SACEA AGM Address

16 February 2006

Mister President, Past Presidents, Council members, Ladies and gentlemen.

When David Sichamba invited me to address this distinguished gathering I agreed without having any idea of what I would talk about. It is no simple task to address a gathering of engineers, many of whom have amassed an absolute wealth of experience and expertise in our profession. So what does one talk about?

Today I would like to talk to you about engineers and money and the effect of engineering decisions on our business.

Our business, coal mining, is all about making money.

Our primary responsibility is to provide our shareholders with the best returns possible. Having said that I must add that we must provide those returns as responsible citizens of our country and the world,

- within the legislative framework of our country,
- without injuring people,
- and in a manner that is socially and environmentally sustainable over the long term.

The question that begs to be answered is, how do we accomplish, what can only be described as a reasonably complex goal, and how does our profession contribute to the optimal performance of our business?

Many years ago an old and experienced engineer in the mining industry told me that an engineer is someone that could do a piece of work for one rand which any fool could do for two rand. As a youngster, new in the business, his one liner piece of wisdom impressed me no end.

As I gained business experience I came to the realization that his wisdom was not only a one liner, it was also one sided in a multi faceted business. It concentrated on the technical engineering aspect of the business while losing sight of why we are here, to make money, not save money.

While saving money is part of making money, it is not the whole picture and as engineers we need to look at the whole business picture and not concentrate on one small aspect of it.

A total focus on technical excellence and on minimizing the cost of maintenance or on minimizing the capital cost of a project will not guarantee optimal performance of our business. In many instances it achieves exactly the opposite.

Allow me motivate my statement.

Recently I was told, with great pride, on a mine how the mine was nursing the cutter head on a Continuous Miner. The cutter head seals are leaking and it is in need of changing, however replacing the cutter head now would mean that the budget would be exceeded by a million or more rand. In addition, the vibration and oil analysis indicate that the internals of the cutter head are in good condition. Instead of changing the cutter head now the oil is checked and filled once in every shift.

Now this sounds good, the cutter head is kept full of oil and is in no immediate danger of catastrophic failure and the mine is postponing the expense of repairing it at the cost of a couple of liters of oil per day.

I have no doubt that each engineer in this audience can recall numerous similar examples where a little engineering ingenuity and attention can stretch the life of a machine or component at little immediate cost. Engineers are particularly good at this, after all that is what they have been trained to do. Engineers can make most things last forever and if there is no money to replace the machine or component right now, we will make it work for as long as needed.

What are we truly saving by postponing the replacement? At a weighted average cost of capital, in non accounting terms, the interest at which businesses obtain money for funding operations, of 8 % per annum, postponing a 1.5 million Rand expenditure means that the business is really saving ten thousand Rand for every month the cutter head repair is delayed.

Let us examine the business wisdom of this decision. The particular continuous miner section operates three shifts per day, six days a week. A mere 20 minutes per shift lost in nursing the cutter head translates into a 6 hour per week production loss, 26 hours production loss per month.

Xstrata Coal expects a continuous miner section to produce at least 100 000 tons per month on a 3 shift cycle. The other businesses represented in this room probably expect the same ball park performance from their Continuous Miner sections. How much money do we therefore expect a Continuous Miner section to generate per operating hour? I am willing to bet that not many engineers have a feel for that number.

Simple arithmetic says that the section is expected to produce, on average, 171 ROM tons per hour. At an unspectacular 60 % yield that translates to an even less spectacular 102 product tons per hour.

At the current, and I may add, depressed, export price of coal, less the variable cost of production, that means that a continuous miner section is expected to generate a cash contribution, cash in the bank in non accounting terms, of twenty one thousand Rand per operating hour.

Let me repeat that, we, and by we, I mean the coal mining industry, expect a Continuous Miner section to generate twenty one thousand Rand in cash per hour, after costs have been deducted, in the bank.

For those of you that are shocked by the magnitude of this number, spend some time with your accountants and they will verify it. It is not excessive, not if you consider the magnitude of money invested in a Continuous Miner section. A single Continuous Miner section represents an investment of at least 40 million Rand.

If we multiply the cash contribution expectation by the time lost in nursing the cutter head we quickly realize that we are creating a 560 000 Rand per month dent in the bank balance for the sake of a true saving of 10 000 Rand per month. Our excellent engineering efforts are thus resulting in a true loss of 550 000 Rand per month, hardly what I would call a prudent business decision.

Let me repeat what I said earlier: A total focus on technical excellence and on minimizing the cost of maintenance does not guarantee optimal performance of our business. In many instances it achieves exactly the opposite. In this case it certainly did achieve exactly the opposite. It was an extremely poor business decision. What makes it worse is that we see these good technical, poor business decisions daily.

For those in the audience that are shocked by the numbers, let me add some more shockers.

A mine consisting of 3 CM sections and a washing plant has a fixed cost, the cost of staffing and maintaining the mine without producing a single ton of coal, of around 30 thousand Rand per hour.

For the same mine the 600 ton per hour washing plant is expected to produce a contribution of 75 thousand Rand per hour. It is scary to think that the failure of a single pump or conveyor pull switch or circuit breaker can stop this revenue stream. Even scarier is the thought that for the sake of making the cost budget this month, someone took a decision to rather save a couple of thousand rand on an inferior product or service and thereby risked many hours failure time somewhere in the future.

Ladies and gentlemen, what am I trying to impress upon you?

I am not telling you to start spending money like drunken sailors, to the contrary.

I am urging you to make prudent business decisions

- using your engineering skills
- and a thorough understanding of all the facets of the business,
- taking into account the total effect of your engineering decision on the business.

As an engineer you need the ability and the skill not only to focus on the detail engineering excellence but also to see the whole business picture and to understand in detail the effect of your decisions on the total business.

Engineers generally tend to be extremely analytical persons by nature and it is exactly that analytical ability, guided in the right direction through training, knowledge and experience, which turn engineers into exceptionally good business analysts. After all, the engineer on a mine is probably the person with the greatest wealth of knowledge of the details of the total operation.

It would be first prize if all the engineers in our business were to have MBA degrees, however, I don't think that's going to happen. It is also not necessary. What is necessary is that engineers develop a detailed understanding of all the facets of our business, preferably through some form of business qualification and through plain old fashioned interest, asking questions, analyzing cost and financial statements and analytical questioning.

In an ideal world an engineer is primarily a business person who is using his or her specialist engineering skills to add value where others cannot.

As a business person you need to see each piece of equipment or machine or plant on your mine as an investment.

Nobody in his or her right mind would make an investment without expecting a quantified return on the investment. The coal mining business is no different and therefore you need to understand the return of each piece of kit on your mine in detail.

Returns can be in the form of

- money
- or health and safety
- or in protecting our environment
- or in sustaining the socio economic stability of our society
- however it must give a measurable, known return.

You need to understand the return and compare it to what you need to put into the investment to maintain and operate it. If that calculation does not show that it is a good investment, get rid of it.

Would any of you keep money invested in the bank if you had to pay the bank to keep your money? I don't think so, you would take your money and invest it somewhere else where you can get a return. The same applies to equipment in our business.

How does an engineer equip himself or herself to make the prudent business decisions required for the continual improvement of the business?

In exactly the same manner as you became qualified as an engineer in the first place, by developing an interest in the subject and by qualifying yourself through learning. Go and do an MBA or an MDP, or any of a whole number of courses designed for equipping technical persons with business skills.

You will find that it is a lot less challenging that getting a Government Ticket. I am not prepared to have another go at the Government Ticket, once in a lifetime is quite enough, however, I am quite prepared to do another MDP or MBA. That should put the relative complexity of the qualification in perspective.

Ladies and gentlemen, our business cannot function without technically qualified engineers. Adding business skills to your engineering expertise will make our business thrive and will truly make our SACEA members the leaders and champions of our business.

I thank you for the opportunity to address this distinguished association.