Toulouse, November the 20th 2001

Fuel Cell Technology's proposal

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Summary

PROJECT OBJECTIVES

Air pollution is a major problem in Taiwan, and high two-stroke scooter densities contribute to an extremely dirty air. The Taiwanese government has implemented measures to control air pollution and promote fuel cell scooters. Actually, compared to the battery powered scooters currently being promoted by the government, fuel cell engines offer the advantages of extended range and quick refueling.
This is an interesting option for small vehicles because the market and governments are beginning to put a high value on options offering low or zero emissions.

We are interested in creating a joint venture with TGTM. We can provide fuel cell technology and know-how to develop fuel cell powered scooters. We can also design and manufacture fuel cells.
Thanks to this, you will increase your production, employment and profits. You will be the leader in this market and improve your position on environmental protection. In addition, we will assist you to aide the process of methanol production and development of distribution stations.
This joint venture will facilitate our implantation on the Taiwanese Market, avoiding cultural misunderstandings. We desire to penetrate the Taiwanese market because it represents an opportunity to develop our activity in Asia. Moreover, we know that the Taiwanese government and inhabitants are very sensitive to clean energies and new technologies. Therefore, we consider that fuel cell scooters will be accepted quickly.

For all these reasons, we do think that a joint venture with your company represents a very interesting opportunity.

OUR COMPANY :

Fuel Cell Technology (FCT), was founded in 1988 by Stéphane Roche, the famous French chemical engineer, to provide leading edge research and development in the fuel cell industry. FCT has a worldwide presence with its headquarters in Toulouse, France, and 3 subsidiaries in Germany, California and Japan. 560 people work with FCT to propose the best solutions for clean vehicles.
Our philosophy and policy are the protection of environment. And as we enter a new millennium, it is predicted that the global demand for energy and clean vehicle use will rise phenomenally. A technology is needed which is clean enough to help reverse the damage to our environment. That technology is fuel cells.

Management Team

Chief officer	Stéphane Roche
CEO	Hélène Sallagoity
CFO	Michaël Tahar
R&D director	Gwendolyn Courtois
Marketing & Communication Director	Grégory Lacroix

OUR STRATEGY

FCT's core competence lies in the development of fuel cells for all applications. To commercialize the fuel cell successfully, FCT required partners and customers to deliver the benefits of clean, efficient, and reliable power in a wide spectrum of potential applications. FCT's focus is to work with its strategic partners to develop competitive products for mass markets, by reducing cost and implementing high volume manufacturing process, and on expanding our activity in all urban transport.

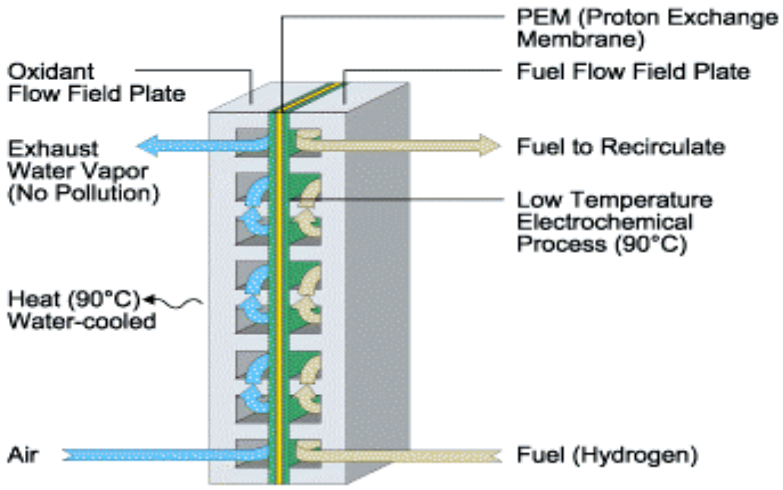
To leverage our combined efforts, obtain capital, and gain the critical capabilities of market access, product engineering, mass production, and service coverage, FTC has secured alliances with selected global players in our target markets.

FCT's first major collaboration was a four-year agreement signed in March 1993 with innovative vehicle manufacturer DaimlerChrysler. FCT/DaimlerChrysler alliance created two jointly-owned companies: one is responsible for developing, manufacturing and commercializing fuel cell engines for buses, cars, and trucks and the second is responsible for selling fuel cells and fuel cell engines for vehicles to automakers around the world.

FUEL CELL SYSTEM

Description

In principle, a fuel cell operates like a battery. Unlike a battery, a fuel cell does not run down or require recharging. Using chemical reactions, it will produce energy in the form of electricity and heat as long as fuel is supplied. The fuel is the hydrogen obtained from the methanol.
In the fuel cell the chemical energy is : $2H_2 + O_2 \rightarrow 2H_2O$ and electrical energy is produced.
A fuel cell consists in two electrodes sandwiched around an electrolyte. Oxygen passes over one electrode and hydrogen over the other, generating electricity, water and heat.



These cells operate at relatively low temperatures. They have high power density and they can vary their output quickly to meet shifts in power demand. The proton exchange membrane is a thin plastic sheet that allows hydrogen ions to pass through it. The membrane is coated on both sides with highly dispersed metal alloy particles (mostly platinum) that are active catalysts.
Hydrogen fuel is fed into the "anode" of the fuel cell. Oxygen (or air) enters the fuel cell through the cathode. Motivated by a catalyst, the hydrogen atom splits into a proton and an electron, which take different paths to the cathode.

Hydrogen storage in the form of metal hybrids, and a proton exchange membrane fuel cell running at low temperatures, are chosen for the reasons of ease of manufacture and operation, low cost, and minimal volume.

A fuel cell scooter would be superior to both by offering both zero tailpipe emissions and combustion scooter class range. The hydrogen fuel cell is actually the most efficient in terms of converting chemical energy to road word.

Technical specifications

Fuel cell scooter performance requirements are :

Maximum motor power output	**5.9 KW**
Range before refueling at 30 Km/h cruising speed	**200 Km**
Maximum speed	**60 Km/h**
Maximum curb weight	**130 Kg**

Our company has experts in different types of fuel cell. We have two products responded to your specifications :

- Transient power requirements reach 5.9 KW due to the rapid accelerations, suggesting a very large fuel cell pure.

But it is not really adapted, by his volume and weight, and suggests an important redesign of the scooter body to make more room available.

We are the first to implement a modern fuel cell system, ideal for scooters.

- A hybrid scooter with a small fuel cell (1.1 KW) and peaking battery (4.6 KW) could also handle the load. System side is the best**,** at 30 L and 60 Kg for the fuel cell, hydrogen storage and electric motor/controller.

Hybrid designs were examined in an effort to accelerate fuel cell scooter adoption by reducing the size of the fuel cell stack needed. This model doesn't require a redesign of the scooter body because its design is approximately the same than for a current electric scooter.

The driving cycle is respected with these technologies because the frequent decelerations allow regenerative braking gains .In fact, Taiwanese congestion and frequent stops mean that mass and velocity profile are important. Scooters in Taiwan are driven aggressively which means that maximum power is much more important than medium power. The battery is so used much more often and contributes frequently to the total power output.

The targets of hybridization for the scooter are:

- ✓ To reduce system cost by reducing system size : peaking power battery are cheaper than additional fuel cell capacity, at least for the next several years.

- ✓ To increase total fuel economy with regenerative braking lower curb weight. An important consideration as weight and volume of auxiliaries will decrease significantly if a smaller fuel cell is used (a smaller radiator for instance).

- ✓ To reduce the maximum allowable fuel cell temperature to 60°C.

- ✓ To maximize the promotion of new and clean energy.

Our company proposes these new technologies for scooters because the Taiwanese are very open to new ideas and promote the zero emissions behavior. We guarantee an environmental protection and industrial safety due to the very good quality of our products which is the key to success.

SETTING UP OF THE JOINT VENTURE

- TGTM and Fuel Cell Technology (FCT) shall proceed to form a Joint Venture Company in Taiwan in purpose of designing, manufacturing and commercializing Fuel Cell Scooters.

- The parties agree to provide the JV with adequate capitalization and personnel to properly discharge these functions.

- This JV shall endorse a copy of this agreement and thereby agree to be bound to the extent provisions thereof related to their performance, obligations and rights.
  TGTM and FCT will provide customers of the JV assurance of performance by the JV of its obligations as may be necessary.

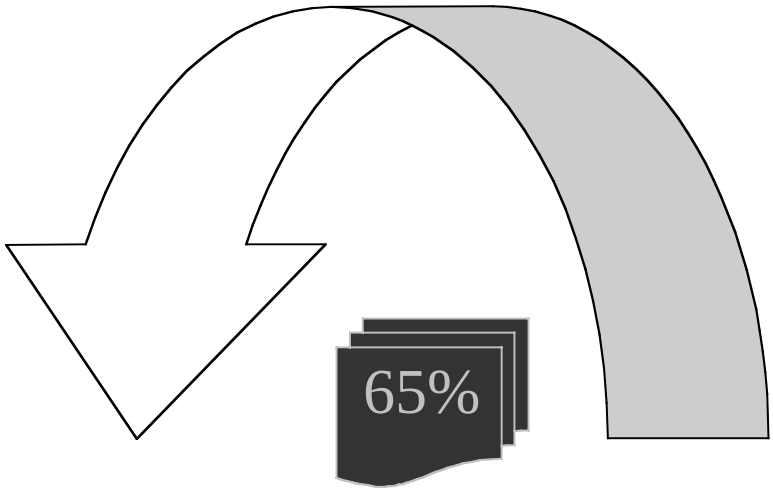
The name of the JV shall be ***FCTM***. It will be a company of limited liabilities.

The logo of the company will be as following :

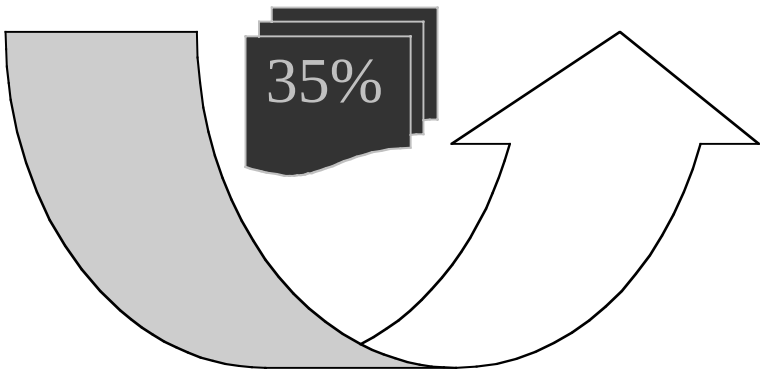
JOINT VENTURE CONTRIBUTION

FCT

- The exclusivity on our Fuel Cell Technology.
- Technology Transfer
- Workers training
- Our Technological knowledge
- Presence of our experts.
- Our presence in the Management Team
- Financial participation for the project development: 220 000 USD



FCTM

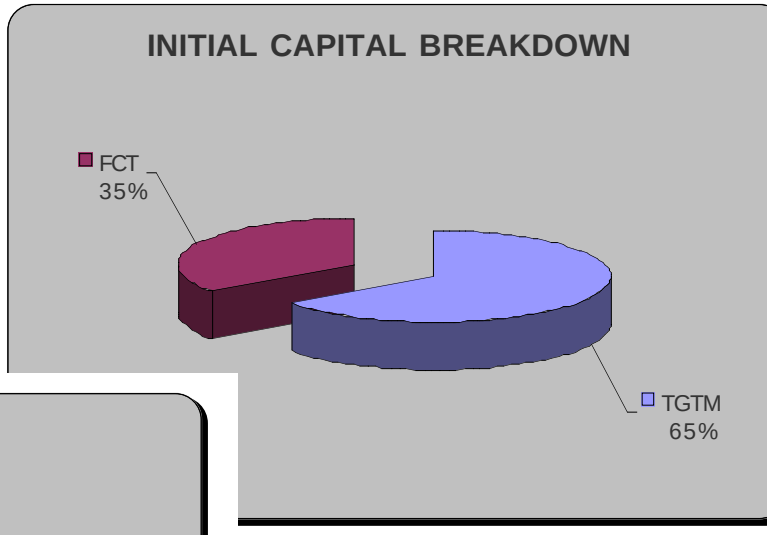


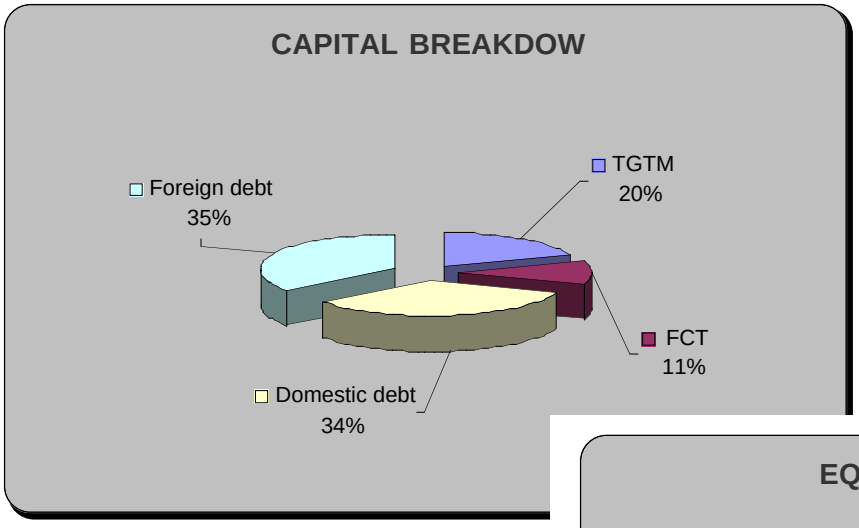
TGTM

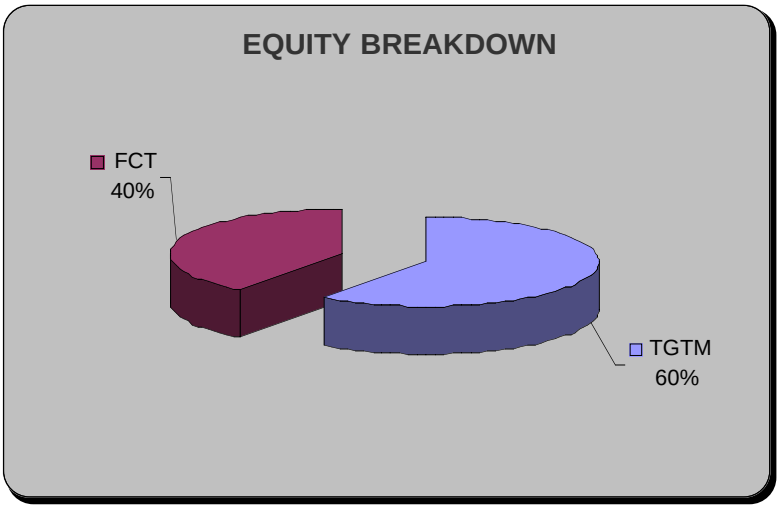
- Technical infrastructures
- Market Knowledge
- Scooters manufacturing
- Workers
- The Management Team
- Financial participation for the project development : 400 000 USD

CAPITAL

STRUCTURE







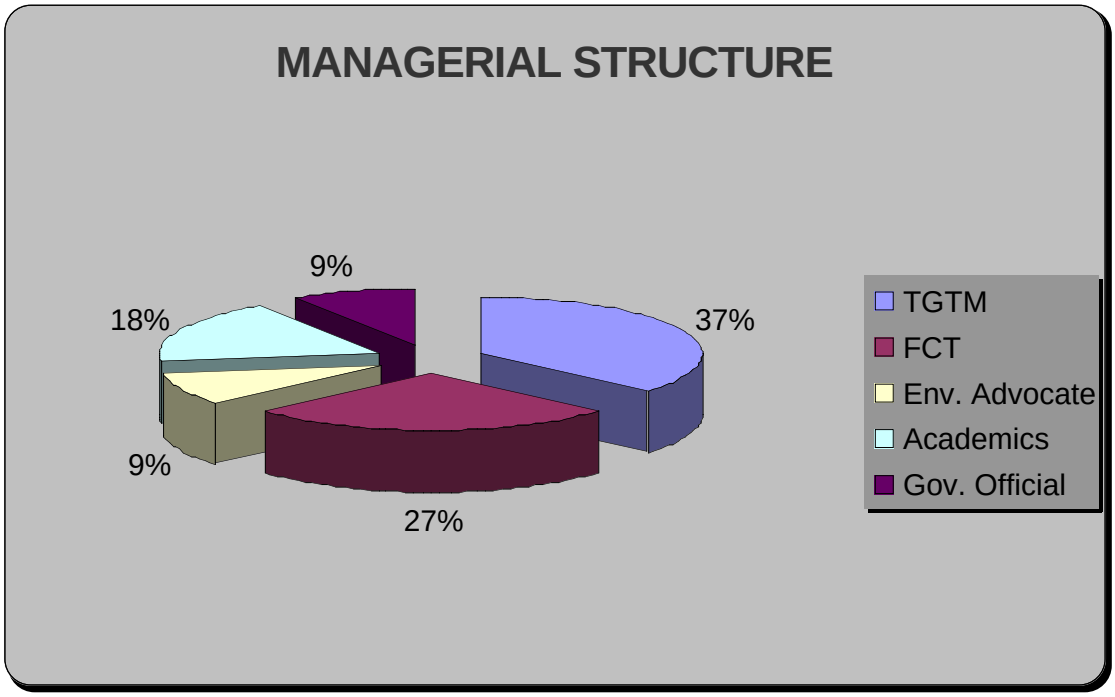
- The JV will have the sole responsibility for the design and manufacturing of the fuel cell scooters and will provide or arrange to have provided product support and warranty services to its customers.

- **The JV shall have a capital of USD2m divided into 20 000 shares of USD100 per alue each, which shall be composed of 4 000 shares of class A and 2 200 of class B all of the same status.?**

- The class A shares shall be subscribed by and issued to TGTM and the class B shares shall be subscribed by issued to FCT.

- In the registered capital of the JV, the shares of TGTM shall be no less than twenty percent (20%) and the shares of FCT shall be at eleven percent (11%).

MANAGERIAL STRUCTURE OF THE JOINT VENTURE



4 TGTM Executives

- CEO
- COO
- Lawyer
- Technology Expert

3 FCT Executives

- CFO
- Technology Expert
- Investment Bankers

Others

- 1 Environmental Advocate
- 2 Academics
- 1 Government official

FUNCTIONING

Strategic decisions

- The BOD is empowered, pursuant to the provisions of the JV's agreement to discuss and decide all major problems of the venture :
    - proposals for production and operating activities
    - budget for revenues and expenditures
    - distribution of profits
    - appointment or employment of the president and the vice-presidents.

- Responsibility of overall program management will be assigned to the JV through its president and its CEO appointed by the board.

- The BOD may act only upon a majority of 75%of the total board. Such decisions shall be subject reconfirmation by the board (at the majority of 75% of the board) at the request of any director.

- In handling major problems, the BOD shall seize the extraordinary general meeting (EGM) which shall be composed of the BOD, the shareholders, the local government (offices of transportation and Economic development), the local workers union and impartial observers and specialists from Shanghai Academia, accounting and law firms.

Venture Capital

- The sharing of the losses of the Foreign-Funded Joint Stock Company Limited is in proportion with the shareholders' contributions. Moreover, the incorporators aren't allowed to sell their contributions during the first 3 years from the date of the creation of the Joint Venture.

- A contractual joint venture shall establish a board of directors or a joint managerial institution which shall, according to the contract or the articles of association for the contractual joint venture, decide on the major issues concerning the venture.

- If the Taiwanese or foreign party assumes the chairmanship of the board of directors or the directorship of the joint managerial institution, the other party shall assume the vice chairmanship of the board or the deputy directorship of the joint managerial institution. The board of directors or the joint managerial institution may decide on the appointment or employment of general manager, who shall take charge of the daily operation and management of the contractual joint venture. The general manager shall be accountable to the board of directors or the joint managerial institution. If a contractual joint venture, after its establishment, chooses to entrust a third party with its operation and management, it must obtain the unanimous consent of the board of directors or the joint managerial institution, report to the examination and approval authority for approval, and register the change with the administrative authorities for industry and commerce.

Governing law & Jurisdiction

- This agreement shall be governed by and interpreted in accordance with Taiwnese law.
  The parties and the JV will endeavor in good faith to mutually resolve any disputes between them involving the interpretation, application or performance of this agreement.

- Any such disputes which cannot be resolved by the personnel immediately involved shall be referred to the heads of the commercial, financial or technical services, as the case may be, of the parties for resolution or if no resolution, for clear definition of the issue. The issue so defined shall be referred to the management of TGTM, FCT and the JV for final resolution. Any dispute which cannot be so finally resolved may, by mutual agreement of the parties be referred to arbitration and finally settled under the rules of Conciliation and Arbitration of the international Chamber of Commerce by one or more arbitrator appointed in accordance with the rules, who shall render a decision based on the law of Taiwan.

- The arbitration court will sit in Lausanne, SWITZERLAND the arbitration award shall be final and binding on all the parties hereto who shall abide by the arbitrator's decision. The arbitration proceedings and all documents presented shall be conducted in English.

Technology transfer

- The results of individual research carried out or commissioned by the FCT Company are and shall remain the exclusive property of such parties which alone may use the industrial or intellectual property resulting there from.

- The membrane which is included in the fuel cell manufacturing is protected by an international patent.
  This membrane still remains the property of FTC Company and still shall be manufactured in France.

- This part of the fuel cell shall be imported to Taiwan in proportion with production's rhythm.
  As the sole supplier of membrane of the JV, FTC Company shall sell to JV the membranes aforesaid. This importation from France to Taiwan shall be submitted to incoterm EXW (Ex Works).

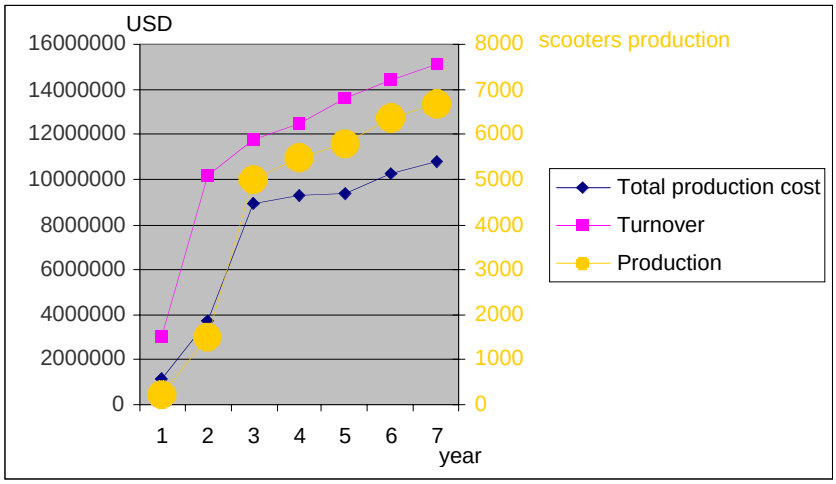
- That means that FTC will deliver the goods on the exit of the French factory and for the "normal" transportation of the membranes to destination's place which shall be conveyed, FCTM will have to pay the transportation and the insurance for the transport.

- As the sole buyer of this technology, FCTM shall support the risk of loose and damages of the material hereto. The additional costs resulting from events happening after the handing-over appropriate of the goods at the end of its routing (all events after the boarding not considered as “normal” during transportation. The insurance shall be so supported by the buyer : FCTM.

Marketing and Commercial strategy

Marketing and commercial strategy will be managed by the our JV. So, we will just give key points we will have to deal with.

- Our production capacity is important for the future of the JV and we can forecast the following sales and turnovers :



  By this projection we can see that will be able to produce large quantities with bigger margins. If the Taiwanese is big enough we will be able to develop our activity on the Asian market.

- Our marketing strategy will deal with 3 points:

  - The Scooter cost after 10 years : We can consider that a ten years FC scooter costs more than a 10 years gasoline scooter.

Cost comparaison in US dollars after 10 years ownership	gasoline scooter	fuel cell scooter
purchasing price	1 400	2 400
present value of fuel over 10 year life time	1 130	480
value after 10 years	10%	20%
market value	140	480
total cost after 10 years	2 390	2 400

  - The security : We will have to communicate on a safety process. The fuel cell scooter does not present more risks than gasoline scooters.

  - A clean energy: FC scooter will be a way to live the environment.

Production strategy

Strategy for 2002 production :

Everything will take place in France

- Prototyping will be done during 2 periods :

    - 1 / Prototype A , we'll make sure that the fuel cell match TGTM requirements
    - 2 / Prototype B , Design of the fuel cell

- We will carry out a first run of x units in real conditions (using the definitive elements, assembly line,…)
- If the tests are positive, we will start the production of the equipment and prototype tools.
- Following the mechanical and electronic design, we'll do a design review internally but also with TGTM to make sure that we can start the project. The project manager in charge of the manufacturing project will start working with his team in order to prepare the equipment of the scooter manufacturing line.

Our target is to have the production line installed in Taiwan by December 2002. We also plan to start the production line and employees formation in Taiwan.

230 fuel cells will be produced as prototypes during the first semester in France. We won't sell them.
Then, we will produce 1500 fuel cells during the second semester and ship them to Taiwan for assembling and distribution.

Production for the following years:

The production in Taiwan will take place in Taiwan for the fuel cell. The membrane will be purchased to FCT and the other elements but the fuel cell system will be purchased to TGTM.

- We will use 3 teams working continuously 8 hours a day, 5 days a week.
  The maximum production capacity is 5 900 units per year (TGTM requires 5 000 units in the RFQ)

- If the commercial results require to increase the production, we could ask our 3 teams to work 6 days a week or 48 hours a week. Then, we would be able to produce 7 212 units per year, or 18% more.

    - **Advantages :**
    - No expenses regarding the training of new employees
    - No extra investments for a new line
    - A more interesting depreciation of the production line
    - Flexibility to the demand

    - **Disadvantages** :
    - Overtime costs

- If we need to produce more than 7212 units, we can work 7 days a week by hiring 3 week-end teams. Our capacity would be of 8500 units per year.
  3 teams would work during the week following the fisrt scenario, we would stop the overtime for these teams.

  - **Advantages :**
  - No extra investments
  - A more interesting depreciation of the production line
  - A maximum use of the equipments
  - Flexibility to the demand

  - **Disadvantages :**
  - The costs for training weekend teams
  - The management of weekend teams
  - Extra cost for working during the weekend

- If we are in the last scenario, we would have to consider the creation of a second manufacturing line or the improvement of the existing line.

We took into consideration other hypotheses, they are listed in the annex, in the production plan section.

Quality strategy

- Quality engineer on the production line

  - Follow up of required modifications
  - Follow up of the quality process: issues during the different production sequences, quantity of rejected elements.
  - Warn engineer if problems happen. Propose solutions and follow up corrections.

- Quality engineer manager (he manages production teams and quality engineers)

  - Ensure the link between customers and engineers.
  - Follow up the quality process and required modifications
  - Propose an regular internal report about products issues

- Product engineer

  - Perfect knowledge of his product
  - He gathers customers needs and issues and prepare answers with the quality engineer manager

TRAINING

Manufacturing of the fuel cells and engines :

One Taiwanese quality engineer and one Taiwanese product engineer, will follow a training course in Toulouse for 1 year, during the prototyping period, in order to improve the product and its manufacturing process. The training will continue in Taiwan for 4 months.
Regarding the Taiwanese marketing director, he will be trained in France for 3 months. After that, he will go to Taiwan to organize the marketing strategy and promote the new fuel cell scooters.

Assembly line of scooters, engines and fuel cell :

The technicians and workers will be trained in Taiwan for 1 month. They will learn theory aspects during the first week and learn the practical aspects for 3 weeks.

A training manager working for FCTM will stay in Taiwan. His work will consist in being in permanent contact with R&D in order to follow the product evolution. He will have to adapt the continuous training with the technology evolution.