

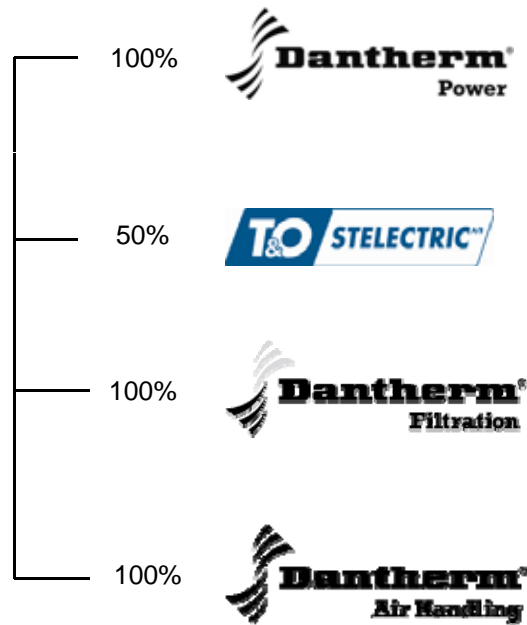
Focus. Trust. Initiative.

Workshop – Microgeneration with Fuel Cells

Jesper Themsen, Dantherm Power

Herning, June 24th 2008

Dantherm A/S - companies



Dantherm Power A/S



Founded: January 2007 (Spinn off from Dantherm Air Handling A/S)

Location: Skive, Denmark

Employees: approx. 45

CEO: Per Albæk

Business focus: R&D, Engineering, Sales and Service

Manufacturing: At Dantherm Air Handling A/S



Commercializing fuel cell systems



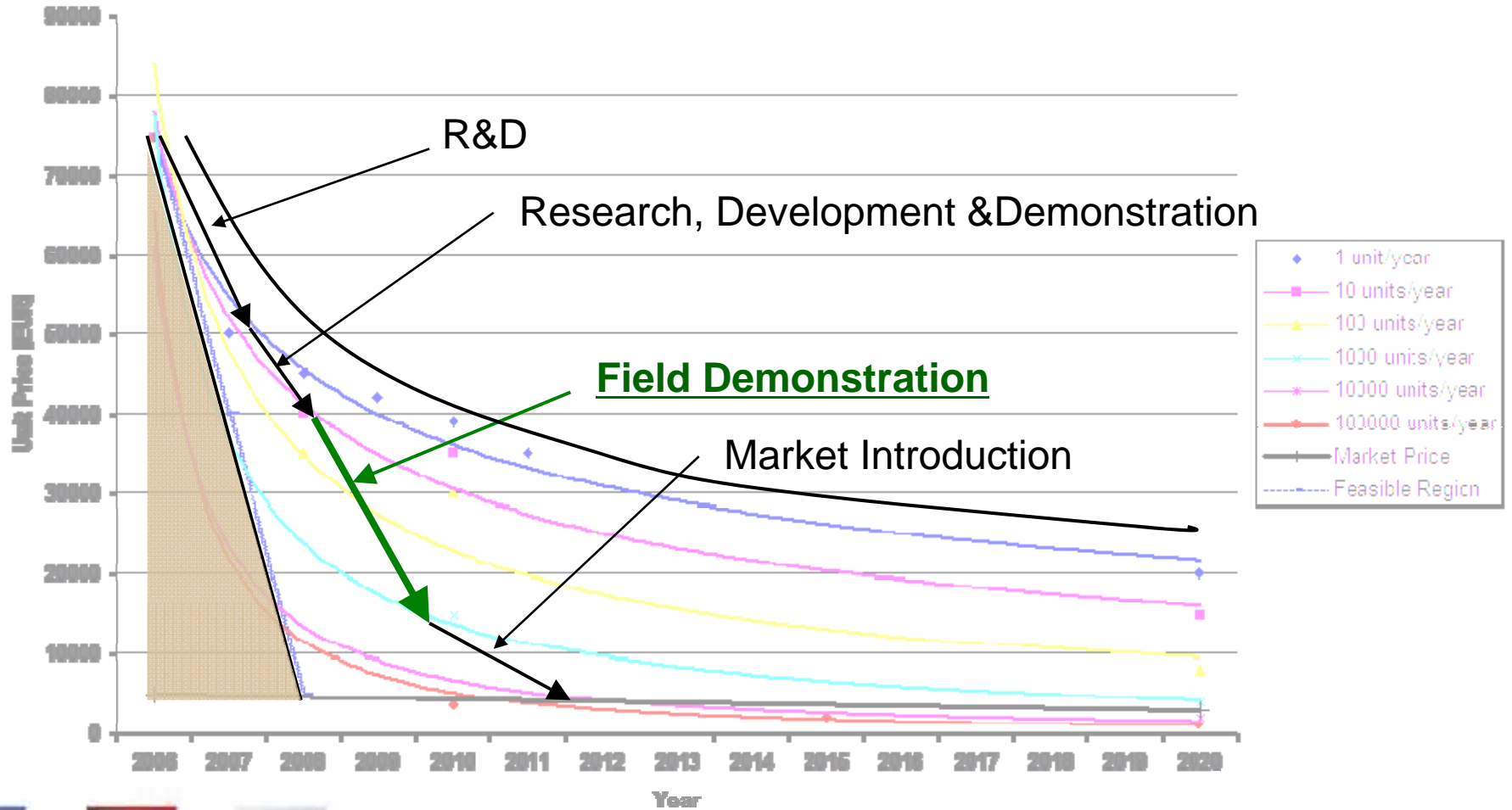
Outdoor cabinet with 1,6 kW integrated fuel cell backup.



Learning curve



Learning Curve, 1 kW el, Pure Hydrogen, 40,000 Hours Lifetime



800 W module installed in shelter



Ongoing commercial projects



Integrated and stand-alone Power Backup Solutions designed for Tetra radio base-station cabinets or shelters

Tetra network solution - I

Power output: 900We/1500We

Voltage output: -48VDC/230VAC (50W)



Tetra network solution - II

Same system as the other but integrated inside shelter.



Ongoing commercial projects



Uninterruptible Power Supply Solution (UPS) designed for Fiber Broad Band networks.

DC Power output: 5,0 kWe (-48VDC)

AC Power output: 0,5 kWe (230VAC)

In case of power interruptions or outage the modules instantly switches from main power operation to backup mode with a delay 0 msec. The modules then supplies the network with -48VDC and 230VAC.

This project is currently under deployment in DK. 12 systems will be installed by end of October 2007.



Mass manufacturing is our daily life



Preparation of mass manufacturing



Production of IPSM-A1600



Power Backup



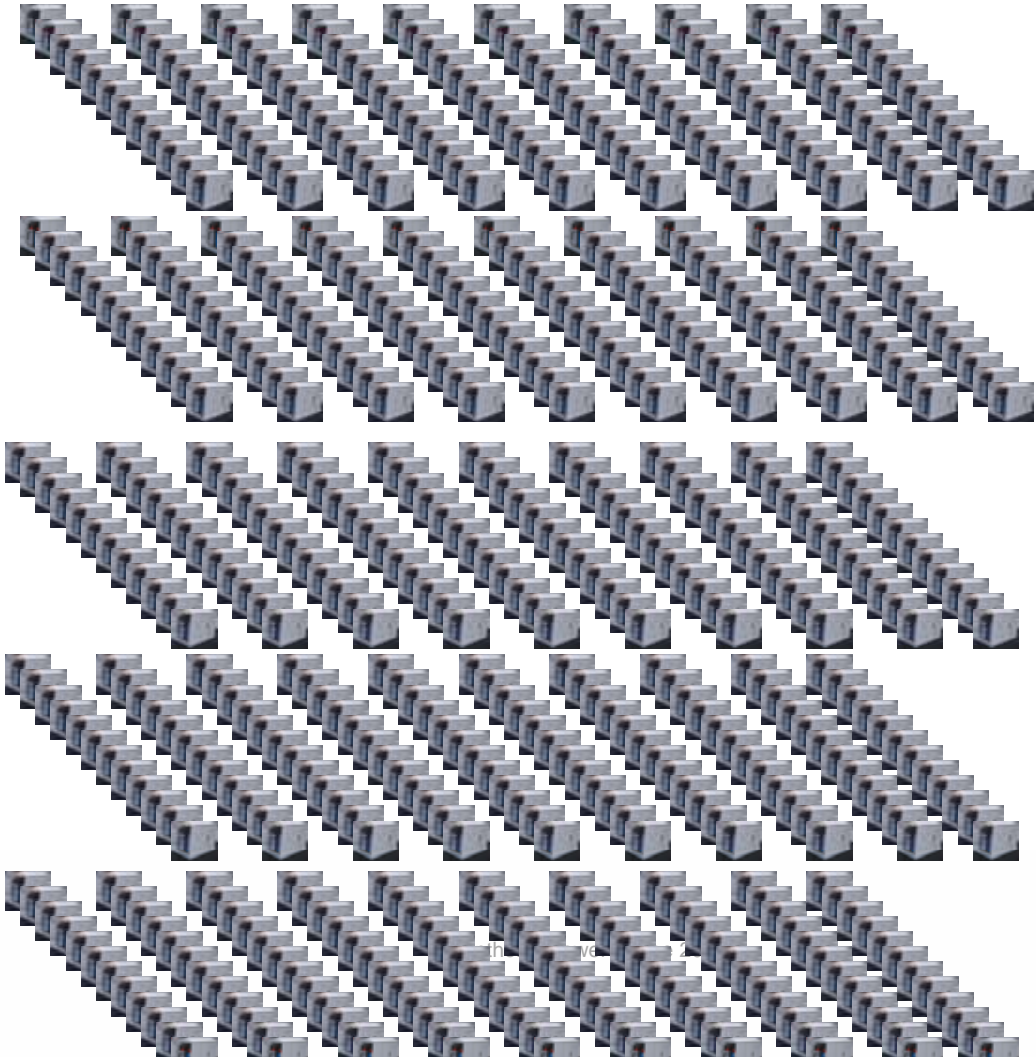
Field Test
January 2007



Demonstration
August 2007



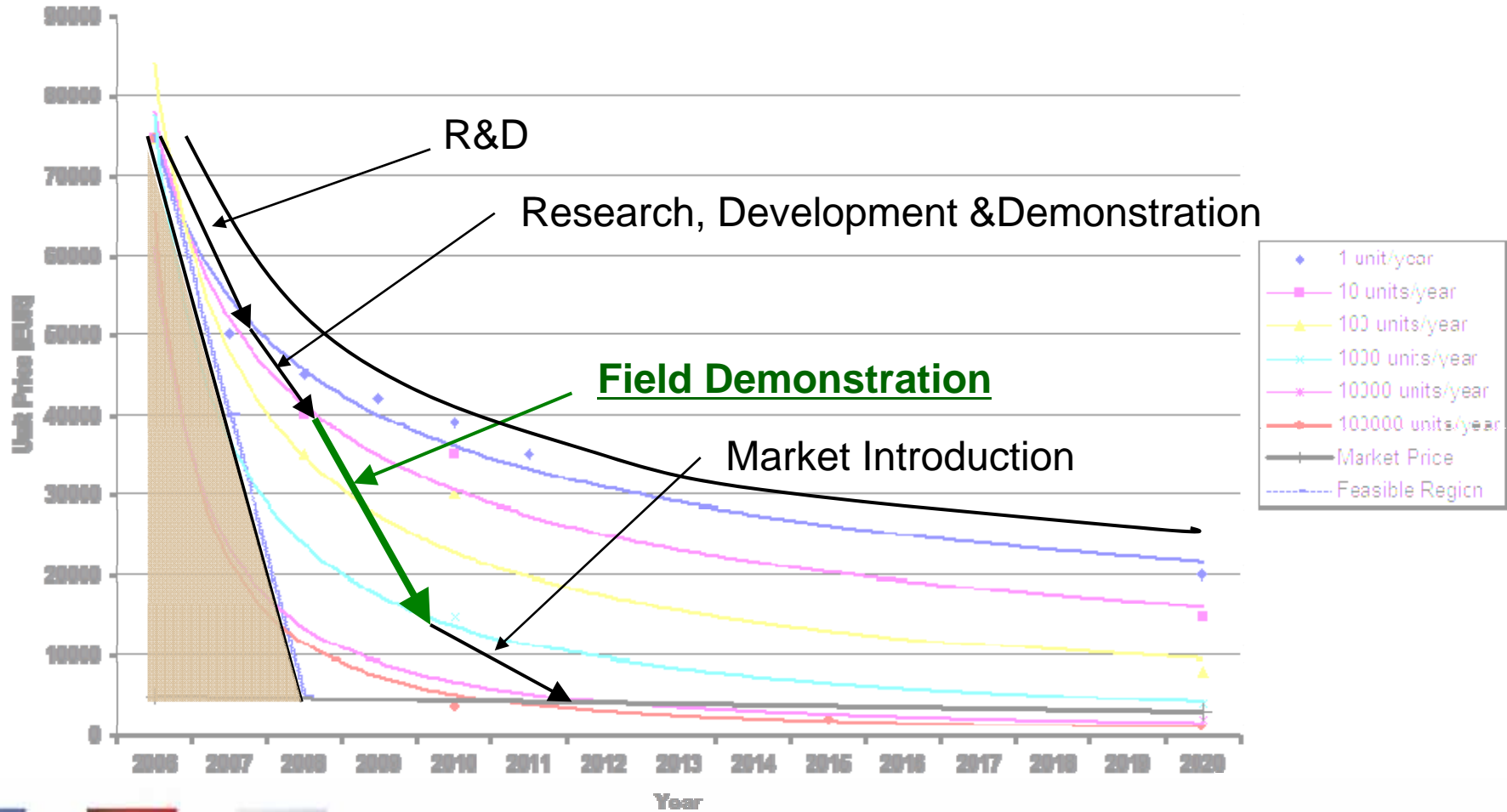
Large scale deployment
2008



Learning curve



Learning Curve, 1 kW el, Pure Hydrogen, 40,000 Hours Lifetime



Stack modules – concept study



**H2
Module**

**MeOH
module**



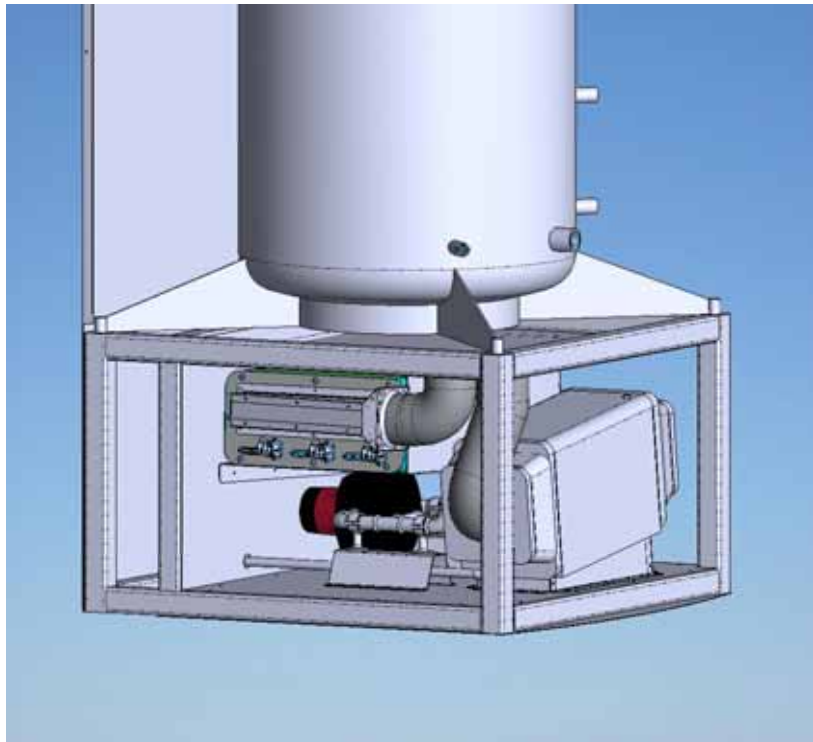
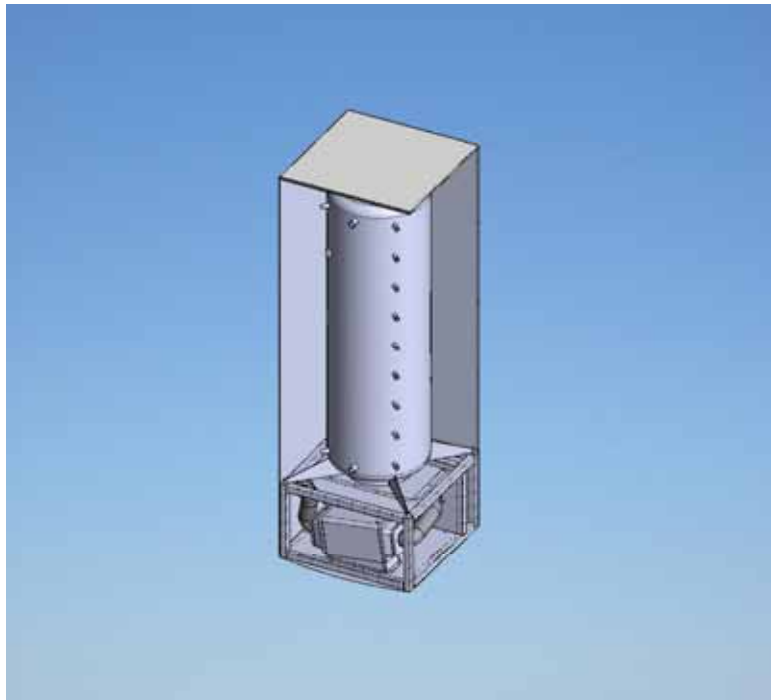
HT-PEM stack module – real life



HT-PEM methanol module – real life



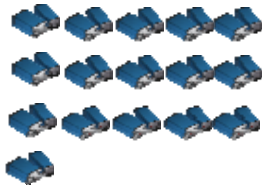
H2 College - Fuel Cell Systems



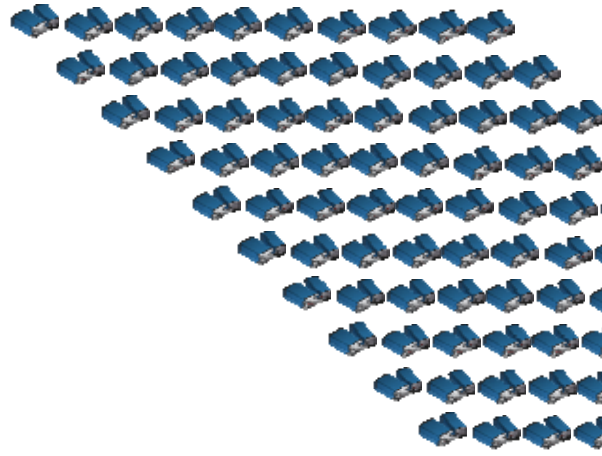
Scaling up RES-FC system deployment



H2 College
16 systems



H2PIA
200 systems



RES FC Market
3000 systems

