

# THE ROLE OF THE CONSULTANT IN THE MODERN REFRACTORIES' INDUSTRY

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## INTRODUCTION

Everyone thinks they know what consultants do. There is an image of a very learned, mature gentleman, to whom others go when help is needed, a bit like an industrial doctor or specialist. At one time, not so long ago, this was true in the refractories industry as well. Many were experienced practitioners who put themselves out for hire, took on retirement, to supplement their pension.

Historically, there have been very few fully independent consultants. This was the case because most large refractories' consuming companies had their own employees with most of the skills necessary for the day to day running of their processes. In addition to this, most refractories suppliers had a significant depth of similar skills to supplement these, making these staff available to their customer base.

This was the situation into the eighties, and even into the early nineties, with larger companies. However the situation has changed quite significantly in the small to medium sized company. With 're-engineering' forced upon many by the downturns of the past decade, many have allowed these skills to lapse, as being none core, (unlike accountants etc). The skills void is only now being fully appreciated. This void does not only encompass normal technical issues, but has also touched on training and OH&S.

## THE TRADITIONAL ROLE

As suggested above, consultants were only called on when all else failed. With the users in-house skills, married to the suppliers knowledge of materials, most problems were soluble without recourse to the expense of the consultant. When one was necessary, he was often hard to find. Because of this collaboration between user and supplier, not many could earn a living solely as a refractories consultant. Generally, they were found in the offices of one of the large multinational engineering/project management firms.

More often than not, the problems requiring consultants were caused by the use and application of new technologies, perhaps those with limited local examples, imported from USA, Japan or Europe. The consultant would be called in at the design stage to overview the refractories component, and to assist with material specification, purchasing and installation. In the days before ISO 9002, he would also preside over the QA procedures.

A second role concerned 'Original Equipment Manufacturers', who may have numerous mechanical, electrical engineers etc, but would not keep a specialist, such as a refractories engineer on the books. They would bring him in at a certain stage of each project, to make sure that the refractories requirement and the basic mechanical design were not in conflict, or more correctly, not fatally in conflict.

The last traditional role of the consultant was as expert witness in dispute settlements. For this, a totally independent person was generally sought, and this was often the sphere of the retiree, with some reputation in the industry, who brought his years of experience to the issue.

## **RECENT CHANGES**

In the last decade, as a result of economic downturns, recessions, (and even depressions), companies have had to dispense with the services of personnel they would otherwise have liked to keep. This downturn for the user has also forced similar action onto the supplier and the installer.

Severe rationalisation has been forced upon the producers and installers by way of takeovers and mergers, to bring supply and demand for product and services back into balance. On the world wide scene we have recently seen the takeovers and mergers on the large scale, such as that of Veitsch-Radex, Didier, A.P Green and Harbison-Walker, and BMI-Alpine with both Hepworth and Premier, now coming within the Vesuvius group. On the local scene we had the Andreco/Crow merger, and of course the sale of BHP Refractories, both of which have inevitably led to rationalisation of personnel, and loss of skills and experience.

This rationalisation has led to a huge loss in skills to the industry, on both the World and local scene, often in the critical middle management areas. The state of the industry has not recovered sufficiently for these skills to have been replaced, and the prognosis is that they will be lost totally. While it is still fairly safe to rely on suppliers for (free?) advice, as the rationalisation of the industry continues, the number of specialists employed has decreased significantly, and the view offered by individual suppliers has become increasingly narrower.

## **THE PRESENT**

Many of the experienced personnel who have been on the receiving end of 're-engineering' have made themselves available for consulting, to try and fill this void. They are now used more as contractors, doing their old job under different conditions of employment, but some have become true consultants, either for specific industries, or in a more general role. The line between a consultant and contractor is worth clarifying. If an engineer does the same job, on an hourly rate, as he would as an employee, then he should be classed as a contractor. If he does a very specific task, with unique skills, and a different task for many clients, then he may be a consultant. In many cases he may be doing elements of both.

The consultant's current role is very complex. The events described above have opened new opportunities for the consultant. His role can now embrace the entire scope of the refractories engineering/project spectrum.

Not only is there a wide lack of technical understanding of refractories, as untrained discipline engineers take over these responsibilities, but there is a lack of understanding of other peripheral issues like Health and safety, installation practices, storage requirements, and even down to the everyday 'buzzspeak' of the refractories industry. All of these issues must be addressed.

## **PROJECT MANAGEMENT**

- Quantitative evaluation of previous lining performance(s)
- Assistance in the preparation of the RFQ.
- Choice of suppliers
- Technical Evaluation of tenders
- Detailed technical discussion with suppliers/contractors
- Site management of suppliers/contractors, QA of performance.
- Monitoring of campaign performance.
- Generation of refractories based standard procedures for QA manual.

In effect, a good consultant would be a part time member of the maintenance team, called upon at the appropriate times to add his/her skills to the project.

## **EXPERT WITNESS**

This is a traditional role of consultants. Unfortunately, it seems to be one area of business growth, related almost entirely to the loss of the skills base, and the reliance on supplier and contractor information and services. Most would, perhaps, agree that money is more effective when spent on sound technical advice, rather than on the legal profession.

Appropriate use of the consultant can avoid major adverse incidents often leading to time consuming litigation, invariably avoidable by timely action during project planning and procurement stages.

## **HEALTH & SAFETY ISSUES**

OH&S is of particular importance. Refractories do not pose a general threat, where normal precautions are taken, but there are exceptions. Years ago, as an example, asbestos millboards were widely used. Their use was (and still is) considered a serious problem. Then along came ceramic fibres as the answer to all these problems. But no! They are also problematic, especially on removal, as they cause skin irritation, and crystalline silica can be formed in service.

The same can be said for Chrome containing bricks. These are not a problem on installation, but in many applications hexavalent chrome compounds are formed in service. The problem is then one of satisfactory disposal. These toxic compounds do not form in every application, but many users and suppliers have decided not to risk association with these materials on moral or legal grounds.

While suppliers and professional installers are generally aware of these issues, the law says it is the user's responsibility, and here he may need expert advice which is no longer available in-house.

## **TRAINING**

For many practitioners, the most urgent issue is the loss of the skill base. There is no course in Australia where refractories engineering is taught comprehensively. The number of people entering the industry is so low, that no institution can justify a dedicated course, at either trade or professional level.

Many ad-hoc 1 or 2 day courses are offered, and these are normally good value, but nowhere is there complete program of training and progression, which is transferable between companies and/or countries. Even an interstate transfer can cause severe problems for tradesman. This is not a problem confined to Australia, but here the problem seems to have been missed or ignored, to the point where it will soon reach crisis levels.

On a professional level, there is some attempt to teach the rudiments at degree level, but this is often lost, or ignored, as an elective, in a general ceramics/materials engineering course. The trade situation is just as bad. The only formal training is a small part of the bricklayers apprenticeship. Most refractory tradesmen are taken from the role of domestic bricklayers, and have no useful training until they are employed by a refractory installer, or a user company. Here they invariably pick up the bad habits of their supervisors. In terms of training in the installation of gunning and ramming materials, again this tends to occur 'on the job'.

There have been some attempts to rectify these issues in a formal way by the various training boards, but refractory skills traverse the industry based format of these bodies, and only now are they attempting to coordinate their efforts. This has been prompted by the action of the Institute of Refractories Engineers, which has offered technical and QA assistance to the boards.

## **THE FUTURE**

For the future, we see the main role of the consultant moving away from the traditional areas, although his skills will still be needed here. There is a wider role for him to play to help maintain the industry's necessary skills base, by sharing his experience with others through general and specific training courses. On the trade side, he can help coordinate the required training courses with the registered authorities and training boards, while on a more academic level, he must lay the foundations of course modules available to engineering students, either on campus or via correspondence.

## **CONCLUSIONS**

The role of the consultant is changing. While the traditional tasks will still be required of him, he must turn his attention to areas from whence skills have been lost by industry, namely OH&S and training.