

MORPHOLOGICAL
INSTITUTE
CANADA

REAL INNOVATION
CASES

BY

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95/A

**Real Innovation
Cases Part A**

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Groups of Innovative Approaches

Desi:	Design	Dist:	Distribution	Mark:	Marketing
Mgmt:	Management	Orga:	Organization		

Desi 76.1 State of Product Limits Market

Summary

The best echo ranger on the marketplace did not fulfil a set of extended market criteria. By adding some state-of-the-art system components, all criteria was exceeded and even more applications were enabled. No core redesign was required.

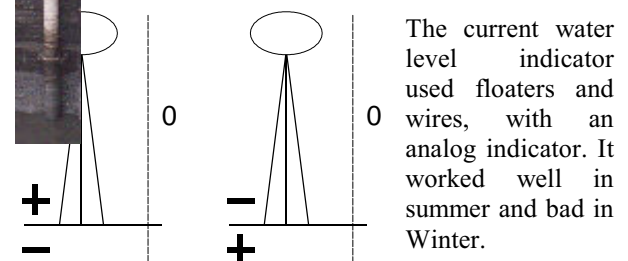
General Assessment

Sorensen AG was a Raytheon subsidiary in Zurich, Switzerland. After change of management 1974 Emil Zahner became responsible for marketing and sales of production and measuring equipment in whole of Europe. He went to America and Canada and found new promising products for the sales range. To introduce these he visited every one of Sorensen's European distributors. 1975, the Belgium distributor recognized a possible application of what one of the new products could solve. An echo ranger made by Raytheon and Milltronics of Canada would measure the level of grain, gravel or other material. Would it measure water level in a sluice?

Analyzing the Situation



A range of about 9 meters level difference had to be measured. The indication had to be bipolar, around a given average water level mark. Accuracy needed was ± 2 cm over the whole range at any air temperature. Indication in digital form. The available power was unstable. No level alarms were required at this stage but would be wanted with the second system.



The current water level indicator used floaters and wires, with an analog indicator. It worked well in summer and bad in Winter.

A recording device indicated the tide's progress to assist and record activities. The recorder's paper advanced at 2 cm / hour. The slowness posed problem with the writing device. To read the level one had to turn the head 90°.

I was able to secure the tender using some ingenious ways to eliminate competition.

Analyzing the Resources

Milltronics was unable to meet the accuracy and stability required for the application, suggesting the case to be dropped. However, if the requirement could be filled, there would be a competition free product on the market with many additional applications.

Analyzing technical limits brought up the following:

- It was not possible to convert the unipolar signal into a bipolar signal at low cost using analog means.
- Using a digital panel meter indicated gross error of indicated value during zero voltage passage of a bipolar analog signal.
- The system had to supply a signal for limit switches compatible with the readout.
- Calibrating the system based on analog signal processing would be very time consuming and likely too unstable.
- The original signal was - however - an analog one. To convert this analog measurement into a pure digital signal would require a fundamental redesign. This was out of question for a product made elsewhere.

Defining the New System

The new system needed the following characteristics:

- Temperature compensated measurement, unipolar signal processing with conversion into a digital signal and adding a means of shifting the readout zero point. Accuracy readout < 1 cm during calibration, 2 cm during operation.
- To enable market adaptation the readout need to be unipolar with reversible polarity (level / distance), and bipolar. By adding a zero setting function this would automatically be the case. Zero within the range would read out bipolar, zero outside of range would read out unipolar.
- To ease calibration, a function was added which was free of polarity and zero compensation and permitted bias correction of 99 mm to compensate for a small, unipolar system error. To better see the true value resolution in millimeters rather than centimeters, an extra digit would light up when the calibration mode was selected. The standard calibration at this high accuracy had to be done by a differential method. This was the only analog setting left of the original system design.

Meeting and Exceeding the Goal

The resulting system achieved the following data and functions:

- Accuracy $< \pm 2$ cm at any temperature of the application (calculated to be 12 mm). Milltronics guaranteed 20 centimeters for this application.
- Switch selection for distance, level and bipolar applications.
- Easily calibrated since only one analog signal had to be adjusted, which was usually done at the factory. All other adjustments were digital and predictable using simple adding / subtracting, or by adjusting the readout to a known value.
- A digital output was available to connect digital limit switches.
- A readout test could be switched on
- The analog output for the recorder remained unchanged.
- A power stabilizer was added to eliminate fluctuations due to voltage variation.
- Serviceability was enhanced by providing stabilized power connections for test instruments
- All calibration accesses were behind the same panel which carried the readout. The readout remained visible during calibration.

This was the first system of all known competitors in the world market to employ a micro processor.

No recorder on the market was meeting all specifications without modification. The recorder was redesigned to match the high standard. The recorder was using the Xerox process for writing at any speed and flashed a light when the unrecognizable 2 cm/h movement of the paper was stopped. The paper moved from right to left, in a vertical plane. No need for head tilting

Looking beyond the Immediate Need

The limit switches were fully programmable and could be activated and deactivated by remote control (failure case control). There were no suitable units on the market which would satisfy the current requirement and the anticipated application. All specifications exceeded what the market offered at that time.

Absorbing the Cost

The cost was quite reasonable, considering the new applications and the savings in calibration time (factory specialist was no longer needed on site, calibration had been simplified and was done by the customer). Delivery for the whole system was not delayed, an other indicator for reasonable cost.

The methodical approach lead to solutions very fast. The checking for errors was rather thorough. The original manufacturer Milltronics was unable to compete. The distributor solved the problem much better as a result.

Responsibility for the whole process: Emil Zahner.



ordering a machine.

Creating the System

The **resistance trimming machines for thick film resistors** must be adaptable to the various types of proximity switches, their electrical and mechanical characteristics, to attract several manufacturers. Industrial standardization of this component helped the design. Handling the switches was taking too much time during manufacturing. Hence added test functions which would be performed while the component was in the jig. That saved extra handling and separate testing processes.

The characteristics of the machine would permit to:

- eliminate a large inventory of expensive components
- speed up the resistor adjustment process from minutes to 1-2 seconds
- test under extreme condition while in the jig, including mains power voltage - requiring operator protection
- separate operating from non-operating products by immediate testing
- include more operations per handling sequence
- simplify adjustment for various switches of the same manufacturer
- simplify modular design for needs of different manufacturers
- make the machine suitable for any part of the world (230/115 volts).

Results Example for Client

Savings for proximity switch manufacturer Balluff, Stuttgart as an example: Replaced range of 80 expensive high precision resistors

by three trimmable non precision thick film types. Reduced handling to 20 %.

Old way, this would take minutes:

- Setting up the particular test jig for the switch type, once per type.
- Placing each consecutive proximity switch into the jig
- connecting the power
- connecting the wires for the adjustment component
- Adjusting the jig to find switching point.
- Successive manual approximation process with varying switching distance and varying resistance values (resistance decade).
- Memorizing the correct value found.
- Selecting the high precision component from one of 80 boxes.
- Hand soldering the corresponding precision value and isolating the connection wires.
- Retesting the switching distance.
- Disconnecting and removing from adjustment jig.
- Separate testing of voltage extremes.

Meeting and Exceeding the Goal

New way, this would take about one to two minutes including several test processes.:

- All proximity switches had their adjustment component already mounted.
- *Selecting* the mechanical test jig settings, which was suitable for many types.
- Preset once the switching distance for the whole series of similar switches.
- Placing the individual proximity switch into the jig

- Place the adjustment component into its jig
- Connect the power
- Automatically trim the resistor to the value for the correct switching distance, done in 1.5 seconds
- Rotate some panel switches to test the proximity switch for general function and extreme voltage conditions. (Some switches run on 230 volts nominal - hands off control was included).
- Separate any failing switches.

Sales

This **resistance trimming machines for thick film resistors of proximity switches** was sold to 4 manufacturers of proximity switches, Baumer in Switzerland, in Germany to Balluff, Pulsotronic and one more. All customers reordered and Balluff even ordered one machine for their subsidiary in Japan. Machine price 1977 approx. \$13000. At that time many very small companies made proximity switches, many of those had too small a production to absorb even this low cost machine. The more efficient larger companies who were using the new design put some out of business.

Dist 82.1

Distributorship Improvement / Change

Summary

Using an unusual approach the strength of two companies were combined to multiply their market strength while staying independent.

General Assessment

The company Elmes in Switzerland designed and manufactured measuring and recording equipment for electric energy. While in some areas distributors sold an acceptable amount of equipment, others in similar markets sent hardly any orders. The products were demanding long range decisions. Brand, functionality and appearance were all of importance. They would hardly occupy a distributor's salesman fully. While looking into a specific distributorship, the methods of cooperation should be reconsidered.

Analyzing the Situation

The product was an energy consumption recorder new. Introducing this system fast in several countries would permit cost reduction if the distributorship problem was attended to at the same time. The current distribution followed the usual pattern of principal and distributor, the one way road. The product would be most suitably handled by a manufacturer with the same type of customers and no competing product. Three things are important in such a connection: 1. The quality of the product, 2. the quality of the operating people, 3. the mutual interest in keeping good relations between both organizations. The third point is overlooked by many companies, leading to wasteful threats and defenses instead of mutual improvement. If an additional link could be established, the mutual cooperation might become much better. The extra link would be cross representation.

Analyzing the Resources

The area referred to in this case was Sweden. While preparing to look into the qualification of the current distributor, three more potential distributors were approached. The current distributor was visited. He obviously had never had the right contacts over the past five years. The energy products range was carried as a show piece, without spending much work on its marketing. I canceled the current distributor and went to see the new ones. One was a favorite and was contracted right away.

Building the new Distribution System

In this kind of business it can be more difficult to replace a highly specialized distributor of the specific product than to replace a casual customer. The new distributor was a manufacturer of products for the electricity supply field but was in no way competing with the product to be marketed. He had the right contacts, was interested in products to back up his business and add marketing power. No condition was made that he was to distribute his products in Switzerland through the company he was to represent. He was offered the possibility and left to sell himself on the matter.

Result

So it happened that two manufacturers had two new distributors on a single communication channel backed up by mutual interest. Cost of visits and the like could be split according to both sides needs. This connection remained active and productive for many years.

Dist 82.2

Increasing Distributor Turnover**Summary**

Sometimes top management is the main braking system in a marketing environment.

General Assessment

As a rule of thumb manufacturers presume distributors could send more orders. So does a general distributor with regards to local distributors. The case could probably stand for many similar egocentric views.

Analyzing the Situation

The company was a designer and producer of measuring equipment for electric energy. Checking the distributor qualifications and comparing performance, it was found the distributor for Finland was performing low, in spite of being qualified. Visiting the company I found it was much better than its reputation with the energy equipment manufacturer. It was obviously a question of suppliers competing for salesmen's time. Reason for low performance: The support quality available from the supplier was lacking. To change the engraved habits of that manufacturer how to deal with "lazy distributors" would be next to impossible.

Creating a Better Marketing System

By circumventing the self imposed obstacles in the company, response time was shortened and a better support generated. Where possible, verbal agreements replaced the slow top brass signatory process for any documents.

Results

The regularly priced turnover in Finland increased by 20% while turnover of areas covered by managers of other areas fell compared to the previous year.

Mark 78.1

Introducing an Investment Product into an Unknown Market

Summary

How a bridge was built between a solution provider and companies in need of it and who did not know they needed the solution.

General Assessment

This case is about a product that had not been heard of in the market. The approach was rather unusual. It shows how a single person can approach and represent a medium size company with expensive products and market these successfully. It concerned modern technology in cutting soft materials by a **fluid jet of 0.1 mm**, made by McCartney, an American machine manufacturer. At that time he had only machines in Scandinavia, besides USA.

Analyzing the Situation

I collected technical and marketing information at the headquarters of that Ingersoll-Rand company in Kansas. After three days I signed an exclusive distributor agreement for three European German speaking countries.

Creating the Market

In Sweden I was shown a fully computerized system where a minimum of 20 fluid jet cutters were all at the same time cutting wooden puzzles.

Since the lowest investment was about 60000 US\$ for any customer, I started up a broad, but low cost press campaign with hard fact information. Inquiry numbers were huge. I filtered and worked on the financially promising company sizes. A reprint of a large article showing many application pictures satisfied

many inquirers for the moment and brought in inquiries up to five years after its publication.

A system was sold in Switzerland. Mailing a questionnaire helped defining the cutting problem of distant prospects and their implementation plans. Very promising and large projects appeared, right down to Hamburg, in Northern Germany. Unfortunately adverse business conditions, not related to this activity, made it suddenly impossible to continue on the promising projects.

Mgmt 83.1

Chaotic Company Turnaround**Summary**

When an owner of a company becomes unable to lead and at the same time does not trust his best people, strange things happen.

General Assessment

This business had been in operation for about 35 years. Its owner fell ill, losing his capability to keep in control of the trade company with about 18 people. Following the advice of his lawyers he sold it secretly. Two non-cooperating department heads (one each for components and for systems) felt unsure and started to look for alternatives. I joined as right hand of the new manager who had selected and bought the company on behalf of his employer. I took on responsibility for marketing and technical management.

Analyzing the Situation

Change of ownership usually permits immediate cancellation of distributorship agreement. The more lively principals had already canceled and waited to see what the new management would do. The lower quality in general did not react to the change of ownership. The department head for systems had already signed up with a competitor. I found he motivated suppliers to follow him rather than stay with the company. This could not be tolerated. The product range was extremely technical, requiring thorough knowledge to demonstrate and sell: Test instruments for telecommunication. Should we keep that man another two months for his specialized knowledge or move him out immediately to avoid his inside activity against the interest of his current employer?

Recreating the System / Company

I decided to take on the risk losing the specialists support, counting on my ability to regain good relations with principals. Hence the disloyal department head was asked to leave immediately.

It was needed to reassure principals and to visit customers to assure stability. At the same time prices had to be increased. I managed to keep all products in the distribution line which I found were supported by the manufacturer. Some poorly performing suppliers were asked to look for a different outlet and supported to the end of the contract.

There was also a huge stock. Large quantities of components and outdated equipment on the shelves. A fire sale list cleared those without defect. Turned in defective equipment was put aside to be repaired when no other repair work would be available. Many of these items could then be sold with no or little loss.

Results

Jumping into "unknown waters" was risky. Separating things of key importance from others made for winning the situation. I received unexpected bonus award after the turmoil was over. The company soon was profitable again and regained customer's trust.

Orga 86.1

Show Business: Big Band Touring Canada and USA

Summary

Ideas are not enough if people do not believe they are achievable. A balanced approach and sharing of work and information is required to succeed and ignite motivation.

Assessment of the Situation

Having been active member of an orchestra for many years it happened that the 50th anniversary of the orchestra were getting close. There was excellent co-operative spirit in this amateur orchestra of about 30 people. A European wide known composer was a member. Good quality music was played.

Goal: Tour North America

1. Convincing the group that their performance was wanted by those American Swiss clubs and that they would be welcome.
2. Finding ways to keep cost to a low level.
3. Making sure people would be separated often and long enough to be happy to meet again and tell their adventures to help the spirit.

Course of Action

Two major events were to be organized in parallel: An international meeting of orchestras as a celebration event and funds generator, and the tour to North America. I took on to prepare the tour.

Letters to numerous Swiss Clubs and , advertisements in Swiss papers and more were the external activity. But there was internal friction: The members did not really believe in their welcome and in the tour at all.

Positive Experience Motivates

To prove the welcome I had the orchestra perform in front of the Foreign Swiss Delegates during their annual meeting in Geneva. Now the spirit changed. Besides getting many invitations from various countries I had convinced my group they were wanted. Slowly the first inquiries from America turned in. Consuls and club presidents wrote about their individual efforts to make the plan a success. We still did not have enough night stays covered. This was keeping cost high. We had to eliminate those clubs who offered one night only in places where we wanted to stay longer.

Partners of the Event

Suddenly some clubs realized they would need to do more than offering nice words, they would have to be partners of the event. They started looking for performance opportunities and checked for extra beds in their homes. Now the cost fell to an unbelievable low level.

Results

With great pleasure the president of the orchestra informed the audience of the international meeting that the orchestra on stage would soon play in Canada and the United States of America, in Pittsburgh, Detroit, Berne, Indiana, New Glarus Wisc, and Chicago. Which is what actually happened - ten concerts in five cities over two weeks, with highly satisfied partners.