

## MMS7

### Towards an Adhesives Design Toolkit

Notes of 3rd Industrial Advisory Group (IAG) Meeting held on 30 April 2003, at TWI Granta Park, Cambridge. Prepared by R S Court, TWI.

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#### PERSONS PRESENT

John McCarthy	AEA Technology
Phil Cooke	e2v Technologies
David Page	e2v Technologies
Bob Orme	Henkel
Terry Ackerman	MBDA Missile Systems
John Harris	MERL
Greg Dean	NPL
Bruce Duncan	NPL
Martin Fakeley	Permabond
Richard Roberts	Pira
Alan Hickman	Quotec
Richard Court	TWI
Ewen Keller	TWI

#### APOLOGIES RECEIVED FROM

Bernard Sikkell	3M
John Hunter	Alcan
Peter Padelopoulos	Anvil Innovations
Dave Dixon	BAe
Peter Godfrey	Caswell
Joan Cocksedge	DTI
Mike Lavery	Evode
Jeff Kapp	Ford
Tony King	Mayflower Vehicle Systems
Steve Abbott	SATRA
Shaun Hurley	Taywood

#### 1. INTRODUCTION, WELCOME AND AGREEMENT OF AGENDA

Ewen Kellar (TWI) welcomed the attendees. The Agenda for the meeting was agreed.

This third meeting of the DTI funded Measurement for Materials Systems, MMS7 project - Towards an Adhesives Design Toolkit, was held in conjunction with other adhesives related projects within the MMS programme. These other projects were: MMS8 – Interfacial Adhesion Strength and MMS11 – Fatigue and Creep in Joined Systems. The minutes from these two projects can be found on the NPL website at <http://www.npl.co.uk/npl/cmmt/cis/mms8/mms8intro.html>.

#### 2. ACCEPTANCE OF NOTES OF THE LAST MEETING

No comments were received for alterations to the minutes of the second IAG meeting held on 4 December '02. Minutes from this third meeting will be placed on the web-site.

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**Action 3.1:** Richard Court to place a copy of the minutes from this third meeting on the Adhesives Toolkit website.

### **3. REVIEW OF ACTIONS FROM LAST MEETING**

All actions from the second meeting were completed.

### **4. REVIEW OF PROJECT PROGRESS**

#### **4.1 Overall project progress**

Ewen Kellar (TWI) gave an up-date on progress of the project, which covered the various Tasks and the development of the Modules. The dissemination activities were presented, including the article in the April edition of Materials World. The usage statistics for the web-site are now being logged and show encouraging signs.

Martin Fakeley (Permabond) asked how the information content of the web-site could be searched. Ewen Kellar (TWI) replied that there was a Search function planned for the site, although this was not working at present.

Phil Cooke (e2v Technologies) asked whether surface preparation of substrates was going to be a module? Ewen Kellar (TWI) replied that this topic was not planned for this phase of the Toolkit. The topic is a very important one though and it should be thought about how to include it in the future.

#### **4.2 Detailed discussion and demonstrations of the Modules**

The Case History module was presented and a request was made for additional input of case histories from the IAG. The About section gives details of the origins of the project and IAG members were asked whether they would like details about their organisations included in this section

**Action 3.2:** Richard Court to send reminder to IAG in May '03 about submitting additional case histories and for including details in the About section.

The software programming phase has started for the Stress Analysis module, and the work split between TWI and AEA has been agreed in detail.

The Design Guidance module is being offered, as an alternative to a module on failure criteria. Work on this module is being co-ordinated by John Harris on MERL.

In the Documents/Data part of the Toolkit the reports for previous DTI funded projects can be found in electronic pdf format. Projects added to the module to-date are from the period 1993-96, and it is planned to add the PAJ (Performance of Adhesive Joints) and PAJ-ex projects, running from 1996-99, to the Toolkit. A demonstration of using the Toolkit to access the reports from 1993-96 was given. The demonstration showed the summaries that have been added as part of the project, which allows users to get an indication of the report's content, prior to down-loading the full report – many of which are several M-bytes in size.

John McCarthy (AEA Technology) gave a review of the content of the Adhesive Selector module, and described the logic used. A draft of the module had been circulated to the IAG prior to the meeting and was used as a basis for discussion at the meeting. Both Bob Orme (Henkel) and Martin Fakeley (Permabond) expressed a view about the difficulty of getting all the relevant information from a potential user in order to help make an adhesive selection decision. The whole meeting felt that it was important that if the software selected no adhesive, then the user of the Toolkit was advised to contact some of the suppliers/industry experts, to check the situation and to get help.

The Links module was demonstrated, and its functionality explained, whereby users could obtain information about suppliers of certain types of generic adhesive.

A presentation of the Adhesive Database module was given by Greg Dean (NPL), giving details of the proposed format for the different types of information and data that needs to be presented about adhesives. The parallels with the plastics industry were made, in that this industry has decided on a standard set of properties and tests that will be used to characterise the material. The question was asked as to whether this is what was needed for adhesives. Data is needed for materials selection, and for design, along with some generic data to be used by modules in the Toolkit. It is now necessary for industry to give some feedback as to what tests/standards it is prepared to support. There is some scope for standardisation, possibly through ISO. It was noted that ASTM standards are widely referred to in America – although it was noted that if the markets expand, then ISO standards may become more prevalent.

**Action 3.3:** Richard Court to arrange for a copy of the presentations to be placed on the Adhesives Toolkit website.

## **5. DISCUSSION OF PROJECT AND FUTURE PLANS**

The future work was described in the presentations about each of the modules, as detailed in the previous Section 4.

## **6. PROJECT FINANCIAL STATUS**

Ewen Kellar (TWI) provided an up-date on the project spend and progress, with the project being slightly ahead of the planned spend and ahead of target on progress.

## **7. DTI MATTERS**

No comments were made during the meeting.

## **8. ANY OTHER BUSINESS**

No items relating to the Toolkit were raised. A separate presentation about future DTI programmes and funding for Materials research was given by Bruce Duncan (NPL). An important part of the presentation was the need for industry to make its input as to the areas and topics that should be supported. A questionnaire is available and people should send their suggestions as soon as possible.

## **9. DATE OF NEXT MEETING**

The date for the fourth meeting of the MMS7 IAG will probably be in September/October 2003, and the venue is to be confirmed. Both will be circulated to the IAG via email and on the Toolkit website.

**Action 3.4:** Richard Court to circulate details of the fourth IAG meeting as required.

## **10. SUMMARY OF ACTIONS**

**Action 3.1:** Richard Court to place a copy of the minutes from this third meeting on the Adhesives Toolkit website.

**Action 3.2:** Richard Court to send reminder to IAG in May '03 about submitting additional case histories and for including details in the About section.

**Action 3.3:** Richard Court to arrange for a copy of the presentations to be placed on the Adhesives Toolkit website.

**Action 3.4:** Richard Court to circulate details of the fourth IAG meeting as required.