PROMOTING THE EXPLOITATION OF ADHESIVES IN INDUSTRY

JONATHAN WILLIAMS
Centre for Exploitation of Science and Technology (CEST)
Enterprise House
Manchester Science Park
Manchester M15 4EN

INTRODUCTION

It is widely recognised that adhesive bonding and sealing should play a major role in future manufacturing and construction. This is because bonding can offer significant potential benefits:

- Performance and sometimes cost advantages;
- Simpler design configurations and assembly processes;
- Possible use of new materials.

A recent market survey [1] has predicted a 10% growth in UK consumption of high performance adhesives, with higher growth of certain adhesive types (e.g., water based) and in certain industrial sectors (e.g., building and construction). However, this growth is largely restricted to established applications in a limited number of companies. There remains a large part of industry which neglects the potential advantages that adhesives and sealants might offer.

Industry as a whole is reluctant to incorporate this technology for two very good reasons:

- Lack of confidence in long-term bond performance attaches significant risk to the wholesale introduction of adhesive materials;
- Their piecemeal introduction is often not cost-effective.
For example, in the field of structural silicon glazing for buildings, consulting engineers Ove Arup "... remain unassured as to the long term durability of the bond between glass and sealant." [2]

 Soon after its formation CEST identified adhesive technology as an area of under-exploited potential. We began working on this field in October 1988, with the objective of examining the issues involved, and taking appropriate actions to promote exploitation.

**APPROACH**

The project has been divided into three phases:

- Initial assessment of the problem;
- Definition of obstacles to exploitation and ways to overcome them;
- Initiation of necessary actions.

An important feature of this work has been the high level of interaction with other interested parties: companies, research organisations, Government departments and trade bodies. This provided an objective understanding, and assured compatibility with other initiatives in this field.

**Initial Assessment**

The range of possible applications of adhesives and sealants is limitless. It was necessary, therefore, to restrict our attention to those industrial sectors where a significant and widespread impact could be achieved. Four sectors were selected:

- Automotive;
- Heavy engineering;
- Aerospace;
- Building and construction.

These embraced companies which had several decades of experience with adhesives, and also those with no experience; they also covered a wide range of innovation perspectives and fabrication methods.

It became clear very quickly that under-exploitation was due to a variety of causes, some technological and others organisational. Therefore, an effective response would need to involve a range of organisation types.