



**ChromoGenics**

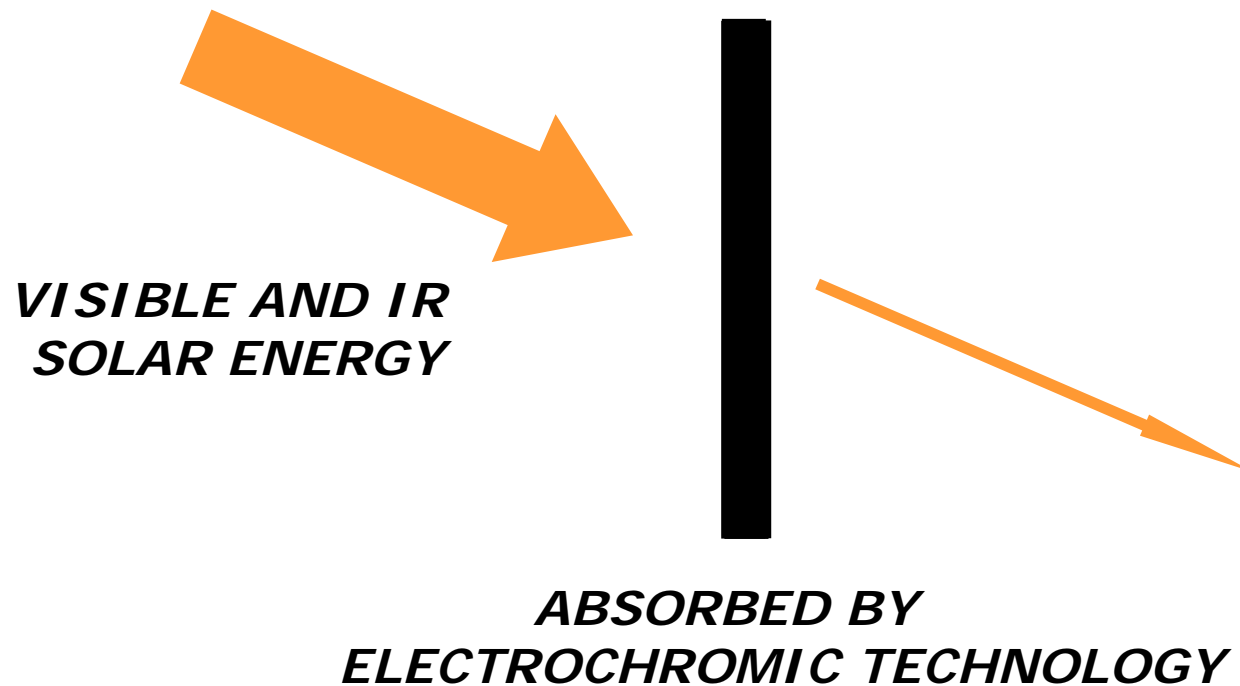
*Sweden AB*

***A CLEANTECH COMPANY***

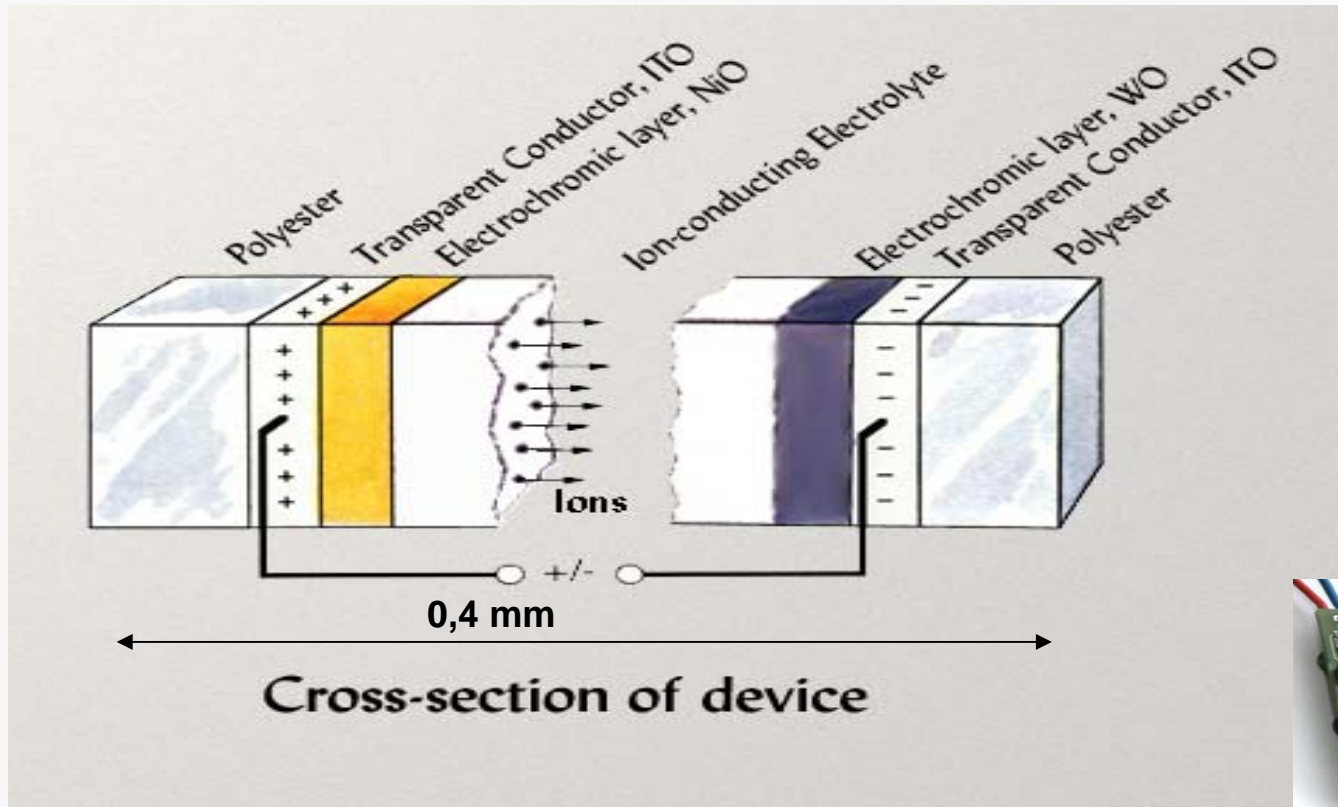
**ENERGY SAVINGS WITH  
SMART WINDOW TECHNOLOGY**

**CEO Bengt Åkerström**

## SMART WINDOW SOLAR HEAT GAIN CONTROL



## Intelligent electrochromic system



**Control unit**



***Commercial***

***Building envelopes  
goes "glazed"!***



***Residential***



- ✓ **Building and transport are large energy consumers**
  - Buildings - 40% of total energy consumption in EU
  - 1995-2003 energy consumption in EU related to AC increased with an average of 17% per year
  
- ✓ **Smart window technology - a solution which may reduce energy consumption in buildings by as much as 50%**

- Window / façade manufacturer
  - Added value / higher margin
- Construction company
  - Smart Window investment balanced by reduced investment in AC and static solar screens
- Property owner
  - Reduced operational costs
  - Increased property value / rental margins
- Tenant
  - Comfort



***The autoindustry  
goes "glazed"!***



## Smart window technology

- reduced energy consumption for AC
- increased passenger comfort



## **Electrochromic Devices (ECD)**

- gradual transparency
- low voltage DC
- memory effect (low energy consumption)
- failure mode bright

## **COMPETING TECHNOLOGIES**

### **Suspended Particle Devices (SPD)**

- high voltage AC
- requires continuous power supply to operate
- failure mode dark

### **Liquid Crystal Display (LCD)**

- bi-stable (dark/clear)
- low maximum transparency
- poor optical quality (hazy) in blocking mode

- Unique knowledge in production of electrochromic **thin flexible foils**
- Generic technology with high optical quality and **low production costs**
- **Patent protection** of strategic materials, control strategies and processes for volume production

## **Spin-Out from Uppsala University**

- 2005** Operations begun  
1st Customer agreement signed  
Financing Round A (new investors Volvo & DuPont)
- 2006** Cleanroom production facilities & Pilot plant installed  
Customer agreements
- 2007** Production process development

**Patents:** 5 granted + 3 filed + 2 pipe-line

**Board:** Founders, VC, Volvo, DuPont

**Advisors:** Technology & Production (US & SE),  
Production equipm (JP & US), Chemistry (SE)

**Staff:** 14

**University:** Research team co-operation

1. Application engineering, customer adaptation and product integration
2. In-house production - ramp-up
3. Production license agreement
  - Patent rights
  - Know-how
  - Application rights
  - Build and cut-over of plant (certified equipment and material suppliers)
  - On-going support
  - **Electrolyte produced and delivered by ChromoGenics**

- **Capital need** \$15M US
- **Purpose**
  - Migration to high volume roll-coating production process
  - Establish international presence & partnerships
  - Build Trademark
- **Time frame** 2nd half 2008
- **Investor profile**
  - Experience and networks for international expansion and production scale-up
  - License business competence





**MARKET POTENTIAL**  
**\$20,000,000,000 US/year**



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