

SUPPLIERS/REFINERIES/CUSTOMERS : VERTICALLY INTEGRATED TEAMS

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ABSTRACT

Alumina quality - how to achieve it. Good quality alumina - that product which customers want and are willing to pay for - is not simply processed bauxite. Rather it is bauxite processed carefully using both internal and external resources to produce alumina to meet the customers' needs.

The key resources are people. Many work for the refineries, others work for the customer, still others are associated with the suppliers of equipment, materials and/or technology. If one of these groups of people are not focused on nor trying to achieve, good quality alumina, then the task of making good quality alumina becomes much more difficult or even impossible.

The use of "vertically integrated teams" ensures that suppliers, refineries and customers are informed of the objectives and work in a co-ordinated fashion to achieve those objectives. Despite being employed by different companies the goals are shared as are responsibilities and authorities to reach these goals.

Because of the relatively large diverse nature of this type of team the use of a "driver" and a administrator/facilitator are important. The driver maintains project momentum and the focus on the end goal. The administrator/facilitator maintains the quality systems and the coordination of resources. The result is a Total Quality Management approach with high quality quick results.

This paper presents how these teams operate, how to manage and train the members and what benefits can be expected by all participants. Some of the concepts may already be written into existing project procedures. This paper demonstrates how to obtain timely practical results.

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1.0 INTRODUCTION

"Good quality" alumina is not an absolute. The quality of alumina required by end users depends on its end use, available technological advances, the quality of alumina available from competitors and, of course, what the customer is willing to pay for.

Typically a change in the required quality of alumina is customer driven. For instance a smelter may demand less fines in their smelter grade alumina. Often the reason for the change in quality is not given.

The refinery's management works to meet the specification. They issue directives to staff who in turn issue directives to subcontractors and suppliers. Every link in the chain does its part without knowing the "Big Picture" and without providing input directed at solving the customer's problem - they only meet the directives issued to them.

The above customer driven scenario has a few implicit assumptions including:

- 1) that the customer has properly identified the problem and the best solution (the one resulting in the alumina specification);
- 2) that the refinery personnel know how to best achieve the specified product quality; and
- 3) that all the information required at all levels is actually conveyed to those who need to know.

Companies are, as the word implies, a company of people. People have numerous excellent points, but not everyone has the same ones. Large companies, e.g. alumina refineries and aluminium smelters, have a lot of people employed and therefore should have access to a huge knowledge data base. However, larger companies are also prone to communication problems, and may be slowed down by bureaucratic processes. Many people employed by large companies are attracted to these companies because of the stability of the company. These people are often not lateral thinking risk takers and occasionally not aggressive in pursuing their duties.

Alumina companies, unlike many other large companies, do not exchange technology, data, information, etc., between themselves. The result is that alumina companies operate in a very insular environment and are often unaware of new (and even existing) technology. They are forced to develop their own technology under bureaucratic systems which, by and large, do not promote innovative or efficient results.

The resource required to advance the quality of alumina is people. People from both within and without the alumina company working as a team. The team draws on strengths of members with company members providing experience and systems and

external members providing technology, efficiency, external contacts, and lateral thinking. The efficient amalgamation of these people can be done by modifying policies and project structures to allow for a "vertically integrated team".

A "vertically integrated team" is one which draws on the fundamentals of Total Quality Management, but accepts that projects can get bogged down in talk and bureaucracy if not guarded against. The "guard" is someone generally known as a "driver". The person is, in fact, an inhouse entrepreneur. In years gone by this person was the project manager who took large risks based on "gut feel" and was successful often enough to continue in that style. These people do not conform well to a Total Quality system.

Drivers are entrepreneurs in the sense that they have a vision of the end goal and will focus on that goal to the exclusion of all else. If a line of thinking or study will not achieve the particular goal he will drop it (irrespective of its potential elsewhere) and move onto some more promising lead. Drivers tend to lean away from detail unless it is central to the success of the project - statistics and quantitative testing are considered housekeeping duties to be performed after a solution has been found (if at all). Although drivers are good motivators they can mistreat co-workers and subordinates simply for not being able to keep pace or for not believing in the same vision.

Drivers are also excellent in putting forward their concepts and pushing them through administration and into the plant. Drivers can often make a project successful by sheer perseverance and salesmanship and for this reason, amongst others, they play a very important role in the "vertically integrated team".

The "vertically" integrated team accepts the benefits of the driver and his management by objective style and formulates the team members to support the driver and maintain a Total Quality Management approach.

1.1 The Team Leaders

There are two key people in the team, the driver and the facilitator/administrator. The driver is well described in the introduction. Suffice to say that this person regards achieving the end goal as paramount irrespective of the means employed to achieve it.

The facilitator/administrator is as unique as the driver This person is a blend of the traditional project manager who is able to schedule and coordinate a project (the administrator) with a person having the people skills to bind dissimilar people into a team and facilitate the project's end goal (the facilitator).

The facilitator/administrator must be able to deal with the driver (who by his nature is not likely to be a team person and not usually interested in conforming to someone else's views). The facilitator must be strong enough to let the driver drive the project without letting the driver drive the project, or those associated with it, into the ground. The team must not degenerate into "serfs"

acting on the whims of the driver. The facilitator will need the authority and ability to check the driver and maintain balanced control of the project.

The facilitator/administrator will be a person with an eye for detail. A willingness to use statistical methods and quantitative experimentation will balance the disregard of these tools in the driver. It is the administrator who will ensure the project achieves its goals on time and on budget. This person is the one who makes the driver accountable for his actions.

In many ways the driver and the facilitator/administrator are diametrically opposite types of people. The balance of the two is crucial. The facilitator/administrator must recognise the role of the driver and give the driver a lot of latitude. The driver must acknowledge that the project must be managed (not just driven) and therefore respect the administrator's role in controlling the project. A subjective list of personal attributes for the two key people is supplied in Table I.

TABLE I:
Personal Characteristics

<u>Facilitator/Administrator</u>	<u>Driver/Entrepreneur</u>
Conservative	Risk taking
Good people skills	Good motivational leader
Well organised	Qualitative
Detailed	Forceful
Quantitative	Goal oriented
Intransigent	Egocentric
Respectful	Quick thinker
Total Quality oriented	Able to assess new ideas

1.2 The Team

The remainder of the team is very much a function of the type of project being dealt with. The team should certainly contain a representative of the end customer. This person need not be an employee of the customer. Rather the person must know the customer's needs and wants and be willing to take the customer's position in discussions. Often this person will only be involved infrequently during the project to aid project review meetings.

The company is usually (but not necessarily) represented through both the driver and facilitator/administrator. In addition there are company personnel who are experts in their area and can make a real contribution to the project and should be on the team. The temptation to put people on the team simply because they show interest (rather than being qualified in some way) should be resisted. The risk is that the team becomes too large and becomes biased towards traditional company views and ways of doing things.

The remainder of the team will likely be the source of most advances in the project. They are the suppliers of people, materials and especially technology. It is these people who will input external know-how and innovation or ask questions which result in innovation.

There should be at least as many suppliers on the team as company personnel, preferably more. Their involvement should be encouraged, but suppliers of basic standard items may not be in a position to add much.

The greater team (driver, administrator, customer's representative, and say, one to three company experts, and three to six suppliers) can get fairly large. However, this group is the source of innovation and will serve as a project review body. During most stages of the project a lesser team of active members will exist. For instance during a development stage only the driver, administrator, a company expert and perhaps two suppliers (a consultant and a fabricator) would be involved. During installation the lesser group would include the driver, administrator, a company expert (area engineer), and perhaps three suppliers (the designer, fabricator and on site contractor).

1.3 Project Initiation

The project is initiated when a need is perceived by the company either because of a customer request or a self generated process improvement. Traditionally the directive is passed onto only the driver, however it is important that project control be implemented from project initiation. Therefore it is recommended that the facilitator/administrator be informed of the project first so that he/she can get an administrative framework prepared. At least the two people should be informed simultaneously.

At this point the administrator and driver should meet and discuss 1) what they believe is entailed in the project; 2) what can be accomplished in the time frame given (if no time frame was given set a firm deadline by which the project will be completed); and 3) who might have constructive input into the team including customers, company personnel, consultants, contractors and suppliers.

The administrator next organises a meeting of those people. The purpose of this meeting is brain storming. That is to assemble a very large diverse group and draw on their collective intellect, experience and lateral thinking ability. This meeting is not to achieve a fixed direction, or actions, only to raise ideas and possible solutions. This is the largest single meeting of the project. Its size is limited only by the administrator's ability to chair it.

At this meeting the end customer's problem is presented, preferably by a representative of the customer who can field questions. The driver would present the direction he feels the project should go. All the while the chairman should allow and encourage questions.

Once the problem and a possible solution have been presented the brain storming begins in earnest. This part of the meeting can take many forms. Participants should be invited to put forward their ideas verbally or as notes during or after the meeting. For the verbal ideas the chairman should write every idea down, preferably on an electronic whiteboard.

In order to encourage ideas it is important to gather ideas first, then discuss them. This is for two reasons. First if too much time elapses people will inevitably lose enthusiasm for their own idea or even forget it. Second, if there is discussion which is critical many people will not present their idea for fear of exposing themselves to criticism.

The discussion of the ideas should be aimed at identifying advantages, disadvantages and potential problems associated with the idea. Although some ideas will obviously rise above others no one idea is to be selected at this meeting. Rather time, a day or two, should be allowed for those who wish to give written submissions to do so. All members of this meeting should be provided with minutes (white board copies) of the discussion to aid their written submissions.

1.4 Team Meeting

The greater team is now assembled. The members are selected by the driver and administrator and will generally be drawn from members of the brain storming meeting. Its size should probably be kept to ten people or less. Each member has a duty to see that the project is progressing according to plan from his/her perspective.

The first order of business is to introduce the project from a Total Quality Management perspective. This will usually only require ten to twenty minutes. It is, in fact, a training session on Total Quality Management which lays the ground rules for how the project will proceed.

Next is a review of the possible solutions. The obviously inferior solutions are put aside with a note as to why - if the preferred options fail these solutions may still be called upon. The better options are then critically reviewed with the aim being to select the most likely to meet the customer's needs in the long term.

The whole team then is involved in setting the project's agenda, setting stages, when reports are due and what they should contain, on stage deadlines and project completion date. The result of this meeting is a very good outline of the project which all team members agree upon. The team members individual commitment to the chosen direction should be sealed with their initials or signature on the notes or similar. It is of singular importance that the driver fully agrees to the project as this person will tend to not comply with the agreed direction unless he/she believes in it. This may well involve a compromise where the team allows the driver to pursue his ideas as well as the team's agreed project outline.

1.5 Communication/Feedback/Review

After the initial team meeting(s) the team gets down to business. Not all the team members will have actions to perform at all times of the project. At any given time there will be a core group of team members who are actively performing actions. The driver will be in contact with core members on an irregular schedule to integrate actions or push individual concepts. The administrator will be requiring regular progress reports (nominally every two weeks) to allow him to document the overall project's progress. Review meetings are to be held at predetermined times or when landmarks are reached.

These review meetings are important in development and/or research projects because of changes in project direction due to an idea not performing satisfactorily. The review meetings should be attended by the whole team not just the active core members. This will help breathe new perspectives into the project and maintain a balanced view of the end goal. Reviewing the applicable Total Quality Management principles at these meetings will help to refocus the project.

1.6 Public Relations

The normal actions of project management are also performed in vertical integrated teams. One improvement which may be new to some companies is to advertise not only the formation of the team, but its participants (team members and the people working for them) and the team's progress.

The longer the project the more need for this advertising. Long projects can be very emotionally draining and demoralising, particularly if progress is slow or hard won or the driver is treading on people trying to maintain project momentum. The act of advertising the team's progress reinforces that all members of the team perform well or not together. This means that no one person can steal the credit for the team's success. Similarly if one member is having a difficult period he/she can share in the overall team's success and likewise dilute the stress and guilt that is associated with not performing well. This is not to say that his/her responsibility to perform is in any way diluted into the team, but the stress can be relieved.

1.7 Project Conclusion

As the project approaches completion, the winding up of the project needs to be planned. In particular summary reports by the team members on their aspect of the project need to be prepared. These will be very different for each member. Some will be technical reports, others will report difficulties with contractors and suppliers. These reports will generally be straight forward to write if the progress reports have been performed, as they will contain all but the universal conclusions and recommendations. The administrator should prepare an overall summary which can be published along with the names of the team members and all those directly involved in the project.

At the project's conclusion an overall review of the project should be performed at a full team meeting. It will vary, but will usually revolve around how to better manage the project. This meeting and the summary reports provide the final information from which the administrator can prepare an overall summary report.

Lastly, there is the celebration which provides a landmark to close the project. The celebration can be a party, dinner, sporting function, whatever. At the celebration should be an article (written by the administrator and anyone else who wishes to provide input) which highlights the successes and names of team members and participants and their contributions. This article is to be published to ensure acknowledgement of everyone who helped in the project.

1.8 Benefits

On the surface the "vertically integrated team" appears to be a lot more work for who knows what sort of benefit. The benefits are very real and start with the end customer.

The end customer will receive the benefit of a large diverse group of experts each focused on solving the customer's need in the best manner possible.

The company also benefits by accessing experts who are generally external to the company. The knowledge base of these people is much more diverse than if only company people are involved and much less expensive. The inclusion of the external members on the brain storming session and on the project team provide the company with a new perspective, contracts and innovation to solve the problem efficiently.

Suppliers benefit greatly because they kept more abreast of project progress, hence they are better able to plan their own operations, which result in better efficiency and lower costs. In addition they have an avenue for introducing novel technology or products, which may otherwise remain on the shelf.

1.9 Conclusions

Use of a "vertically integrated team" affords benefits to all involved at little or no additional cost.

The combination of a driver and administrator acknowledges the fact that two very different types of people are usually needed to maintain project progress as well as a total quality approach.

Only minor changes to team structures are required, these being use of both the driver and administrator and inclusion of the customer and suppliers as team members.

1.10 Recommendations

- 1) Implement "vertically teams" to improve product or process quality and efficiency.
- 2) Select the driver and administrator very carefully as they must be balanced and capable in their respective roles.
- 3) Encourage involvement from all levels and make sure all levels are represented on the team.