

Appendix VI Guidelines for action

CBM=*Confederation of British Metalforming*
CDC=*Castings Development Centre*
EPUK=*EPMA UK Regional Chapter*
IMechE=*Institution of Mechanical Engineers*
IOM=*Institute of Materials*
UK MagSoc = *UK Magnetics Society*

0. Overall

The list below is quite ambitious; it is suggested that specific industry priorities will best be arrived at by benchmarking the parameters of particular relevance to the PM industry.

UK PM manufacturers should be invited to participate in the DTI Benchmarking Index scheme, reference contributions from world class companies in countries such as Germany and Spain are needed.

Action

- proposal to DTI for study of UK PM industry under DTI Benchmarking Index scheme: EPUK

1. PM Component Production

a) Consensus

PM component producers need continually to:

- increase added value
by employing management best practice, maintaining research thrust, improving shape capability, quality and productivity, improving component functionality (including use of gradient materials), use of new shaping processes (metal injection moulding, isostatic pressing, spray forming etc)
- move into new markets and materials
e.g. new materials components and systems required by: major changes in the automotive drive train, the ageing population, security, health (including biomedical), IT/communications, environmental protection/remediation

b) main directions for action to achieve the above:

- reduced production costs: best practice guides are required
- market pull: research projects should have strong END USER involvement
- new markets: market surveys made available to industry on pre-competitive basis giving key information for decision making including market size, main players, potential for PM, technical requirements, barriers to entry
- improved shape capability and quicker time to first successful parts: UK manufacturers should participate in computer simulation and rapid prototyping projects

- UK manufacturers should also consider broadening their component range by utilising alternative component production processes such as metal injection moulding, isostatic pressing, spray forming

All UK component makers should be encouraged to participate in the above, both smaller and larger players, involving other members in the supply chain as necessary

c) Action

- Best practice guides on key areas identified in benchmarking index study: Centres of expertise e.g. Wolfson Centre for Powder Handling
- Market studies on new sectors : EPUK under new Materials Link programme
- Improved shape capability: EPUK/UKMagSoc to encourage UK manufacturers to participate in relevant projects

2. R&D Effort

a) Consensus

the whole PM community needs better to direct its R&D effort by:

- giving priority to research areas identified in this study
see priority areas in PM structural components (Section 2) and Magnets (Section 3); research should be cross disciplinary where relevant (e.g. powder handling, compaction modelling, sintering, energy savings); the possibility of dedicated calls for specific research topics
- ensuring R&D is industry driven
research should include shorter term projects such as improving manufacturing efficiency, quicker prototype development, environmental impacts, ecotox and health testing; funding bodies need to be aware of industry priorities; evaluators need to be technically knowledgeable in priority areas
- networking to make better use of available resources
by carrying out research benefiting widest possible range of industries and markets (cross disciplinary and cross market); by identifying and maximising UK expertise in the area.

b) main directions for action to achieve the above

establishment of a new umbrella organisation for taking action on priority areas identified, for ensuring R&D is industry driven and for networking:

- strong involvement of all key players including EPSRC, Centres of Expertise, Trade Associations, PM companies PLUS networks such as Nottingham and other relevant
- possible establishment of a virtual R&D centre
- EPMA UK Chapter to take the lead

c) Action

- umbrella organisation: EPUK to act as focus for industry needs and to form the core of this, with participation of representatives of key Solution Providers as appropriate
- virtual R&D centre : EPUK to discuss with EPMA (this could be European)

3. Legislation

a) Consensus

industry supply chains need to develop more proactive stance on environmental and health legislation by:

- supporting co-ordinated industry initiatives more actively
providing technical expertise and financial support for industry wide initiatives (monitoring, training, lobbying, testing etc)
- incorporating legislation in company business plans
appointment of in-house specialists or external advisers; effect of legislation on materials choice, product design, markets

b) main directions for action to achieve the above

to respond to the fast pace of legislation industry needs to

- enhance the resources for established structures to monitor legislative thinking in time to interpret and influence
- by effective monitoring, incorporate into product and process development strategies the demands and opportunities of future legislation
- develop metal industry-wide policies on testing (ecotox and health)
- allocate resources to this area (in-house specialists, supporting industry wide initiatives in people and testing)

c) Action

- Monitoring legislative thinking : industry through joint trade association standing conference
- testing: UK manufacturers to participate in industry wide initiatives
- allocating resources: IOM to mount senior management awareness seminars

4. Education and Training

a) Consensus

there are special needs for education in PM

- end users: constant efforts needed to educate end user designers in capabilities and latest developments (geometry, properties) and competitive advantages
- manufacturers: training for designers, production staff and salesmen both for existing technology and for potential new materials and products (e.g. bonded magnets)

the EPMA runs successful summer schools for young European engineers, a possible template for a UK initiative

b) main directions for action to achieve the above educational initiatives to cover both PM and competing manufacturing processes:

- reestablishment of in-house seminars primarily for end user designers
- introduction of UK based short courses in PM for young engineers
- obtaining recognition from accrediting bodies
- possible IGDS at qualified university

c) Action

- In-house seminars: EPUK to discuss with CBM and CDC
- Young Engineers: EPUK to discuss possible government funding for young UK engineers summer schools
- accreditation: IOM and IMechE
- IGDS: University (?Warwick)

5. UK Technology base

a) Consensus

best use of UK technology base

- resources: database of experts, equipment
- available technology: database of research
- database of mechanical properties and standards*
- database of case studies

there is a need currently for input into development of good ISO/EN standards for PM, the new iron-base soft magnets and established permanent magnets.

b) main directions for action to achieve the above

Internet based databases of resources and available technology:

- operated by neutral body
- modest membership fee
- steered jointly by neutral and industry bodies

reviewing and enhancing PM property data and standards as necessary

c) Action

- Operation: IOM Materials Information Service
- Steering Group: IOM and EPUK