



Veeder Root

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Veeder Root Environmental Systems Europe

Although somewhat dated this case still represents a good example of the power of employee involvement in innovation and the approach needed to make this a part of the everyday culture of the organization.

This case was prepared by Maeve Gallagher, Sarah Austin and Sarah Caffyn working as part of the CIRCA (Continuous Improvement Research for Competitive Advantage) programme at CENTRIM – the Centre for Research in Innovation Management at the University of Brighton.

There [is a video interview with Hugh Chapman , the Managing Director here](#) and a [transcript here](#)

Veeder Root Environmental Systems Europe (UK) carries out the European operations of Veeder Root UK (a flagship company of the Danaher Corporation based in Washington DC, USA).

Overview of case

Over the last four years the whole company has undergone a number of transitions and learning cycles. Central to the change process at Veeder Root is the introduction of CI which has been driven by top management.

At Market Harborough the company has successfully implemented CI through the application of two key strategies, firstly by devolving responsibility for achieving business objectives to all levels and secondly by encouraging employees to input ideas. The company has not

introduced a formal CI programme, but incremental improvements (kaizens) occur regularly in both team situations and on an individual basis. As well as the tangible benefits CI has achieved, it has also contributed towards creating a more self sufficient and innovative work-force.

Background

CI at Veeder Root is creative and largely uncontrolled but understanding leads it to being business-led and strategically aligned, we can see where improvements are needed, and policy deployment drives the process.

(Site Director)

The company has two locations within the UK. Sales for electronic gauging systems, found on petroleum sites, are based in their London headquarters. Manufacturing, distribution, service support and sales of non-electronic products are based at Market Harborough in Leicestershire.

The Market Harborough site was originally family-owned and produced basic gauging systems for measuring the contents of underground petroleum tanks. In 1992 Veeder Root purchased the company from Microlec.

Veeder Root also manufactures gauging equipment and their product ranges include electronic systems for leak protection and stock control. Customers for this type of equipment include ESSO, Shell as well as supermarket chains such as Tesco and J Sainsbury. The company maintains sixty percent of the US market share and ninety percent within the UK.

Post-change

When the company took over the premises at Market Harborough major reorganisation and changes took place. These include the following:

- concentration of all manufacturing operations at Market Harborough;
- concentration of sales and marketing for traditional products at Market Harborough;
- an investment programme and considerable re-organisation of the Market Harborough site.

The company, pre-take-over by Veeder Root, had a traditional approach to working with a mechanistic style of management. Among the first changes to take place was to foster a new climate where people were given the freedom to experiment and learn from their mistakes. Other elements of the acquisition plan included the following plans to improve standards, quality and staff training.

Table 4.1: the challenge of change

redefine responsibilities at all levels	focus on customer needs
introduce modern management systems	introduce modern manufacturing techniques
introduce Quality Assurance systems through ISO9001	introduce Supplier Partnerships
introduce major training plans for managers and staff to become multi-skilled	prevention of errors

Driver for change

The introduction of CI at Veeder Root was motivated to a large extent by policy and work practices at Danaher Corporation. In 1992 the UK board members visited the parent company where they were impressed with the high levels of employee involvement in implementing change, through 'kaizen', to improve processes. These activities involved 'solving' rather than just 'identifying' problems and secondly, their involvement was largely 'improvement', as opposed to just problem oriented. The approach taken in the American company gave the UK subsidiary a framework in which to introduce the principles of CI. Under the guidance of the parent company, and with the help of a Japanese consultant, Veeder Root began their CI journey.

CI training

Training was introduced using the expertise of an external consultant as well as examples of best practice from the parent company in America. In the first instance two of the managers

were trained as facilitators, and eventually four to five people across the organisation were trained in this role. The facilitators encouraged involvement in the kaizen teams, which were set up to tackle areas in need of improvement across the company. The kaizen teams operated on an ad-hoc and informal basis. People were encouraged to become involved in teams in which they could make a positive contribution. This was achieved by giving individuals the opportunity to participate informally in a team, by observing, learning and asking questions, and finally taking a more active role. This has helped to gain support for the kaizen way of working which has now become a part of everyday working, and it works on an informal basis without monitoring or supervision.

In the early to mid-1990s Veeder Root, along with a number of other UK companies, had undergone a variety of initiatives aimed at achieving competitive advantage. These included lean manufacturing, cost reduction, faster delivery time and introducing standards and procedures, for example through ISO9001. The next phase of change was quality driven and focused on increasing customer satisfaction.

Recent impetus for change focuses on employee involvement and creating a 'learning organisation'. This is probably one of the most difficult stages in the improvement cycle to implement and quantify outcomes.

However, Veeder Root has had an advantage in that it was a small company with an open minded work force which has hastened the process of change.

Management support

One of the main tenets of CI is to give employees the opportunity to learn new skills and develop. In Veeder Root one of the employees (who was an unskilled worker) was encouraged

to develop some IT and computer skills. This particular worker asked to be made redundant rather than learn a new skill which he was afraid he did not have the ability to master. However, through training and management support the individual gained the required skills and has since adopted a more responsible job role, which requires a greater level of skill and capability.

Information technology

Information technology has helped to speed up a number of processes by generating data which helps the company to assess performance.

For example both customer complaints and ISO standards are now on-line. All training in the use of Information Technology took place in-house and all staff are trained to analyse their work performance based on computer generated information. This is done on a monthly basis to help monitor how well targets are being met.

Approach to CI

In the early days the company recognised that success would not happen over night, and aiming for one hundred percent improvement company-wide was neither realistic or practical. Therefore, the company decided to focus on making incremental improvements across as many areas as possible.

CI looks at any aspect of our business to try to make small improvements, five percent here, two percent there, which helps keep our attention focused on everything. We're not looking for one hundred percent improvement, our culture is too bogged down in this, we just need to improve and get modest gains, going back to the drawing board and looking forward all the time.

(Hugh Chapman, Site Director)

Policy deployment

The corporation has outlined their key objective as follows:

To achieve world class excellence in customer satisfaction by continuously striving to improve quality, service, delivery and cost.

Veeder Root is implementing this objective through policy deployment, which means devolving responsibility for meeting business aims throughout the different levels within the company. While policy deployment is a corporate objective for the group as a whole, each site has the autonomy to implement it in the way most appropriate to their way of working. The advantage of using policy deployment as a means of introducing CI or 'kaizen' is that each of the business aims has an impact on different parts of the company. This helps to ensure that the improvement activities are linked to specific targets and strategic aims, which makes them more meaningful to individuals by giving them a greater sense of ownership.

Devolving responsibility

Annually the board identifies the key business aims for the company and outlines the expected performance for the coming year. The board will first draw up a broad aim, for example 'we want to be world class and improve customer satisfaction'. There are elements of this statement that can be applied to every area and the management team come together to ensure there is consensus about the targets. Each manager then takes these objectives into their own work unit and splits it into 6 or 7 items to which that the section can contribute.

Examples of generic targets include the following:

- to improve quality;
- to exceed expectations;
- to put the customer first;
- to ensure best practice;
- to meet promises and commitments;
- to reduce costs and increase efficiency.

In order to achieve the objectives and create the kind of culture where 'everything can always be improved' the company ensures that the targets are achievable, for example an expectation of eight percent increased productivity or five percent reduction of rejects over a six month period

Monitoring policy deployment

The items/targets are quantified, put on a chart and monitored every month. Feedback is given and reasons for slippage or not achieving targets are explored.

The advantage of policy deployment is that it sets up targets and drives the company in the direction the board wants to go. It also gives freedom at the individual level while ensuring everyone is driving towards a common goal.

The objectives are recorded on a '**Policy Deployment Matrix**' to which all staff can refer. The policy deployment targets at the time of writing this case were set in September 1995 and came into force in January 1996. These are posted around the building within each work area and in communal areas, such as on the company notice boards. Targets are assigned to individuals and kaizen teams are set up as necessary to work towards meeting those targets.

For example, an employee identified that the cost of production was too high at £500. A kaizen team was set up which succeeded in reducing production costs to £115 in two attempts. The kaizen teams capitalise on the skills of the people with the relevant expertise, regardless of level in the company, for example the site director and front line staff are currently working with customers to help develop and modify a new product.

Philosophy for change and professionalism

The philosophy for change at Veeder Root is based on a code of behaviour which encourages people to make improvements, without trying to force employees to contribute. The onus is on management to lead and encourage people to put forward ideas. Guidelines on how to communicate with people are illustrated in the following table. Veeder Root have helped to

make the change process more visible by formally recording their expectations in terms of exchange of information and the scope of projects.

Table 4.2: - Management of People

Management of people is about:

<ul style="list-style-type: none">• Management of the unknown and of fear
<ul style="list-style-type: none">• Leadership - focused direction and execution
<ul style="list-style-type: none">• Direct and open communications
<ul style="list-style-type: none">• No false promises
<ul style="list-style-type: none">• No false or patronising rewards
<ul style="list-style-type: none">• Training, development, multi-skilling/tasking
<ul style="list-style-type: none">• Promotion of team work and flexibility
<ul style="list-style-type: none">• Visible display of information
<ul style="list-style-type: none">• Sympathise when things go wrong

Enablers

The kaizen teams are usually set up in such a way that maximum benefit is gained from shared knowledge and skills. Usually there are six team members, which consists of two people who know the process and four others who are not from the same work area but who can make some useful contribution. The team members come together to look at the process and set up charts to allocate responsibility. If possible the teams try to restrict the time spent on solving a problem to two days.

Some of the kaizen activities that take place are more informal and are linked more to local improvements in performance than strategic goals.

Examples include improvements by employees to their own work area. Employees are given the freedom to arrange their work areas in a way that ensures maximum efficiency and comfort.

The following points outline the approach to project management at Veeder Root which help to define the scope of projects and how the process should be managed and recorded.

Guidelines on managing CI projects

- Pick a tool you understand
- Pick a project which is easy and where success is assured
- Involve a number of people from different disciplines

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- Train project team in tools being applied
 - Record existing process and record changes
 - Ensure project is completed and regularly audit and maintain new methods used
 - Publish the benefits and acknowledge progress and success.

Staff training

'Staff training, teamwork and the introduction of simple management systems has resulted in significant improvements in the Market Harborough company's performance'.¹

The majority of training takes place in house. The site director has a very 'hands on' approach to training, and gives a training course in basic word processing to staff that require it. The company has developed a training plan in which each individual has a number of modules to achieve. There is no formal system for monitoring individual performance except through the measurement of the targets set on the Policy Deployment Matrix. The company also takes an outward approach to identifying gaps in skill levels by bench-marking performance against other companies. Membership of the CIRCA CI Network gives Veeder Root the opportunity to meet other network companies to compare experiences and share ideas.

¹ Article printed in the Leicester Mercury in November 1994 in relation to Veeder Root achieving the Company of the Year Award, organised by Commerce Magazine.

Increase in employee skill level

Since 1992, the company has managed to build up employee skill levels and develop a highly flexible workforce who can cope with change. In the early days operators performed a small number of functional tasks, usually about four; now each worker can perform approximately 32 tasks which can be applied across a range of functions within the company. This flexibility has been driven partly by the aims of meeting customer delivery times and improving performance.

Cross-functional job rotation takes place on an ad hoc basis. An operator will often help out in the sales function, when they are understaffed or inundated with customer calls. This approach to work helps to create a greater awareness of customer relations as well as giving direct feedback to the front-line staff.

Improvement in efficiency

"We can see advantages so we are convinced, many are dismissive and do not see the value in small things, those who are convinced bring about a change of attitude."

(Hugh Chapman, Site Director)

The improvement in efficiency has resulted from a gradual attack on all areas rather than through major change. This has resulted from giving employees the opportunity to specify and implement changes in their work place which makes the job a bit easier. The majority of changes have taken place within the production area and they are summarised in table 4.3. Some of the improvements have been implemented by individuals and some by kaizen teams, the majority of ideas are small but have had an impact on the company as a whole.

Table 4.3: improvements made by individuals and kaizen teams

Improvement to	Old system	Improvement	Area	Implemented by	Result
available storage space	no designated place to store probes	design of customised racks	stores	kaizen team engineering and stores	more space reduced cycle of activity and time wasted
redesign of work space	single function work areas	design of multi-purpose work bench	packing	kaizen team	simplified task increased efficiency
redesign of workspace	operator working from three different desks	redesign so functions could all be operated from one desk	manufacturing	kaizen team	more pleasant and efficient work area
automating processes	hand-written labels on products	barcode system introduced	manufacturing production	kaizen team	speeds up process

Other examples of CI initiatives include:

- Displaying kanban cards in internal assembly which act as instruction to assemble parts, rather than getting instructions from supervisors. Everyone is trained in each cell and operators can move around between the different cells. This has helped achieve a number of benefits, including simplifying the process, reducing stock levels, improving quality and giving individuals more control over their work area so they can now carry out their tasks without requiring supervision from the works manager.
- Equally, the fact that tasks are clearly illustrated in different work areas has helped increase job rotation and flexibility without requiring in-depth training. These open stations are simple to run which means that anyone can do the work there. More people can work together in this area if the company is inundated with orders, which helps to ensure that the three day order delivery system is met.
- A group of operators decided that they wanted to redesign their electronic PCB board area to be more efficient. They went to an Electronics Show and selected the parts that they wanted, which were the most appropriate and cost effective. Management invested the money and bought the carousels for holding stock on-line and the employees redesigned their whole work area.

Carousels are loaded with different programmes presenting operators with parts they require thereby eliminating the searching process and speeding up assembly of electronic boards. The area was then fitted with a home made extraction system used to filter out odours and fumes through a fan (which used to be a old tool box!). As a result of these changes all manufacturing times were reduced by fifty percent. This is a good example of how employees used their initiative and understanding of their work area to implement an improvement which made their work area more efficient, comfortable and environmentally sound.

Key attainments from the kaizen teams

The main benefits from the kaizen teams include:

- greater understanding by employees of processes and how job roles fit into the overall structure and aims of the company;
- turnover has increased by forty-seven percent;
- overdue customer orders have reduced from 430 to 5 over eighteen months;
- order response has been reduced from eight weeks to three days;
- customer satisfaction is in excess of ninety percent;
- process time has been reduced by up to eighty-eight percent;
- product costs have been reduced by up to seventy-nine percent;
- thirty-five percent saving on space utilisation.

Success factors

The Site Director attributes the success of kaizens to the fact that change is brought about as an ongoing process with modest targets rather than adopting a 'company-wide one hundred percent improvement' approach. The projects which are chosen often rely on input from a number of disciplines and the results are 'quick and dirty' so people can see the

improvement early on. This helps to ensure the momentum is sustained and projects are completed as well as ensuring people remain motivated. The philosophy of 'incremental improvement' as an ongoing process seems to have taken root in the company. In fact the Managing Director remarked that he was not aware of all of the changes that have been implemented as people seem to have made a habit of seeking out ways to improve things, without looking for recognition.

Quality has improved as people know what they are doing now so it is easier to monitor when things go wrong.

(Hugh Chapman, Site Director)

Reduction of inventory was a UK corporate objective which has been very successfully achieved and now the Market Harborough site acts as a role model to the European subsidiaries on how to introduce 'best practice'.

Other factors which have helped the company to achieve competitive advantage include simplifying processes and reducing the amount of paperwork generated. For example, in an attempt to abolish all work orders the company now use many dispatch notes. This piece of paper has numerous functions, it works as a kanban by generating information to down grade stock levels, as well as acting as an authorisation to manufacture a product. The dispatch note is on line which means that all areas of the company can access the information. The company also uses the electronic mail system as a form of internal communication and an interface between the different departments such as sales and marketing and production.

E-mail

The electronic mail system has also been used as a means of passing on information on correct procedures and practices in the company. For example when a customer complained about the telephone manner of an individual in the company, correct procedures on how to address customers were e-mailed to all staff which helped to deal with the problem without targeting or disciplining one individual. The e-mail system has helped to speed up processes through by-passing traditional communication channels and getting individuals from different locations directly in touch with each other (for example the London office interfacing with Market Harborough) .

Information sharing

The communication system at Veeder Root is quite simple and straight forward. A lot of information is displayed on the company notice boards. One of the notice boards acts as a sort of recognition or achievement board. This shows photographs, press releases and bar charts showing the improvements and reductions, as well as a glossary of terms for visitors.

A general notice board displays social events and general news.

The third board outlines more formal company policy and objectives, for example what needs to be done in the different parts of the organisation, the company's monthly performance, which includes any poor performance such as overdue customer orders and the policy deployment matrix which outlines the extent that targets have been met.

Culture change

The change in culture at Veeder Root has resulted from getting people from different teams and departments to talk to each other, both informally and through the kaizen teams. Attempts are made to involve all staff, both those working within the organisation and field workers such as service engineers.

For example, in 1995 there was a problem between the service engineers and the manufacturing section. One of the company targets was to reduce the amount of faulty parts that were returned from customers from thirty-five per month to seven per month. This was achieved, but it transpired that the service engineers were not returning parts quickly enough to be able to determine a root cause analysis. This problem took a year to solve as the two sides tended to blame each other. Eventually the management spoke to the service engineers, and the manufacturing engineer suggested that they sat down and worked things out together.

The engineers and manufacturing sections put their heads together and developed new test equipment, training programmes, and fault analysis techniques which allowed them to identify problems and achieve greater customer satisfaction.

Results

In fifteen months a system for prioritising and dealing with faults was implemented and in the intervening time the blame culture and poor communication between the two different sections had been broken down.

The company have also achieved a number of awards over the last few years. These are outlined in the table below.

Table 4.4: awards and recognition

1994	Winners of the Commerce Business Magazine Company of the year award for 'Manufacturing Excellence'
1995	Runners up of the Engineers Magazine Manufacturing Industry Achievement Awards 'Manufacturer of the Year'
1996	Department of Trade and Industry 'Insight Company'

Veeder Root - review of implementation

Key points

- The aim of CI implementation at Veeder Root was to develop a culture via training to allow people the freedom to experiment and develop techniques in support of the overall corporate objectives.
- The approach to CI is informal and encourages incremental involvement. Employees in the production area were given the freedom to arrange their work area in a way that ensured maximum comfort and efficiency, and this has helped to create a culture of experimentation.
- The CI activities are focused on improving internal efficiency and cross-functional working. The targets are modest and ongoing and results from projects are visible early on. This

approach has helped ensure that the momentum is sustained and it encourages people to remain enthusiastic.

- The opportunity for meaningful involvement is enabled through policy deployment. This means that all employees have targets and objectives assigned to them and this helps to drive CI in work situations.
- Veeder Root has reaped a number of benefits from the introduction of CI. These are measured in terms of statistical outputs, margins and reductions in inventory and operating costs.
- As the CI process becomes an integral part of everyday activities it becomes more difficult to measure the tangible outcomes. Veeder Root is now at the stage where CI can no longer be documented totally in quantitative terms, but it has moved to a level where it is becoming ingrained in the culture.

Summary:

As a small company Veeder Root cannot afford to have resources tied up in implementing programmes which work in parallel to daily activities. Therefore, the approach to CI at Veeder Root is fully integrated and there are no formal systems such as suggestion schemes or newsletters to encourage involvement. However, the Site Director plays a very supportive role in the CI process and helps encourage people to make improvements to their work area. There are also a number of enablers in place to encourage involvement, including kaizen teams to tackle specific problems and help share knowledge.

This case provides a good example of CI being introduced in a way which best suits the organisational culture. However, the informal approach taken by Veeder Root might not be

as effective in a large organisation which did not have such a highly skilled and flexible workforce. Although the informal nature of CI activities indicates a high degree of autonomy and freedom, some advantages may be lost by not capturing good practice, so that learning by sharing could be .