The Philips Woodstove,
From a research prototype to a commercial business proposition.

Jan Alders
Philips DAP
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Bringing simplicity to life

Our Mission:

We improve the quality of people’s lives through timely introduction of meaningful technological innovations

Sustainability:

Exploring the opportunities sustainability offers by making it an integral part of our strategic thinking and acting

- One of the largest global electronics company with sales in
  - 2006 of EUR 26,976 million
- Founded in 1891
- Multinational workforce of 126,000 employees (October 2006)
- Active in the areas of Healthcare, Lifestyle and Technology
- Manufacturing sites in 28 countries, sales outlets in 150 countries
- R&D expenditures EUR 2,559 mln (2005)
Our businesses

Medical Systems  Lighting  Consumer Electronics  Domestic Appliances and Personal care

Philips Research  Open Innovation
DAP

Domestic Appliances and Personal care

Advanced Technology Center
Philips Research
Woodstove what it is

- A cooking stove making cooking on wood more convenient, nearly smokeless, fast and very fuel efficient

- An integrated fan injects air at high velocity for a very good combustion and therefore ensures less emissions and high efficiency

- Performance against traditional stove:
  - up to 94% carbon monoxide reduction (*)
  - up to 93% particulate matter reduction (*)
  - up to 45% wood saving (CCT)

- An appliance that helps to reduce deforestation and indoor air pollution

( * ): Test results Aprovecho, (US Independent Institute) Dec2006
DAP volunteered to use its competences and network to drive this product into mass production

By realizing our ambition to make a clear step in reducing indoor air pollution and deforestation we aim for millions of stoves.

Key for success:
• An attractive proposition for the consumer base on validated consumer insights
• To be affordable for the target group
  – Initial cost, cost of fuel, maintenance cost
• A technical solution that can claim substantial improvement
• A product that can be produced in mass at low cost and with a sustainable product quality,
• A good distribution, sales and service network
• A sustainable, profitable business for all partners in the value chain
Business approach to build a Sustainable business

1. Experience the local life (know needs of consumers and society)
2. Find solutions
3. Test consumer acceptance
4. Find partners for Commercial pilot
5. Reach the people (test the Business Model)
6. Make Business Plan and scale-up

Key is a profitable business with income generation for all partners in the value chain.
Pilot status India: Woodstove is appealing & performing well

• Consumers recognize the Woodstove as an attractive alternative for:
  1. Traditional open fire stove
  2. LPG and kerosene stoves

• Recognized benefits are:
  – Convenient in terms of speed, clean cooking, portable (not health)
  – Saves cost by increased fuel efficiency and wood has lower cost than LPG and kerosene.
  – Appealing design

• Demonstration, the Philips brand image and word of mouth are key to drive purchase

• Product has to be **simple, robust and reliable**

• **NGOs** are a good partner to create awareness and enable access to SHGs
Technical approach to provide a sustainable product proposition(s)

1. Analyze and understand the research prototype
2. **Modify the design to suit the consumer needs** in a better way (based on findings during the consumer acceptance test)
3. Support the business development by providing **1000 prototypes** for field testing
4. Find opportunities to **reduce cost** and investigate the feasibility of it
5. Design a version that can be produced in **mass, at minimum cost price** and maintaining the **primary performance**
Main technical challenges addressed

• Lifetime of 5 years $\Rightarrow$ >5000 hours
  – Bi-annual service is expected

• Operate the Woodstove without the need for mains electricity
  – Peltier driven Autonomous Woodstove.

• Reduce the cost of the burning chamber and key components
  – Reduce weight, avoid higher grades stainless steel power generation
  – Involve suppliers and negotiate on specification and price

• Improve stability, handling and safety without adding major cost
  – New appealing design

• Philips is an A-brand company. We want to apply the same standards on quality, safety and sustainable manufacturing etc. as we do for our premium products.
The design as used in the commercial pilot (1000)

- Adjustable power between 1.5-5kW
- Low emission figures not changed
- Fan 1Watt, 150 liters/minute
- Heated air inlet at top of stove, 200-300°C
- Peltier Thermo power generator (1.5-2.5 Watt) starts after 4-7 minutes
- About 100 Watt of heat to be dissipated by heat sink
- SS310 steel used for burning chamber (long life)
- Electronics included to control fan speed and for charging the battery
- AA-size re-chargeable alkaline batteries used
Our mission

Philips will be known for changing underprivileged peoples lives by reducing indoor pollution and wood consumption with innovative woodstoves