



**Initiations of micro-CHP applications,  
a possibility to join  
to a FCH JU EU  $\mu$ -CHP demo project**

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## Historical background - Part I.

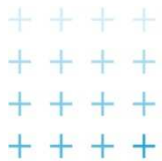
- **2005. First trial:**

- **RES based MCFC CHP:  $P_{el}=200$  kW,  $P_{th}=220$  kW**
- **Major elements of the basic concept:**
  - **Establishing the first Eastern Central European Demo project and the related Competence Centre**
  - **Primary energy sources:**
    - **Sewage gas for normal operation mode**
    - **Natural gas for covering emergency situation**
  - **Electrical market: wastewater treatment plant**
  - **Heat markets:**
    - **Internal use + local district heating system**



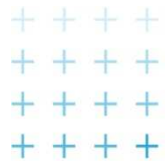
## Historical background - Part II.

- **2005. First trial:**
  - **Major elements of the basic concept:**
    - **Technology background and partners:**
      - **Fuel cell: MTU**
      - **Biogas cleaning: local technology**
    - **Planned financing background**
      - **50 % municipality source**
      - **50 % EU and governmental support**
  - **Result: The local system was not able to accept the innovative values of the project, so it was refused**



**State of the art of FC based CHP  
applications in Hungary**  
or  
**towards to distributed energy production**  
or  
**self care distributed energy system**

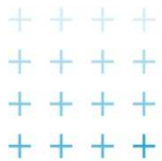
**Establishing demonstration projects on  
FC based micro- and sub megawatt size CHP**



## Major elements of the basic concept - Part I.

- **Added values:**

- **Realization of the complex system integration**
- **Utilization of the specific result of the local innovation**
- **Adaptation necessity to the innovative building technologies**
  - **Passive or active houses**
- **Fulfilling the adaptation demand to the reconstruction technology of old buildings**
- **Realization of the smart grid concept**



## Major elements of the basic concept - Part II.

- **Added values:**

- **High efficiency energy production**
- **Realization of flexible heat recovery and energy storage solutions**
- **Integration of innovative HVAC concept and solutions**
- **Realization of the projects**
- **Quality control and insurance**
- **Complex follow up and monitoring of the projects**
  - **Technical**
  - **Economical**
- **Maintenance and service**



## **Main drivers:**

- **Successful activity of the HFC Platform**
- **Tendencies of the local climate change**
- **Specific EU directives and documents**
- **Integration demand to international demo projects**
- **New, progressive local regulations based on the application of innovative technical solution**
- **High quality, experienced engineering background**



## **Market places and partners:**

- **Governmental buildings**
- **Municipality buildings**
- **Public buildings**
- **Hospitals**
- **Universities and research institutes**
- **Private office buildings and houses**
- **Industrial co-generation demand**
- **Agricultural co-generation possibilities**





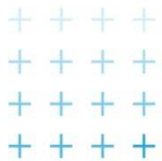
## **Practical assumptions of system integration:**

- **Specifying the primary energy sources**
- **Specifying the grid demands**
- **Influencing parameters of electrical power profile:**
  - **Standard domestic consumption**
  - **HVAC demand**
  - **Charger for electric vehicles**
  - **Electrolyser for high pressure H<sub>2</sub> production**
- **Influencing parameters of heat profile:**
  - **HVAC demand**
- **Composition of a feasible technical solution**



## **Suggested basic element of the financial background:**

- **User friendly, simple co-financing system for supporting the investment**
- **Reaching of the critical mass is necessary**
- **Transparent, long term, differential and optimal feed-in tariff**
- **Solution of the existing tax problems:**
  - **VAT**
  - **excise tax**
  - **income tax**





**Thank you for  
your kind attention!**

