

# “STOCO”

A HYDROGEN STORAGE SOLUTIONS COMPANY

*François Beauvais*

*HQ CapiTech Forum*

*May 10th, 2001*



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# CODE NAME : STOCO

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## February 5th, 2001 Joint Press Release

- 6 months discussions
- Basis for agreement
- “MOU”

## The Hydrogen Storage Solutions Company

- Combined expertise and resources of partners
- Existing business and IP portfolio
- Winning mix of corporate cultures

## Start-up Planned for Summer 2001

- Finalize “legal stuff”
- Administration logistics and organization
- Conditional to
  - Partner’s Board Approval
  - EU Authorities Approval

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# CONTENT

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- Context & Opportunity
- Partners & Structure
- Business & Products
- Metal Hydride Technologies
- Targeted Markets
- Start-up Situation & Challenges
- Current Status & Objectives
- Q & A

# CONTEXT AND OPPORTUNITY

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- **Growing worldwide demand for quiet, clean, environmentally friendly products in automotive, stationary and portable power applications:**
  - Concrete opportunities for many innovative fuel cells applications.
  - Fuel cells applications becoming increasingly real
- **Actions by government authorities in North America, Europe and Japan:**
  - Stringent environmental standards generally.
  - Increased support for development of clean and efficient technologies to significantly improve / replace existing combustion-based technologies.
- **Hydrogen supply and storage is still a key unresolved requirement:**
  - Balance-of-plant systems require hydrogen supply and storage systems.
- **Hydrides provide a clean and safe way of storing hydrogen.**

*OUR VISION: TO BECOME A WORLD-CLASS LEADER IN HYDROGEN STORAGE AND A KEY PARTNER TO FUEL CELL INDUSTRY IN THE EMERGING HYDROGEN ECONOMY*

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# THE FOUNDING PARTNERS

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## **GfE Gesellschaft für Elektrometallurgie GmbH (‘ GfE ’)**

- German producer of specialty alloys and high-quality materials
- Active in LT hydrides and containers for hydrogen storage
- Affiliate, through Metallurg, of Safeguard International Fund, L.P.

## **Shell Hydrogen B.V.:**

- Established in 1999 to pursue business opportunities in hydrogen
- Affiliate of the Royal Dutch Shell Group, access to significant technology and commercial capabilities.

## **Hydro-Québec CapiTech Inc.:**

- V.C. arm of Hydro-Québec:
- HQ, one of the world’s largest electric utilities and a producer of green energy.
- HQ operates a leading R & D center (IREQ): active in metal hydrides for hydrogen storage.

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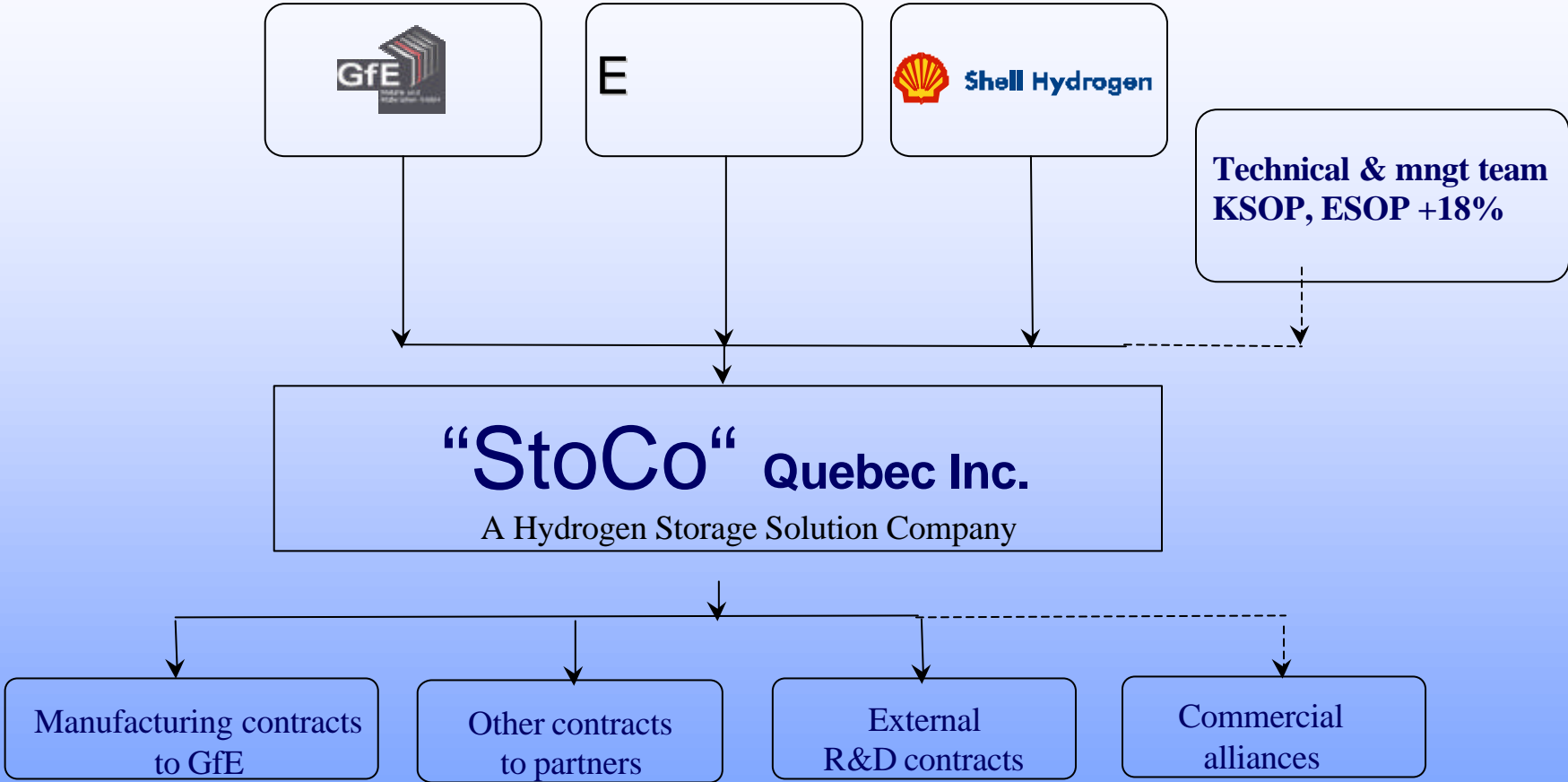
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# CORPORATE STRUCTURE



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# OUR BUSINESS

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## *Hydrogen Storage Solutions Based on Metal Hydrides:*

### **Hydride materials for hydrogen storage**

- Includes all types of metal hydrides.

### **Hydride-based containers and devices**

- For fuel cell applications
- For stationary and automotive applications.

### **World-wide marketing, sales and distribution**

- Initial focus on North America and Europe.
- Close cooperation and strategic relationships with fuel cells developers and systems integrators.

***OUR MISSION: TO DEVELOP, MANUFACTURE, MARKET AND SELL A PORTFOLIO OF SAFE AND CLEAN HYDROGEN STORAGE MATERIALS AND CONTAINERS.***

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# PRODUCT PORTFOLIO AND CAPABILITIES

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## Portfolio of metal hydride materials:

- Conventional LT metal hydrides (commercial availability).
- New mg-based HT hydrides (pre-production capability).
- Development and/or acquisition of MT hydrides.
- Interest in chemical hydrides.
- Protected by a growing and comprehensive patent portfolio.

## Portfolio of hydrogen storage containers and devices:

- Low temperature custom design containers.
- Recognized container design and assembly expertise transferred from GfE.
- New products to be developed.

## World-class technology development capability:

- R & D team of international stature, network of research center partners.
- To be complemented by engineering design and industrialization expertise.
- Fully equipped laboratory facilities and important R & D budgets.



# KEY ADVANTAGES OF HYDRIDE STORAGE

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*“hydride act as “sponges” for absorbing and releasing hydrogen.*

## Safety:

- Very **safe**: hydrogen being bonded to the metal hydrides and only released when heat is applied.
- Hydrides can operate at very low pressures (no compression)

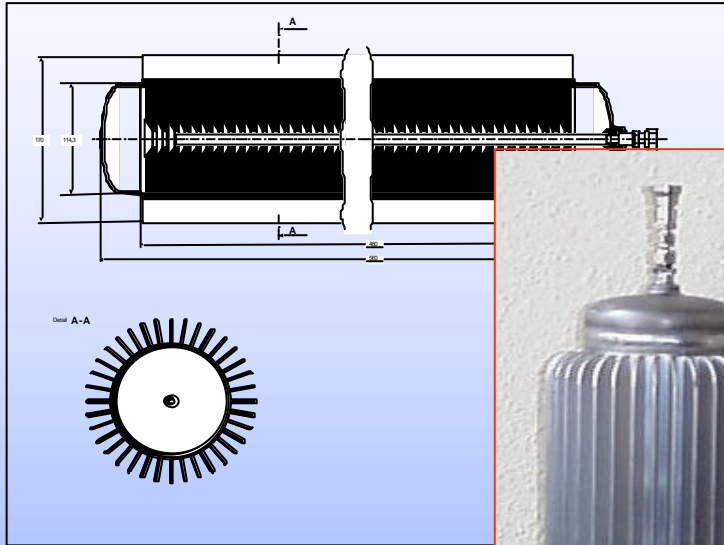
## Environment:

- Can provide a totally **green** hydrogen solution in conjunction with renewable energy sources such as hydroelectric power.

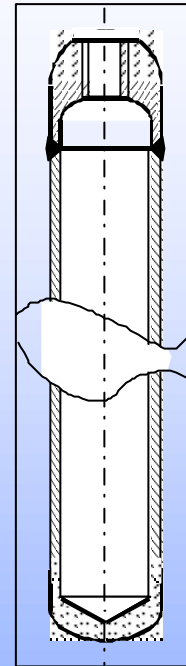
## Form / packaging flexibility:

- Potential for different tank **designs**, which will be key for applications constrained by volume or appearance (e.g. cars).

# Example of Tank Design



Storage Tanks for  
-Back-up system  
-Inventory  
Tracking  
System



*Medium Power*



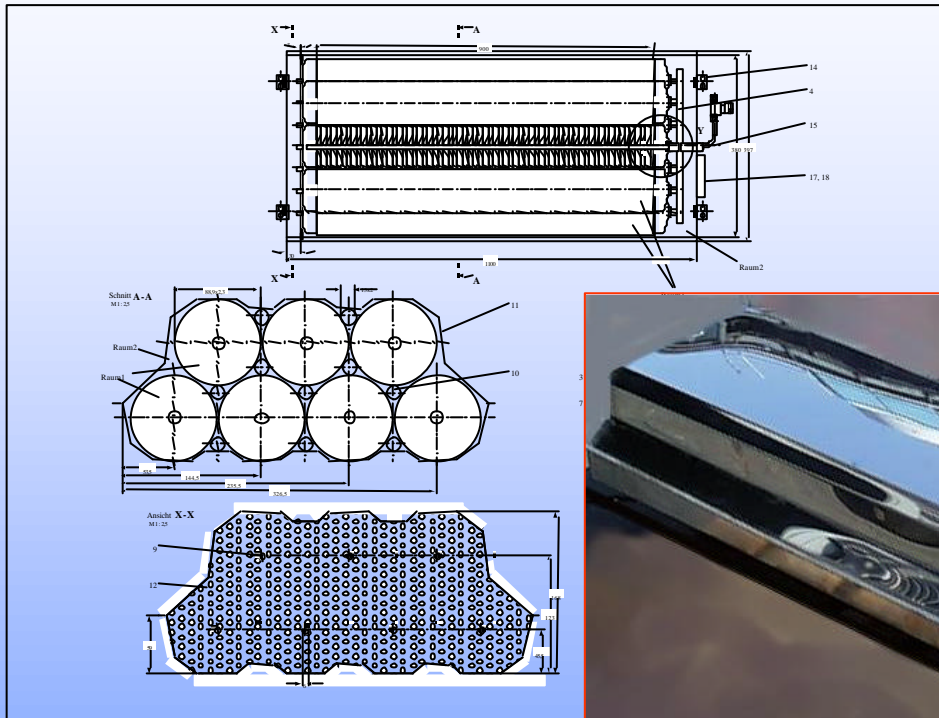
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# Example of Tank Design



*High Power*



Storage tank for passenger boat "Hydra"

# Example of Tank Design

Metal hydride cylinder for U212 submarine, with 2 HDW employees  
Apparent size: 40 cm diameter X 3.5 meters long.



[www.naval-technology.com/](http://www.naval-technology.com/)

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# POTENTIAL MARKETS

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- **Submarines and other military applications**
- **UPS & Back-up power generation**
- **Mobile applications**
  - buses, vans, ferry boats, taxi boats
- **Specialized off-road vehicles**
  - mining vehicles, locomotives, fork lifts
- **Automotive**
  - passenger cars, refueling stations
- **Other applications**
  - Portable GPS
  - Industrial Applications, H2 production sites and transportation

# START-UP SITUATION

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- **Head office & RD Facilities in Montreal.**
  - Production (LTH) and R&D in Nuremberg.
- **Initial \$\$\$ for 30 months burn rate.**
  - First financing round in Y2 (to increase build up rate if successful)
- **No profits first 5 years.**
  - Revenue generating activities Y1
- **Flexible corporate structure.**
  - Foster entrepreneurial spirit, creative environment
  - Yet firm business ethic policies and HSE policy
  - Attractive to new investors
  - Stock option plans for employees and key strategic contributors.
- **Stoco's team (core group from GfE, Shell, HQ CapiTech)**
  - HH mandate for CEO recruitment (nice package!!!)
  - CEO will select his VP's
  - Strong Board of Directors and Technical Advisory Board

# START-UP CHALLENGES:

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- **Management Team Build-up**
- **Business Development**
  - Identify and pursue best applications and key players
  - Develop strong partnerships with key players
  - Build solid business cases in targeted markets
- **R & D**
  - Attract and retain “top brains” to maintain “world class” status.
  - Maintain focus on targeted applications and commercial product development
- **Financial**
  - Generate revenues from existing LTH niche markets
  - Start first financing round month 12

# CURRENT STATUS & OBJECTIVES:

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- **Final agreements between partners & EU approval**
- **Realistic yet aggressive business plan.**
  - Well focused R&D plan, milestone based.
  - Marketing plan for targeted markets.
- **Company creation and start-up**
  - Progressive team build-up around core group.
  - Facilities in Montreal and Nuremberg
- **Value creation**
  - Cash & non cash contributions from founding partners.
  - “World Class” Management R&D Team and IP portfolio
  - Development of strong realistic viable business case
  - Partnerships and strategic alliances with key players



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François Beauvais  
May 2001

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