

# ROBOBUILD REPORT

## Why ROBOBUILD?

The fragmented nature of the construction industry offers both opportunities and barriers to the introduction of Automation and Robotics (ARC). Limited resources in the UK have been used in an unco-ordinated manner in this niche, but important emerging sector of innovation.

The ROBOBUILD report set out to harness the views of experienced commercial, academic and public sector stakeholders in the built environment and other industrial sectors and to pass on this knowledge to those responsible for allocating public sector research funding.

## The ROBOBUILD process

This objective was achieved by a two-part process:

**Part 1 - The Environment** - sets out the structure of the UK construction industry which is helpful both to those within it and to those considering transferring their skills and technologies into it. ROBOBUILD delivers a guide to the main topics in ARC and consolidates current views on the subject. A comprehensive desk study is included providing the international context of ARC in the built environment and reports on AR

developments in other industrial sectors too.

**Part 2 - Market Research** - The detailed 12-page questionnaire was based on Part 1 and sought to find out just how much respondents knew about ARC and what their opinions were using both quantitative and qualitative methodology. Only one-half of respondents were from the UK. The questionnaire went further to inform and educate respondents of current ARC issues and topics respectively. Over 110,000 data cells of information have been analysed in the presentation of the results of this research, making it the most comprehensive document of its type published to date. The market research questionnaire was reviewed by public sector, industrial and academic representatives prior to its issue to ensure that the right questions were being asked and to maximise added value.

For example, ROBOBUILD shows how respondents demonstrated that the introduction of AR for a complete structure could lower the construction costs by nearly 15% in five years

## Why read ROBOBUILD?

The ROBOBUILD report comprises over 100 pages and provides compelling evidence which can be used

in applications to public sector funding bodies, including EU R&D programmes. It identifies locations in public sector work programmes into which ARC applications can be directed - whether this is for technology transfer into construction or from within this sector.

ROBOBUILD provides a model format which can easily be adapted for use outside the UK. Evidence from the report has already been submitted to the UK's new Construction Task Force.

## Market research data....

In addition to the printed report which contains statistical data from the market research the 'raw' data is being made available for purchase in disk format. With only the respondents' identities omitted and in spreadsheet format, different stakeholders will be able to manage the data in a way that reflects their own research or competitive objectives.

## ROBOBUILD's Content

On the other side of this page are the contents of ROBOBUILD, illustrating the depth and scope of the work undertaken over a period of 18 months to Spring '98.

## HOW TO ORDER the ROBOBUILD REPORT (printed version) and the MARKET RESEARCH DATA (disk EXCEL version only).

Please indicate how many copies of the ROBOBUILD report @ £79\* each and/or the Market Research Data on Disk @ £69\* each you would like. (£139\* for both) *Please allow up to 28 days for delivery.*

**Cheque/bank draft payable to "D.W. Cobb" and should be sent to:**

David Cobb, Walnut Tree Cottage, Toms Hill Close, Aldbury, Herts, UK, HP23 5SL.

\*includes postage and packaging.

**All enquiries to David Cobb at Tel/Fax: +44 (0)1442 851098, Email: davidcobb@compuserve.com**

# SUMMARY CONTENTS OF THE ROBOBUILD REPORT

(Main section headings only shown here)

## Introduction, Scope and Methodology

**5 Winners of FREE market research reports were:  
B. Askew, RT MacDonald,  
J. Hodge, V Dupourque (France)  
R. Krom (The Netherlands)**

## PART 1 THE ENVIRONMENT

### 1. UK Construction Industry

- 1.1 Constructors and Manufacturers / 1.2 Professional Community
- 1.3 Construction Clients / 1.4 Construction Industry Representative Bodies

### 2. UK Public Sector and Independent Funding

- 2.1 Construction Research and Development / 2.2 Universities Engineering Programmes and Related Links
- 2.3 DTI Schemes / 2.4 DETR Business Plans for Construction Research and Development
- 2.5 CIRIA - an Independent Private Organisation / 2.6 Institution of Civil Engineers R&D Enabling Fund
- 2.7 Mobility Grants

### 3. Drivers for Automation and Robotics in Buildings and Structures

- 3.1 Risk, Hazards and Safety / 3.2 Standardisation / 3.3 Value Management and Value Engineering
- 3.4 Communication and IT / 3.5 Productivity / 3.6 Quality
- 3.7 Demographics / 3.8 Whole Life Costs of Buildings / 3.9 Sole Option

### 4. Robotic Technology and its Applications

- 4.1 Automation and robotic technologies / 4.2 Applications of Automation and Robotics

### 5. UK ARC position and capability

- 5.1 Key Investigations and Reports / 5.2 Associations and Professional Bodies
- 5.3 UK Academic Situation / 5.4 UK Commercial Organisations
- 5.5 UK ARC Demonstration Test Facilities

### 6. International ARC Developments

- 6.1 International Organisations and Initiatives / 6.2 Global Research Programmes
- 6.3 Regional Developments

### 7. Automation and Robotics Communications and Networking

- 7.1 Journals and Magazines / 7.2 Fairs, Exhibitions and Conferences
- 7.3 Internet

### 8. Transfer of Technology from other Industries

- 8.1 Manufacturing / 8.2 Offshore Oil and Gas / 8.3 Shipbuilding / 8.4 Automobile / 8.5 Electrical
- 8.6 Agriculture / 8.7 Nuclear / 8.8 Defence / 8.9 Aerospace / 8.10 Space

## PART 2 MARKET RESEARCH

Introduction / Market Research Questionnaire

### Part 1 - RESPONDENT'S DETAILS AND ARC KNOWLEDGE

- Q's 1-7 Respondents' Details*
- Q's 8-29 Respondents Organisations' Details*
- Q's 30-31 Respondents' own Thoughts and ARC Awareness*
- Q's 32-33 Academic and Industrial Organisations*
- Q's 34-35 ARC and ARBS Applications*
- Q. 36 Market leaders in ARC*
- Q's 37-39 Technology Groupings, Drivers and Barriers*
- Q's 40-41 UK Public Funding Schemes*

### Part 2 - MULTIPLE CHOICE QUESTIONS

- Q.50 Priorities for UK construction clients achieving cost savings*
- Q.51 Level of importance when considering introducing AR into buildings and structures*
- Q.52. Awareness of UK funding programmes*
- Q's 54 -93. Ranking of 'Ease of Automation' and 'Cost Saving Potential'*
- Q.95 Agents for Change*
- Q.96 Achievable reductions in construction with the application of ARC*
- Q.97 Barriers to UK ARC development (or outside the UK for non-UK R's)*
- Q.99 Views on Further Statements*
- Q's. 100-103 Final Statements and Respondents' Views*
- The "Last Word" Section*

### About the author David Cobb BSc (Hons) MSc MBA MICE CEng

- Member of the International Association for Automation & Robotics in Construction (IAARC)
- Actively involved with IAARC operations and its future development
- Broad international engineering experience
- Organiser of 2 recent ARC workshops
- Organised universities' ARC thematic network application
- Panel member in DTI technology and market review of the robotics sector
- Currently involved with ARC proposals to the EU
- Former Project Director of BRE Cardington's Large Building Test Facility - before privatisation
- Currently an independent consultant active in helping others by developing and implementing domestic and international collaborative research proposals.

## PART 3 CONCLUSIONS AND RECOMMENDATIONS

References / Appendices / Charts / Tables