

## QUALITY IMPROVEMENT AT MULTIWALL BAGS LTD

Ian Allerby  
Carter Holt Harvey Ltd  
Timber Group

I'm going to talk today about how the quality programme at Multi-Wall Packaging was developed. There's still a lot to do today, so it's by no means definitive.

The NZFP I joined was eventually taken over by Elders Resources NZFP, and as part of that, they started to split the group up from the centralised monster to decentralised units. Multi-Wall Packaging came out of that era and after about five years, the company was then taken over again by Carter Holt Harvey. That's when we were formed into Print Pak UEB, one of the few packaging operations for the Elders Resources NZFP Company.

### The Past

When we started, initially we didn't know what our customers wanted. We had a foreman with 25 years of experience who had never been to a customer's plant. We had no customer surveys. We didn't know how our well our marketing teams were performing at all. We had practically no specs for raw materials. We had huge down time and machine stops for breaks and shift changes. All machines would stop for meal breaks. Changes of machines to different jobs were all large. Half the machines didn't have the tools to do changes properly, so there used to be quite a procession to the engineer's workshop to get the tools to change machines.

We had 100 per cent checking. We used to have a 'rowing team', eight girls on either side of a conveyor who used to 100 per cent check every bag that came off these machines. Obviously 100 per cent checking produced a huge amount of rework, and that was largely because the operators on the machines were paid a bonus for production, there was no disincentive for quality. We found we had a colour-blind printer. I found that quite a revelation. He is still there today. Four per cent of males are colour-blind, so in this room of about 200 people, there would be 8 people in here who are colour-blind. Males are pretty disposed to being colour-blind, females are 20 times less likely. So more than likely, you will have colour-blind people on your sites.

We had no training facilities or equipment, not that we could stop to train people, it was more important to keep things going. There were staff who couldn't read. As long as you were a part of a particular Polynesian family, you were in. We had operators who had an unbelievably poor mechanical aptitude. We put in, subsequently, mechanical aptitude tests. The test would ask things like:

"If this pulley goes that way, and this pulley goes this way, and there is a belt round the two of them, what is the pulley in the middle going to do?"

Our existing operators scored about nine out of 25 on a test like this. Now we

wouldn't accept, or even interview staff with a score of less than 20 out of 25.

We had a suppression of information systems. Bad news was kept away from everybody because you were fearful of what would happen. People talked standards down. There were these 'good' reasons why we were only 70 per cent efficient to a standard, and they were always the same reasons day after day, and none of them seemed to make sense.

We had high absenteeism, because we didn't know the skills of our people. Sometimes you just got thrown onto a machine and left to figure it out.

We had bonuses for production. Scrap rates were 12 per cent on some machines, and that was acceptable at the time.

We had no on-site laboratory as it was all centralised and all samples were sent away to be tested. While we had two of our own staff up there, it was up to other people to decide the priority of use of the expensive equipment to test things. We had to wait for a week for results, by which time the material had been used, and it was a waste of time anyway. We had very few measuring systems. It was mainly word of mouth and the way you got trained was by the buddy system.

We had 135 years worth of some raw materials. It was incredible-adhesive coming out of our ears. We had a very poor paper quality from NZFP Pulp and Paper. It unbelievably poor, the main problem was slack and tight edges. As they were a sister company you basically took what you got. That was the way it started out, we were later encouraged by their more positive attitude.

We had a very poor staff environment:

broken windows, dark, cold, dirty, an ugly ugly place, birds in the factory were common. We would periodically carry out extermination campaigns and find birds in the paper.

Staff never regularly, or sometimes ever visited customers. These were senior staff. Marketing and sales thought that it was best to keep people away from marketing because if our people knew what the customers really wanted, or talked to customers they could stuff things up.

There were poor meetings with no agendas, and very poor follow up. We had very disinterested managers - a lot of them long term managers. They worked by the convention that 'this is the way things have always worked'.

We had consultants with very many different ideas. One would strongly advocate this particular thing, and one would strongly advocate another. One we used we found a little bit later on was a taxi driver.

We had very poor information systems to run the company with. If you couldn't do it on the computer, it just couldn't be done.

We had a high pillage rate; theft that was just unbelievable. In fact, I heard once of an electrician who was using a power tool with a huge lead that went for miles across the factory and the drill stopped. He went back and tried to find out what had happened. The middle lead had been nicked. He couldn't believe it - even while he was using it. I think he checked the fuses and switches first.

We were used a typewriter to document our quality assurance system. In the old days you just don't appreciate how really good these new computer systems are

until you've had the old typewriter. The secretaries would twink out a mistake and retype it. The mistake would also be made somewhere else so you would be continually chasing the mistakes. Now I see Telarc are getting quite pedantic about spelling mistakes. It makes me chuckle about the way it used to be.

Material yield was an area which we just didn't have a clue about. It was unbelievable the way we were getting diddled by our suppliers. I am sure it doesn't happen in this industry. We had factory orders which were often wrong, our marketing guys couldn't even tell our factory guys half the time what they wanted, the colours to use etc.

### Implementing TQM

We were coming from a very low base as you can imagine anything you brought into in this sort of environment was going to make things better. What happened? Well, when Elders took over, there was a whole management shake out, and a new General Manager was appointed. They created this role of a Quality Assurance Manager, and why did they do that? Well, it was because the Dairy Board, one of our major customers, had said that you've got to be certified to a Canadian quality assurance standard, ISO wasn't heard of in those days, and we certainly didn't know of it.

I got the short straw and was sent down to head office. The company was losing a lot of money, so it wasn't an attractive place to go. I didn't know what quality was all about. I remember saying to the new General Manager, 'You know, I'm going to do this quality assurance incentive role down here, but I don't know what its all about'. He said, 'Don't worry, neither do I, we'll just learn together'.

We had a new financial controller because the way the Company was going was to devolve all the centralised systems into accountability on each site.

We reviewed our buying system, especially with 135 years worth of some products, and we developed specifications for our suppliers. We tried to understand our raw materials and what were the benefits of them. We found that 40 per cent of our waste came directly from our raw materials. We were buying in the from all these other problems we had.

We started where our resistance was the least. That was in purchasing as the resistance wasn't there in that area. What happened was that we started to visit customers. A whole bunch of people starting going on trips to visit the customers. We didn't talk to management so much, as we were interested to talk to the people using our products.

Senior staff were sent to the Cambridge Corporation in Japan. That was a real eye-opener. Those people obtained a vision of where things can be. You don't really realise how far behind the eight-ball you really are. The thing that really came out of it was how similar they were in the beginning. World War 2 is often used as an example there. The atomic bomb might be a bit drastic, but it really took something like that to get them into the mode of starting off with quality. After that, they had a whole series of oil shocks and other events that really helped to energise them into making them better.

I hear things are pretty difficult over there at the moment, but that will only be making them even better, because they just seem to knuckle down and go that little bit better when there is stress

on. Creating a crisis, be it artificial or real, is absolutely fundamental sometimes to getting things moving, anywhere and in any area.

What we did initially was to dam the place. No rubbish was going to go out. Nobody in production could decide what was good. They were told what the standards were, and they had to organise to meet those standards, but before anything went out of the factory, it was checked by independent people, and we refused to let stuff go out. Now that took a lot of commitment. There were times where there was over \$100,000 worth of bags that couldn't go out because they weren't the right shade of green and it really did require a lot of management commitment. I know the General Manager chewed his nails and fingers at some of these times, but he backed up every one of those decisions if they were reasonable, and most of them were.

Then we stopped rubbish from coming in, so we refused to accept substandard supplies. We let our people have quite an input into what were decent supplies.

We surveyed our customers. That was a revelation as it was a really good audit of the sales and marketing area, and our own performance. We found we had massive problems in that area.

Our staff were surveyed. That was one of the most important things we did. We asked people where the rubbish was in our plant. They knew where all the mistakes were occurring. Some of the guys came up with over 200 suggestions. One person, who is now a foreman, came up with 200 suggestions. Some of them were get rid of company cars, get rid of management and all that sort of stuff. We probably ignored all those although perhaps we shouldn't have in

hindsight.

They had some very good ideas. Napoleon or whoever said, "An army marches on its stomach" was right. In the cafeteria if you didn't eat a pie on Monday, you got it on Friday. You just kept that pie in there until some poor sucker bought it. We wonder why our absenteeism was high!

They complained about the environmental things. They weren't after more money or anything like that, they were after "a bit of heat in the place in the middle of winter", "a decent cafeteria". Those things made a big difference to their lives, and they were easy things for us to change.

We started to put in an area for opportunity, or whatever you want to call it, reporting systems for sales and productions areas, and they were gold-mines of opportunity. Slow to start off, but after a couple of years, they really took off.

The next thing was a management shake out, and that was based largely on the results we got back from our people. They knew where the rubbish was, they knew if the foreman was victimising them, they knew where the theft was going on, they knew what was going on. They knew; we didn't. We had to listen to them, and we tried as much as possible, to make things different. We changed foreman, we changed people on shifts, we changed senior managers, we changed the place upside down.

We were committed to certification. 'The Dairy Board want certification, okay, we'll get that over and done with'. That was basically our attitude until we started seeing what money was coming in on this thing.

We started monitoring some of our quality results. We looked at complaints, holds, down time, pricing errors, returns, supplier complaints, percent in full on time delivery, internal reports of faults and external reports of faults. We monitored those on a graphical form for a large period of time, and we wanted to see them going down or up, whatever way was better. There's nothing like keeping that data in front of you.

We started some training on what quality was all about. We found from the guys that they just didn't know what was going on in the place. They didn't know from one minute to the next how the market was going, or just how the company was performing. Who were these people walking around the place? Were they looking at another take over, or perhaps another owner? As a result they were performing pretty poorly.

There was a lot of non-communication so we started team briefings. That helped a lot. People were suddenly informed about our profit and our performance. They knew what management thought and what the data that management were using tended to suggest. We started dealing with Union issues. Instigating a consultation committee made a big difference in trying to take out the confrontational aspects that were in there. We got round some blockages that were in there.

We had some engineers that were really slow to take the change, and they bore the brunt of it because a lot of the ideas that people had in the factory were simple things that they believed engineering weren't doing. The engineers were telling us how the people on the factory floor were continually stuffing it up. There needed to be a lot of input from the engineers, but we had an

alcoholic paranoid engineer who was their union delegate. One person can really make a difference. We saw that in a positive way and also we saw it in a negative way. That guy has just died at the age 35 although he looked about 55. That one person did really block things up. So we went around the blockages. We didn't deal with all of them in a head-on manner.

The errors were individually noted on factory orders. We kept stuffing it up in the same place. We used the put information about what had gone wrong with the job before on to the factory orders so that the next guy on the next shift who hadn't run that job before knew where that job had been stuffed up over the last couple of years or so. The results were amazing. Once they know where they stuffed it up before, it doesn't happen again. Just a simple information system.

Two sites merged into one. This was at the time of the Stock Market boom, and people were buying a lot of property at the time. Fletchers had kindly bought our site with all the smashed windows, as it was on a very good site by Panelcorp. They must have liked it because they have still got that site. We used the money we made out of that to buy a new cafeteria and change the people involved there. We got a new administration building so we could get all the teams together in one building. That made a big difference. We bought a new state of the art printer. We bought a warehouse and added it on to the site. We bought a \$180,000 laboratory. This site had about 200 people, has got a turnover of about \$50 million, and produces 80 million bags a year - about a million different operations going through the machines a day.

After that we looked at controls and monitoring. Whole consignments of raw material were rejected if they weren't to spec and we let the supplier sort it out. We looked at product audits by independent staff. Those were vigorous, and if they weren't right, the staff stopped the machines and sorted it out. The QA Department were very unpopular. They believed that all this checking that was going on said the bags were okay. In fact, what happened was when we started the quality drive and told everybody about quality, our wastage went up unbelievably - 13 per cent on some machines because people believed that quality was perfection. When QA started passing product that the people believed were less than satisfactory, there was a lot of mistrust, and a lot of misinformation going on.

We made our waste costs easily understandable. That was a major incentive to help people. We told them that basically a bag cost \$1 and that we made about 10 cents profit out of it, and if they threw one bag away at \$1, that we had to make 10 extra bags to make the same amount of profit as throwing that one bag away. This was basic sort of information that the staff could really understand easily. That made a big difference to wastage. Something as simple as a statement like that, given to them in simple terms, what the costs were. We bought a new Wing Fact information system. It made a huge difference to our perception in the market place.

We started to standardise between shifts in a much better way. We had people coming in on new shifts spending half an hour readjusting the machine from the way the shift ran it before hand, to get about 50 per cent of production out during that shift. That was a regular sort of thing that added to our poor

productivity, and our poor performance.

We started to focus on tidiness. We used to pick a person who we would give a slide camera to, and once a month they would go around and take photographs of all the things they thought were untidy around the place, and then show them at the management meetings. The slide history is just unbelievable. Its great to know where you have come from.

The on-site laboratory led to a speedy knowledge of our raw materials. We bought the best equipment so that we often had better equipment than our suppliers. We knew more about some of our raw materials than our suppliers did. They used to come and use some of our equipment. It was state of the art - I guess when you buy it today, it's always state of the art, but still some of the suppliers haven't got some of that equipment. It really puts you in a tremendous position to buy on quality and not on price. You know what you are after. We tested our supplies, our production, and it was used for developments. We were also part of a container corporation network in the United States, and the rest of the world, and we were able to get material from around the world, and compare our performance with other people. That was a great tool for telling us how bad or how good we were.

We bought word processing equipment, simple computers with a bit of decent software. We had a policy that no people would lose their jobs through this quality campaign. It would only be through attrition that employee numbers would go down.

We started using tool shadow boards. With a big pilferage problem, putting up shadow boards was basically an act of faith. Most of our foreman thought it

would be just like shopping. People would come along and say I want one of these and one of those. We thought we would have to put metal detectors on the doors to stop tools from going out, but that wasn't so. Again, it's just the belief in people, and the showing of trust instead of locking them up. We put them up on a board, and they stayed there. Shift changes, and machine changes were faster. They didn't all stay there, but most of them stayed there.

Training, before we had virtually none so we got a training room. We got equipment to help that. The manuals that we used were a mine of information, so we started breaking it down to provide information to people. Foremen then felt quite threatened because they weren't the only ones who knew what the standards were; everybody knew. We hired videos to tell people what the latest thinking was in the area of quality, so they rapidly became quite knowledgeable about quality.

### **Implementing Continuous Improvement.**

After we got ISO we sent all 200 staff to Matataki on the Coromandel, so that they could, through experiential learning and team dynamics, to understand what we were trying to do, to bring out our leaders, and to get people to listen to people. That was an amazing campaign. Most people didn't want to go, but they came back absolutely energised. It was a great facilitator of a group activity in the factory later on. Our people were encouraged to attend courses all the time. We monitored regularly leadership skills by asking staff what they thought of the people. We got skill matrices for all our people. We found that we had to have many people who could run our machines, and we started getting them a lot smarter. We are looking at the

moment at paying for those skills.

Our operators visited factories which were best in their class world-wide. They couldn't believe it when some of them were flying business class to Australia and America to go and see how the best of machines were working over there. That was a sort of perk trip, that only sales people and managers got in the past, and we had our operators going. There was quite a clamour to try and figure out why he went and not me. That did lead to a lot of improvement. The funny thing about it, some of those people now come over to New Zealand to see how our guys are running their machines, and they keep up their contacts.

We had a lot of German equipment, and so we got our suppliers to come over here and tell us how to run our machines. That was tremendous for our engineers as well as for our operators. We are still doing that on an on going basis.

We got ISO 9002 but didn't know what to do after that. We didn't have a clue. But the Kaizen system, or continuous improvement looked pretty good, and we started putting in teams for our salaried people to experience. We had teams for all our salaried staff operating for two years before we even involved any of our wages staff. The people who were on a salary were quite aware of the way it all worked before they started trying to encourage other people to do it. That was important, I believe, in getting decent teams established and led well.

We had a Company-wide fault reporting system. There were no cover-ups. When people started saying 'I've told you for the last year that this problem is happening and you are doing nothing about it', that would really put the heat

back on the people who were supposed to be fixing the thing. We had check lists everywhere. We needed to get much closer to customers, so in the slacker months, we would get buses together and take all our people to visit some of our major customers.

We had internal auditing and all the other things that go with ISO 9002. We started measuring our quality costs. Our quality costs, even at the end of this campaign, when we thought we were pretty good, were still 14 per cent of sales, and that was objectively monitored performance. So if you think yours are a lot better than that, you are most likely fooling yourself. I think the Japanese consider their's at 7 per cent. Our numbers stacked up to about 13.7 last I saw. That's a tremendous amount of money to be losing, and it certainly points to where the improvements need to happen.

With our customers, we know that we've still got a long way to go. We need to totally track our customers' orders. We need to listen to our customers regularly, on a third party objective basis, not just listening necessarily what our sales and marketing people have got, because we can be biased.

We find that we've got innovative packaging now emerging. The Dairy Board has become a much smaller customer as a percent of total sales, and we find now that we can get into a lot of exports. We are now exporting all around the world which is something that never used to be open to us. We suddenly find we are internationally competitive. It was quite a revelation to find out that we could beat off the best in the world throughout South East Asia. We didn't think we could do that sort of thing. It's not just on price - its more on quality. Our staff go up there and find

out what they need often before we accept the contracts because they can be for large orders.

### Implications

Our absenteeism is right down. People like coming to work because they think they can make a difference now. Our skills are up. Our people are better and more employable. There is a more caring attitude by all our staff towards one another. There is still victimisation going on, but they are generally well known. We know where it's going on and we are trying to do something about it.

Our suppliers were all told to become ISO certified, that had a multiplier effect that's happening right throughout New Zealand now. As one company becomes ISO certified, they say 'you can go through this punishment as well', and it goes right through NZ. When you've got 35 suppliers to choose from you can say, 'We are not buying from you unless you get some sort of commitment towards quality'. We now insist that the suppliers must comply with these standards, or we send their products back, no hesitation - they know that.

We know now that management are the problem, and were the problem all along. I'm not just talking about people who wear the ties, I'm talking about the leaders: the foremen, the supervisors. Leadership was the problem. Managers were often managing with a technical attitude; they were doing things on a technical nature, and not actually leading people, not actually encouraging people, thanking people, doing all the things you would expect normal people to do.

Our safety standards have improved unbelievably. We have a lot of dangerous chemicals and products so we have told suppliers what they must do



with all these products to label them better as often the people handling them didn't know how toxic they were. We have instituted a supplier of the year award. Instead of telling suppliers how bad they were, we now also recognise good performance. That is a totally positive aspect which really New Zealanders need to do more of.

Quality statistics are very important as we know they are all profit related. Our wastage moved from 7 per cent to 2 per cent on an overall average. With \$50 million sales, and 90 million bags a year, that is a tremendous improvement of the bottom line.

We found that people were creating a change in the environment. We had our engineers go and paint our machines in our factory. They painted them green and purple, but they like it. The engineering shop is now a lot tidier and cleaner and they feel better about turning up there.

Our stops have reduced significantly. Productivity went up 30 per cent and costs came down 30 per cent - this was just after ISO. It is improving all the time.

We were the tenth registered in NZ to ISO. Quite a few of the companies before us were 9003 accredited but we were the tenth on the register. Now the Baldrige Award has come along, we are committed to meeting that.

### **Conclusion**

This is TQM for us. It started with leadership - it is leadership - that's really what it is all about.

It's knowing what your customers want and redefining your company for your customers - redefining to meet their needs using your leaders to do it.

Quality is putting in quality assurance systems to meet those needs, and trying to deliver it consistently and on time.

TQM is involving our people in the whole decision making process and training them so that they contribute more and more each day.

TQM is monitoring the results of what you are doing compared with best in NZ, or best in the World. TQM is also planning where you are going all the time with training and people skills.

