

# PHILIPS

## The Philips Woodstove,

From a research prototype to a commercial business proposition.

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Philips DAP

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# Royal Philips Electronics



Bringing simplicity to life

## Our Mission:

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

- 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)

## Sustainability:

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

# Our businesses



Medical Systems



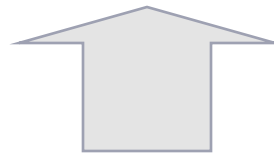
Lighting



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

**6 – Make Business Plan and scale-up**

Key is a profitable business with income generation for all partners in the value chain



**5**  
Reach the people  
(test the Business Model)



**4**  
Find partners for Commercial pilot



# Pilot status India:

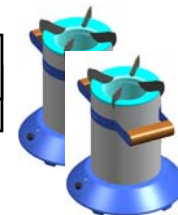
## Woodstove is appealing & performing well

- 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)

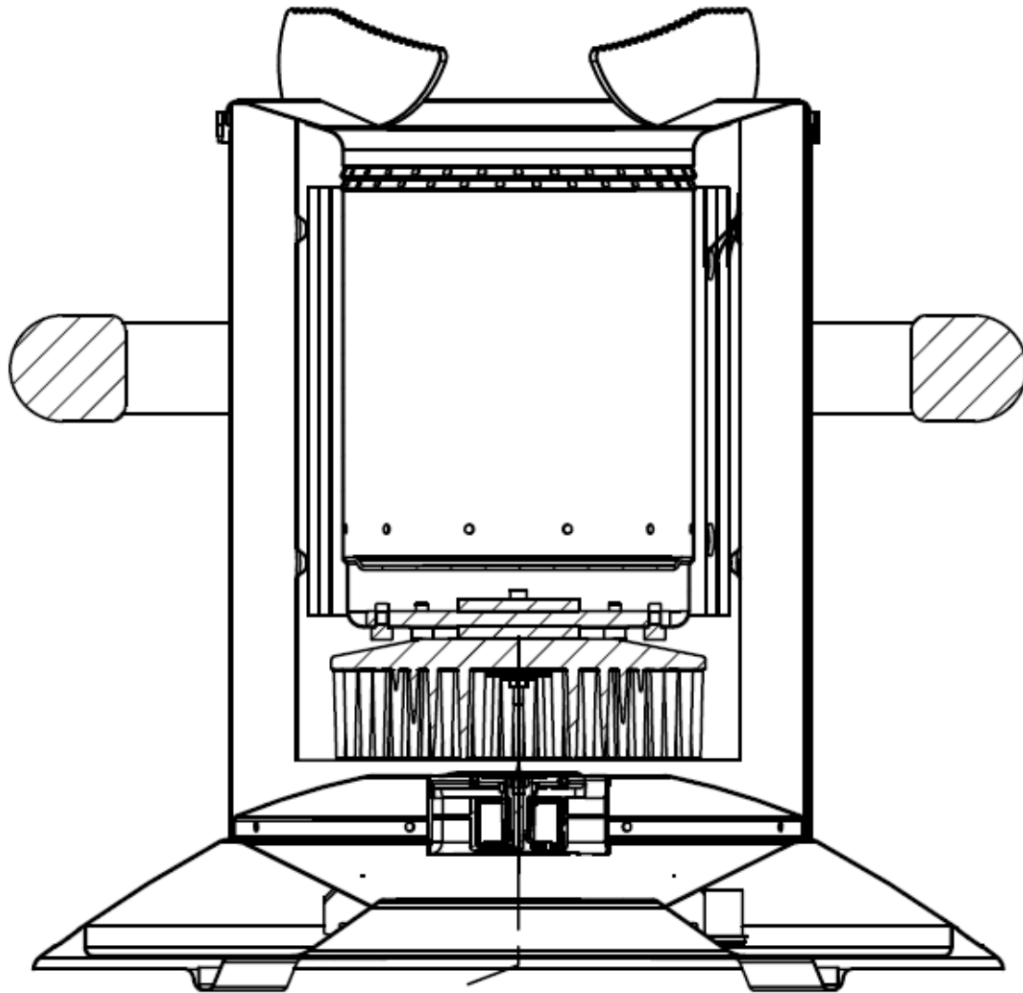
1. Analyze and understand the research prototype
2. **Modify the design to suit the consumer needs** in a better way (based on findings during the consumer acceptance test)
3. Support the business development by **providing 1000 prototypes** for field testing
4. Find opportunities to **reduce cost** 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 → >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  
at 1Watt, 150 liters/minute

heated air inlet at top of stove, 200-300°C

multi-tier Thermo power generator  
(.5-2.5 Watt) starts after 4-7 minutes

output 100 Watt of heat to be dissipated by heat sink

S310 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





