

A commercialization methodology for cookstove dissemination in Southern Africa

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Abstract

Wood is the primary source of energy in many Southern African households and if used efficiently could become a renewable energy. A highly efficient and novel wood/biomass burning stove, called the *Vesto* – Variable Energy STOVE has been designed and tested in Southern Africa by Crispin Pemberton-Pigott.. The key design philosophy is to recycle heat and use this for insulation.

The paper describes the methodology that is being followed to commercialise the *Vesto*.

When making decisions about commercialization there are three different philosophies:

- a. The “Big Bang” Approach.
- b. The “Garage” approach
- c. The “Middle of the road” approach

A strategic approach to commercialization is discussed. The Value Proposition is first formulated and thereafter the Value Chain is established which aligns the organization to the Value Proposition. Thereafter, the philosophy outlined above is applied.

The paper outlines New Dawn’s application to this strategic approach. Detailed are the reasons behind the *Vesto* Value Proposition and Value Chain. This includes our approach to sales and distribution and the emphasis we place on different aspects of promotion.

We briefly outline the steps to be taken in test marketing. Thereafter, gearing up the product for mass production and distribution.

In conclusion the paper reflects on what New Dawn is currently doing and where we are in the process of commercialization.

Table of Contents

1. Background in South Africa	2
2. The Variable Energy Stove - Vesto	3
3. Philosophy behind commercialization strategy	4
4 General Strategy for Commercialization	4
4.1 Step I: Start with a “VALUE PROPOSITION”	5
4.2 Step II: Decide on a VALUE CHAIN	5
4.3 Step III: Test market the product	6
4.4 Step IV: Marketing	6
5. Details of NEW DAWN Methodology	6
5.1. VALUE PROPOSITION for the Vesto	6
5.2 VALUE CHAIN for the Vesto	7
5.3 Phase 1: Test Marketing / Pilot market study	7
6. Phase 2 Marketing	9
7. Phase 3 Gearing up	10
8. Conclusions	10

1. Background in South Africa

In South Africa the lowest income households reportedly spend between 20 and 40% of their income on Energy sources. Women and children spend a large proportion of their time doing ‘survival work’ – gathering wood, fetching water, cooking, etc. [ref 6 in 1]

Government energy policy has placed great emphasis on mass electrification. Although domestic electrification increased by 31% between 1995 to 1999, the use of electricity for cooking increased by only 14% in urban areas and 6% in rural areas. The utilization of electricity for heating was even lower, increasing by 5% in urban and 1% in rural areas. Electricity is therefore not the solution to energy cost problems amongst the poor.[ref 5 in 1]

The current widespread use of paraffin is expected to continue. Between 20-30% of electrified households use paraffin for cooking. Most un-electrified households use paraffin, while LPG is used in some areas. Coal is used by 40% of households in the most industrialized area of South Africa – Gauteng. The coal used in urban areas – such as Soweto, creates a huge pall of smog over the area, affecting the health of millions of people.1(6)

In addition, a large urban and peri-urban population means there is, as in other developing countries, a shift to faster cooking foods like rice. This results in a need for rapid lighting and effective control of the power output of stoves as well as the possibility to burn multiple fuels. There are no stoves providing this on the market.

2. The Variable Energy Stove - Vesto

The **Vesto** is a highly efficient heat recycling stove developed by Crispin Pemberton-Pigott and is being marketed by New Dawn Energy Systems. The incoming primary and secondary air is heated while insulating the fire, preventing heat loss. This increases the efficiency of burning low quality fuel, like dung, by up to 600%. This concept of insulating a stove by preheating primary and secondary air is a remarkably simple, but brilliant concept! The **Vesto** has three types of secondary air provision allowing it to function as both a charcoal-producing gasifier and a charcoal burning, or dung burning, stove.

Another extraordinary feature of the **Vesto** design is that it can be manufactured relatively simply. Its production does not require complex and expensive tooling or high capital expenditure. Many innovative stoves are so elaborate that they are almost impossible to make. In designing this stove Pemberton-Pigott has achieved both simplicity and extreme efficiency. It is based on a modified 25 litre paint can.

It is important to note, however, that the current cost of manufacturing the **Vesto** is not at its lowest. The market for the product is still being tested and several components are being cut using relatively expensive laser or plasma methods. It is only when volumes of sales have increased sufficiently that manufacturing costs will be minimized by developing special tooling and increasing capital expenditure.

Independent testing by GTZ showed that, compared to an open fire, the **Vesto** used one quarter of the wood/fuel and burns smokelessly. In addition safety is enhanced since the flame is enclosed inside the stove. Special mention was given in the report for burning dung, which boiled 1 litre of water in under 10 minutes, smokelessly.

Due to the stove's heat recycling properties, it heats to temperature very quickly and starts cooking within minutes. In extreme testing, Pemberton-Pigott has achieved a heat production from a match lighting the paper to 25kW in 45 seconds. A simple version of the stove has boiled a litre of water in just under 2 minutes from lighting the match. The stove can be seen in more detail at the following website address:

<http://www.newdawn-engineering.com>

3. Philosophy behind commercialization strategy

When making decisions about commercialization there are three different approaches:

a. **The “Big Bang (Bank)” Approach.**

This requires significant funds for extensive research into aspects such as: product positioning focusing on geographical points of sale; selling price; sales volume; pricing strategies and distribution channels. Funds are invested in reducing the cost of the product by developing appropriate production methods and tooling. There is also extensive spending on promotion, stock and distribution.

b. **The “Garage” approach**

This is an incremental approach in which the product is sold as it becomes available. Market research is aimed at assessing target group choices, geographical factors, distribution channels etc. The business is built slowly, but surely, on a trial and error basis: success comes with the correct formula. Gradually, the more expensive components of the product are reviewed and re-investment in the tooling for that component takes place in order to reduce costs. Improved tooling enables one to increase production of products, or reduce costs, depending on whether volume of production or volume of sales constitutes the next opportunity. The advantage of this approach is that it needs very little capital investment.

c. **The “Middle of the road” approach**

This is the path currently being followed by New Dawn in the commercialization of the **Vesto**. The first step is to “test market” the product to decide on its acceptability. Capital will then be raised to start the business. This will be facilitated by the experience and proof of success from the initial “test marketing”. It is our belief that market research and the development of the business form a continuum: the research kick starts the process of growing distribution channels for the stoves. It also limits the damage if it is found that the product at a given pricing will not succeed. Hence, New Dawn has decided to Pilot the **Vesto**.

4 General Strategy for Commercialization

In devising a commercialization strategy for the **Vesto** in South Africa, we began by setting out a general strategy. The entire process is strongly **user focused** rather than **technology focused**. The key issue in this commercialization methodology is to explore and understand the market. Hence, the technology must offer relatively low income people significant lifestyle advantages so that they make an effort to obtain a **Vesto** as they presently do to obtain a radio, wheelbarrow, TV or bicycle. The strategy must focus on what satisfies the needs of the customer. The steps in this strategy are described below.

4.1 Step I: Start with a “VALUE PROPOSITION”

We chose a value proposition which described what our product offers that no other product can. It is important that you are single minded about your Value Proposition. Coke, for example, quenches thirst. Although Coke is also a good rust remover – one of the best, it is NEVER advertised as such. You may have to make sacrifices and not mention some extremely advantageous aspects of your product. There is so much clutter when you consider advertising, that the more single-minded you are in the message, the more likely you are to get it across and well known.

The first rule of our strategy is: Have a single Value Proposition – Keep It Simple – the KISS principle.

When choosing a value proposition you need to think of what people are buying. Customers are not buying a stove - they are buying cooked food. People (or should we say *most* people!) DO NOT buy goods because they fall in love with the technology. Customers buy the SATISFACTION OF NEEDS – they want a hot meal and their food to be cooked, not raw. Mostly, they want to provide for the family and ensure the well-being of their family

4.2 Step II: Decide on a VALUE CHAIN

The Value Chain relates to the business processes of the company selling the product. Questions to be answered are:-

- a. **Who sells your product?** It is no good getting a male teenager to sell a stove because he is really not interested in HOW the food gets into his stomach, he is only interested in getting it there. In South Africa, woman mainly do the cooking, men make most decisions on what to buy – should a woman or a man be selling the **Vesto** ? Whoever it is, the person must be aligned with your Value Proposition, they must care that the family is well provided for.
- b. **Where do you sell your product?** Choose the correct areas, especially at first, that fits in with your Value Proposition.
- c. How do you sell your product? If you are a car manufacture with a status car, you sell your product with a pretty girl on the car since your customer is buying a lifestyle.
- d. How do you distribute your product? Make it easy for your customer.
- e. Who provides the finance?

All of the business processes must be aligned as close as possible to your Value Proposition. The closer you are aligned, the more successful you will be.

4.3 Step III: Test market the product

The objective in this step is to test the Value Proposition and the Value Chain - always questioning your assumptions. Based on this feedback either: Change and adjust the Value Proposition and/or Value Chain depending on results of test market, OR – Give up!

4.4 Step IV: Marketing

Form a continuum from Test Marketing to Marketing, constantly aligning your Value Chain and/or your Value Proposition.

It is useful to personify your product or company. Every time you decide on a design or a person to employ or a place to sell your product, compare it against the person you have created. For example our product is quite a chic woman who wants to satisfy her family's needs in as clever and simple way as possible. Hence, we would not hawk the **Vesto** on street corners.

5. Details of NEW DAWN Methodology

Based on the general commercialization methodology outlined above we will now describe how we have applied it to the **Vesto**.

5.1. VALUE PROPOSITION for the Vesto

We see the **Vesto** as: “The stove that gives you flexibility to satisfy your family. Be seen to be doing the best for your family.” The **Vesto** is the “No compromise stove.” It is “The stove that does more.”

In developing this Value Proposition our hypothesis is that only the **Vesto** satisfies the low income people's need for cooking inside and outside the house while providing space heating. At the same time it has an enclosed fire which provides safety. All of this while reducing the costs dramatically. **Vesto** does this because of **Vesto**'s unique, highly efficient, smokeless and mobile abilities.

Poor people do not aspire to being poor, their aspiration is using good quality products with status. Also, affluent people do not want to be seen to be wasteful. If you want to do the best for your family, you will use the **Vesto** as it is a clever to use due to its saving in time, low usage of fuel, efficiency, smokelessness, safety etc. It can also heat the room, it is portable – can be used inside or outside the house.

We are also targeting the **Vesto** at camping and outdoor markets, showing that even in an upmarket area people use the **Vesto**.

Our Value proposition could be any number of propositions: Uses less fuel – saves money / smokeless / safer / quicker / flexible etc., BUT, these are not aspirations that people have. Cooking is a social event and hence we want the **Vesto** to satisfy people’s aspirations in the social environment – i.e. to satisfy the needs of their family – cook food, keep them warm and provide for the family as well as possible.

In initializing the commercialization of our stove we will test market this Value Proposition. We will remain open minded: it is a value proposition which we can change.

5.2 VALUE CHAIN for the Vesto

You will notice that we brand the **Vesto**. It costs nothing and nobody reading this paper will forget the logo of the **Vesto**. The design of product and the imagery on the product will reflect the value proposition.

In our test marketing of the **Vesto** we have assumed the most important way of selling is via demonstration. Hence, we look to use multi-level marketing techniques. This has to be done in a way that people will aspire to be there – hence, the sales people will be chosen on the basis that they dress with pride, they need to use good pots to cook with. We will spend time and resources on training salespeople and ensure that they carry the message and the “personality” of the **Vesto**. We wish to sell through woman. In the urban areas, certainly, there are many single woman families and they know the problems of cooking and also make decisions on what to buy.

One of the difficulties with our target market is their “Ability to pay”. Hence we have decided to increase the price ticket of the item and allow an installment sale. When the deposit is put down, the sales person will give a HotBag “Free”. Bundling the HotBag and the stove provides an effective two-pot stove with only single pot fuel use.

The “Value Chain” has many more components which have not been worked out yet. The training will demand of our sellers a place where they sell, a way they sell and a method of taking money. This has to be set up for people to carry through and has to be rigorously checked. Your Value Chain even comes down to the way your factory looks and how you treat people working in the environment.

5.3 Phase 1: Test Marketing / Pilot market study

5.3.1 Purpose of Pilot Marketing Vesto.

The Objectives of Phase 1, pilot marketing of the **Vesto**.include:

- a. To establish perceptions of consumer reaction and if there are any possible sales for this product.

- b. To do initial selling of the stove at a reasonable price point to prove the market requirement/acceptance for the stove.
- c. To understand initial likes and dislikes of the product
- d. To evaluate the immediate quantities required for broader marketing of the product eg if the pilot stoves sell very quickly, we know to gear up production very quickly.

For our pilot market study, we have decided to test market 100 stoves. Market research for each sale and for each non-sale will be conducted by the salesperson. [The market research questionnaire will be handed out at the conference]. The following is an extract from the market research proposal:-

1. REACTION RESEARCH EFFECTED BY DIRECT SALES TEAM

This would establish perceptions of consumer reaction, likes and dislikes of the wood stove demonstrated, willingness to purchase/affordability perceptions, warranty relevance and any other information relative to the salesperson/potential purchaser interaction. These questionnaires would be completed by the salesperson after each contact, passed to MSA for coding and analysis, and a report presented.

5.3.2 Area to Test Market

We will choose an area where we assume it will be a great need as well as people having some ability to pay. We do not want to choose the most difficult, rural and low income area first as this will not prove anything. It is better to focus your efforts in one area at a time. Become established in an area first before moving to the next area.

Hence, we intend choosing an informal settlement area, where there is little access to natural wood, but wood can be bought at small shops called Spaza shops. This will probably be an area called Ivory Park, just north of Johannesburg.

The other area will be a peri-urban area where people can collect wood, although it is scarce. This area is called Rustenburg.

5.3.3 Sales Staff

The networking agents will be chosen to promote the stoves. The agent will have to buy a stove and will be trained on how to promote the stove. The agent will then promote the stove to people in her (probably a woman) area. For every stove the agent sells, she will get a commission.

In addition to the commission, the networking person will also get one stove free for every 5 stoves sold.

Hence, the sales people own their own business and manage their own time. Networkers will also be encouraged to find friends and family from other areas who will be able to sell the **Vesto**. They will then receive a commission on what the next person sells.

5.3.4 Manufacture of product

New Dawn products are currently made by a licensee factory in Swaziland. New Dawn Energy Systems (the company in South Africa) is fortunate in that there is an existing facility manufacturing the **Vesto**. Components are currently being plasma or laser cut. This allows flexibility and changes in the design. The stove has come a long way from where it was two months ago due to the innovative designer and inventor, Crispin Pemberton-Pigott.

6. Phase 2 Marketing

In phase 2 we will produce 500 stoves. We will also start selling to retailers in the area ie using formal marketing and distribution channels. The Networking people from the area will still be incentivised, that is paid a commission, to sell the product that is distributed through the retailer.

Due to distribution, finance and availability it is always preferable to sell a product through an established distribution channel. However, most distribution channels do not actively sell the products and promotion is mostly price based. Hence, to get the product known, it is unlikely you will succeed if you just try and sell it through retail outlets, without any concomitant promotion and sales.

Phase 2 may involve conducting further research, if necessary. Also the marketing originating in Phase 1 will be continued.

7. Phase 3 Gearing up

In phase 3, 600 stoves have already been sold and we have considerable experience in knowing how to sell the stoves and where to sell the stoves. We will increase production volumes and seriously look at capital expenditure, reducing costs per product. At this stage, New Dawn Energy Systems in South Africa will manufacture the stove under license.

We envisage advertising and marketing the **Vesto** ensuring that there is public awareness for the product. We will also have additional features on the stove – like an oven that the stove can be attached to, a proper barbeque device, a chimney if all you want to do is use the **Vesto** as a space heater.

8. Conclusions

GTZ has just approved a Public/Private Partnership project to assist us with Phase 1. It is fairly unique in that GTZ/Probec sees private companies as critical for achieving their aim for this phase of their project stated as follows:

Purpose of programme

Lower income population groups satisfy their energy requirements in a socially and environmentally sustainable manner.

Thus, quality of life of lower income population in selected SADC countries will be improved.

Beneficiaries/Target group

Poor rural and urban households as well as small business and institutions using biomass energy (woodfuel, agric. residues) for cooking, baking, heating and food processing.

We have begun manufacturing the **Vesto** and the design work for the logo, for printing on the tin, for the leaflets etc are being done.

We intend starting sales by the end of February 2003, when we will have everything ready and all systems go!!!

References

1. Market Analysis of the SME Energy Sector of South Africa. Final Report Prepared by the Small Business Project for the Shell Foundation. (Available on the WWW)
2. Schwartz, Elliot presentation

About the Authors

New Dawn, Managed and run by Crispin and Margaret Pemberton-Pigott, is a commercial venture which has been involved in design, manufacture and sales of Micro-enterprise machinery, building machinery and stoves for over 10 years in Swaziland.

Rina King has run a successful medium-sized commercial enterprise for 10 years in Johannesburg, South Africa, manufacturing locks with national distribution, marketing and sales. She has experience in the NGO sector as well as in Chemical Engineering.