resilience” for a complete approach:
www.theiet.org/resources/standards/emr-cop.cfm

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The solution continued...

- **Good EM Engineering requires work to start right from the beginning of a project...**
 - and might *appear at first* to add to component costs (BOM costs)
- **But for a legally compliant and more reliable product the *overall* design project effort is reduced (typically by between 30% - 50%)...**
 - so the time-to-market is reduced, and the *overall* cost-of-manufacture is usually lower (greater margins)
 - *EM Engineering is discussed in technical terms in our presentation Module 1, “The Physical Basis of SI, PI and EMC”, and as “Webinar 1d” both available for free (to Registered Members) from www.emcstandards.co.uk*

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Persuading designers

- **Most designers prefer someone else to ‘bolt the EMC on’ at the end of a project**
 - but this guarantees unpredictable delays, increased financial risks, uncontrolled added costs...
 - *this is simply not a competitive approach these days*
- **Sometimes this is because designers find it hard to juggle all the project’s technical requirements**
 - but more often it is because they find it difficult to persuade management to invest time / money on doing good EM Engineering

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Persuading management

... it’s all about the money...

- **Employing good EM Engineering is already a vital *financial* necessity...**
 - which is getting even more important as electronic products become more complex...
 - and as electronic devices become more powerful and more switching power converters and wireless comm’s are used (Bluetooth, 802.11, GSM, etc.)
- **It is now necessary to invest in good EM Engineering right from the start of a project...**
 - to reap the huge financial rewards which are available

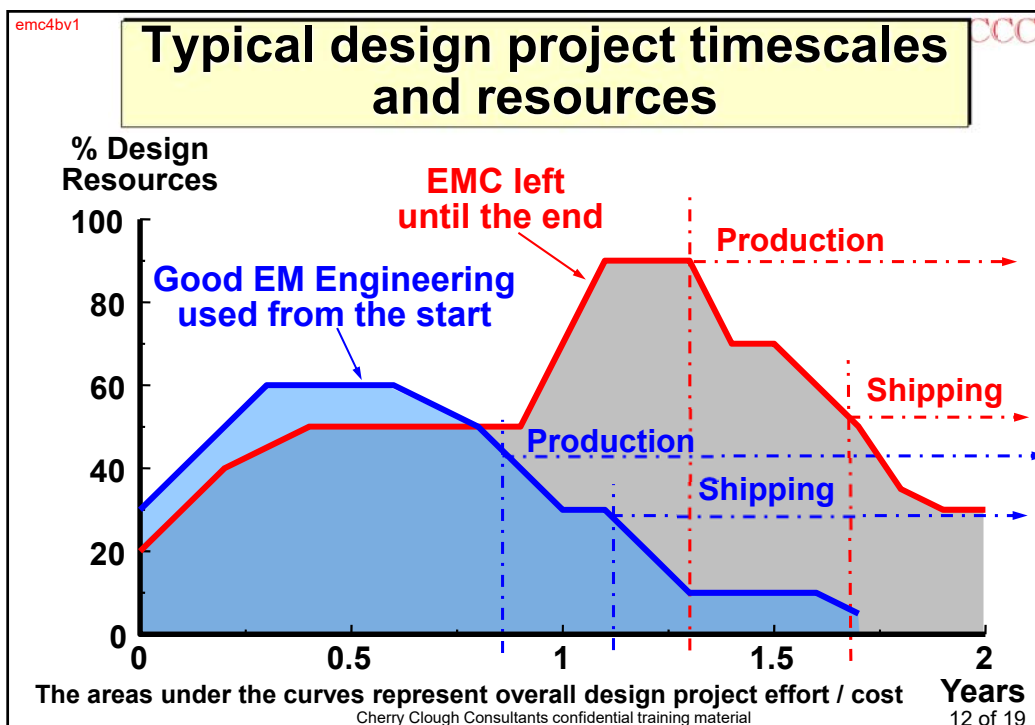
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Financial benefits for Design & Development

- More reliable prototypes (hardware and software) and fewer design iterations
- Lower risks, more predictable progress
- Easier EMC compliance
- Shorter time-to-market
- Less design support during early production
- Lower overall project cost

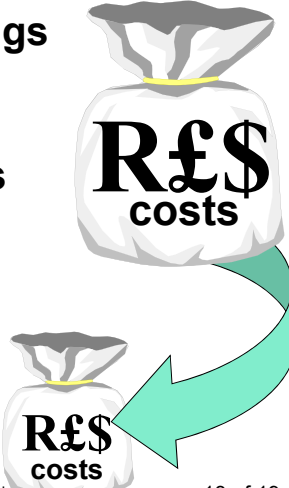
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Financial benefits for Manufacturing

- Fewer problems with early manufacture
- Fewer changes to production drawings
- Less rework, less scrap
- Reduced production times and costs
- Improved yields
- Less money tied up in Work In Progress (WIP)
- Less paperwork, more efficiency




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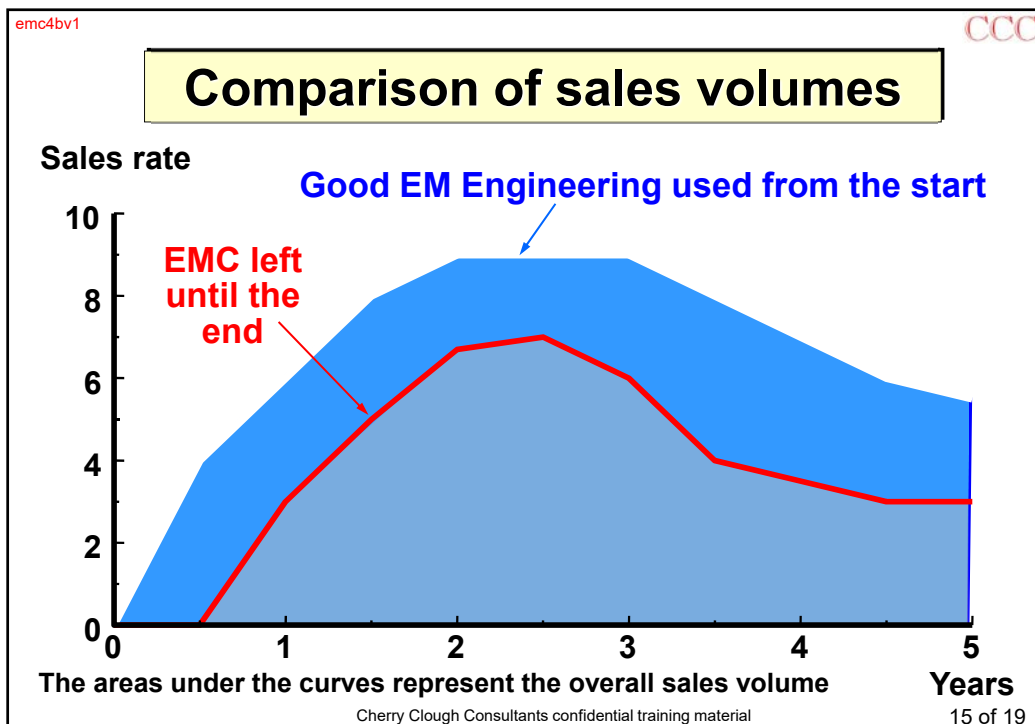
Financial benefits for Marketing / Sales

- Earlier market introduction
- More competitive products, better market penetration
- Higher reliability and lower warranty costs
- Increased customer satisfaction, higher levels of repeat orders
- Higher turnover, higher margins



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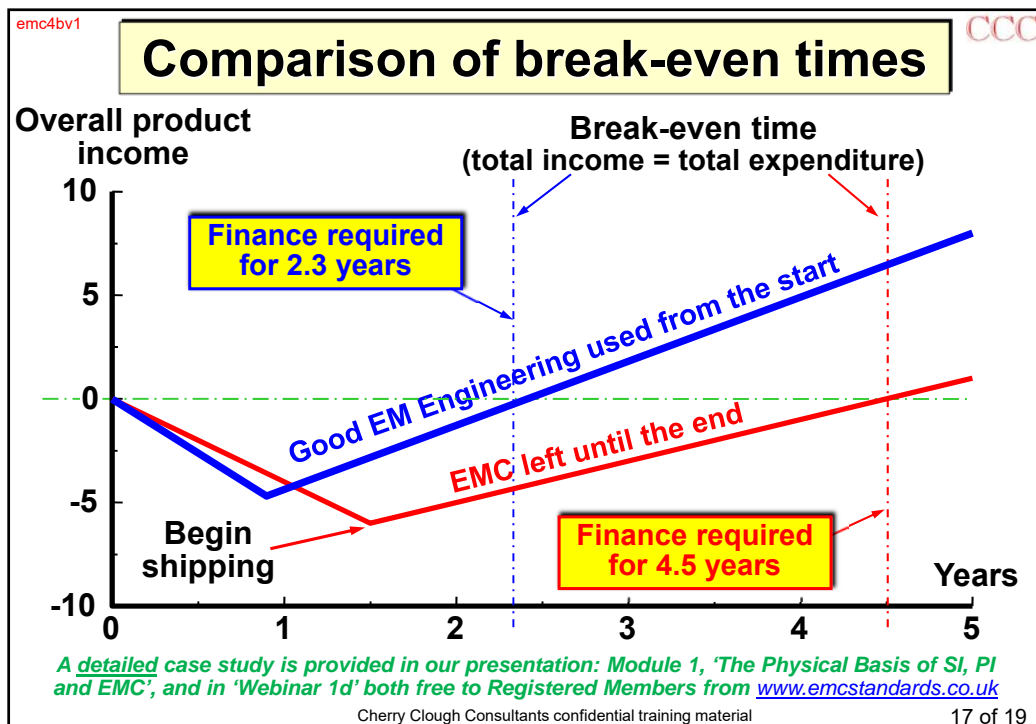
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Benefits for Finance

- Lower costs of finance
- Break-even-point reached earlier
- Reduced financial risks
- Improved profitability
- Improved return on investment (ROI)
- Lower risks of product liability (and other legal claims, e.g. penalty clauses)

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A Case Study

for others since 1994, visit: www.emcstandards.co.uk/testimonials


- E.g. this large video display...
 - the Barco R10, launched in 2016
- Has 1/4 the weight and 1/10th the thickness of all previous outdoor displays...
 - so costs less to manufacture and also requires much less costly infrastructure to hang it on a building's facade
- Took much less time/cost to design than Barco's previous products for this application ever had before...
 - and passed its EMC tests first time!

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the end



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