

## Fuel-cell related development projects at Kontakt-Elektro Kft. in Hungary



## Company introduction



## FC component development

Catalysts, MEA

MTA TTK

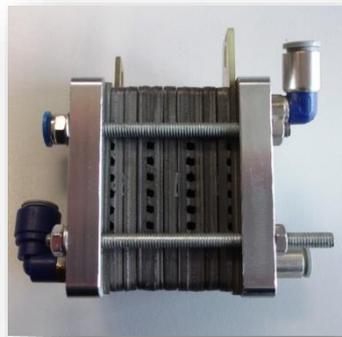
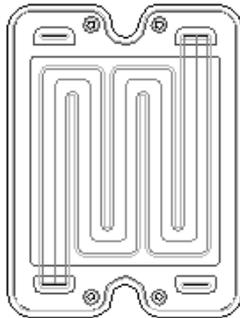


Bipolar plates

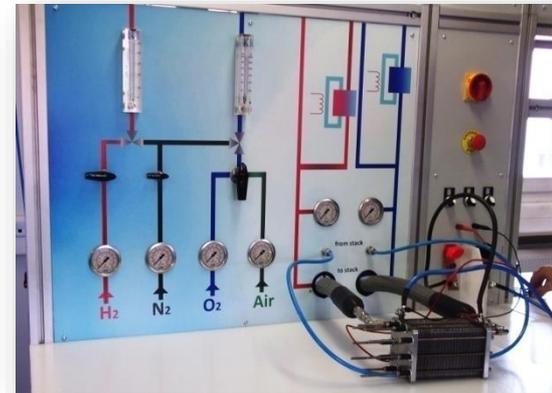
BME GPK



KONTAKT-Elektro



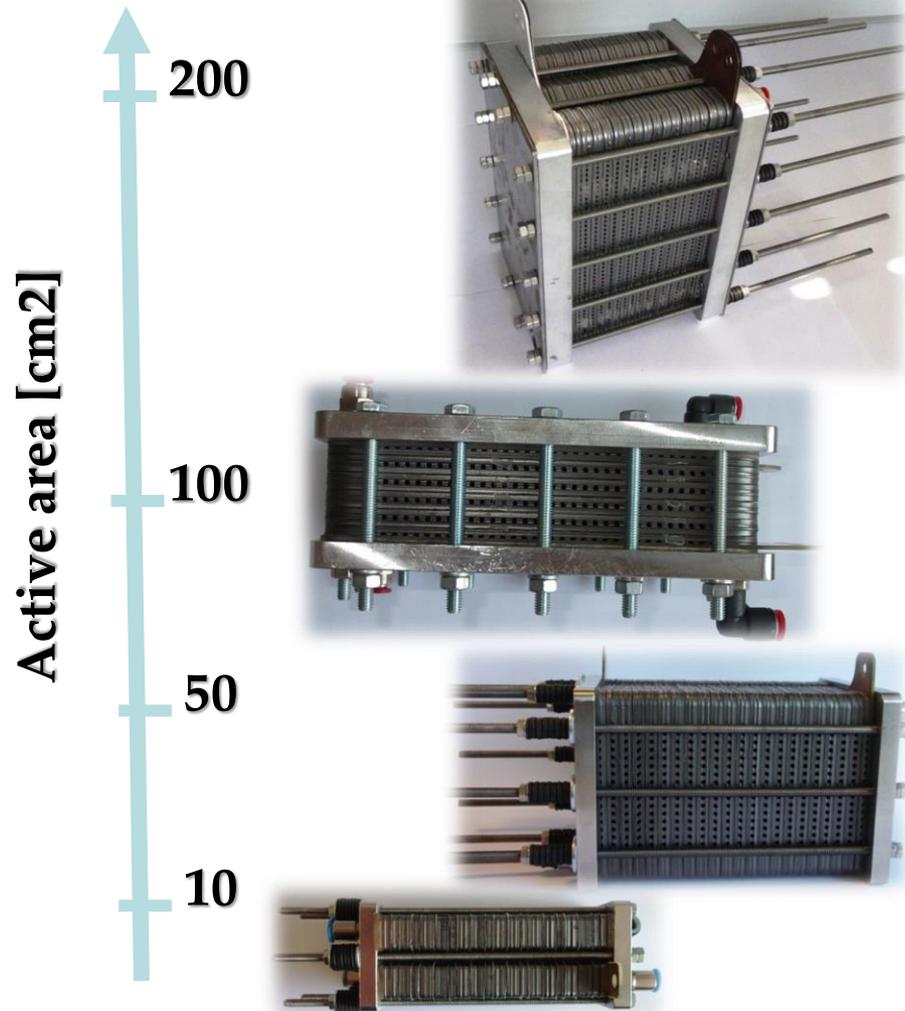
Design of FC stack



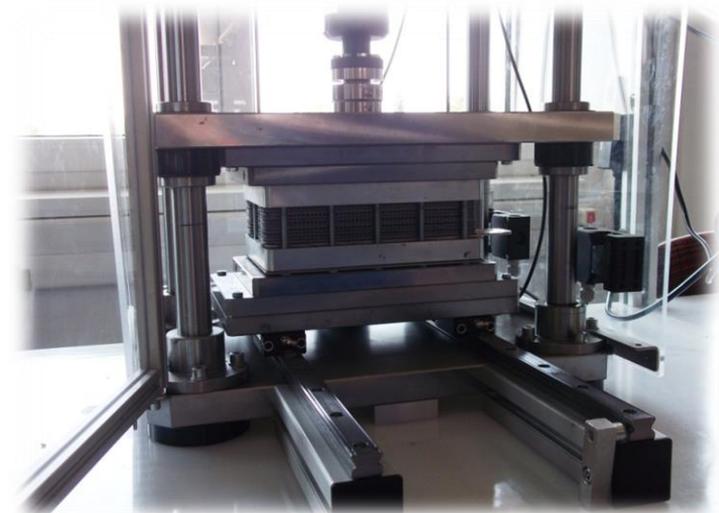
Assembly and testing

KONTAKT-Elektro

## FC stack prototypes



Number of cells: 1-25



Assembly station

# Applications



Uninterrupted  
Power Supplies



Cobined Heat  
and Power  
Generation

Mobil  
Generators



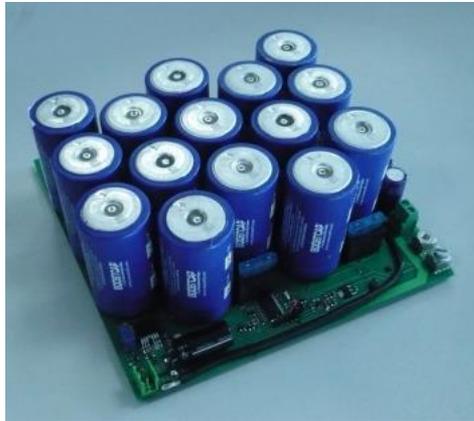
Auxiliary  
Generators

Portable Power  
Supplies



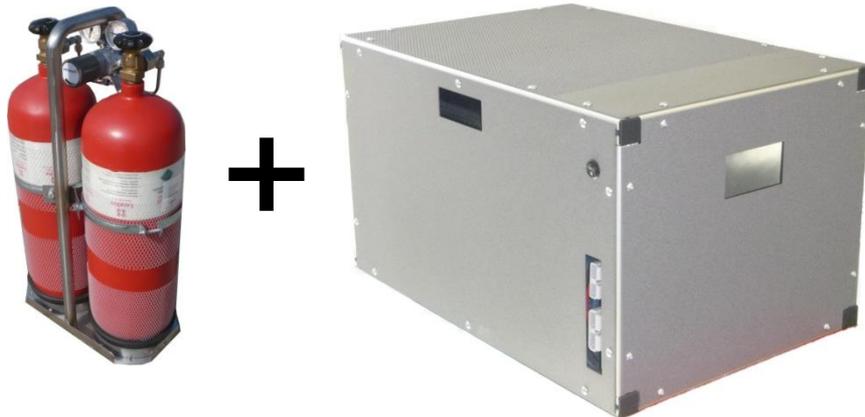
## Hydrogen fuel cell electric bicycle

Motor power:	250W
Fuel cell power:	400W
H <sub>2</sub> storage:	2x300Nl
H <sub>2</sub> consumption:	~250Nl/h
Operation time:	~2hours
Maximum speed:	25km/h
Range(level road):	50km
Weight:	55kg



## Hydrogen fuel cell electric boat

**Boat dimensions:** 535 x 200 cm  
**Dry weight:** 250 kg  
**Maximum no. of persons on board:** 6  
**Motor power:** 2400W  
**Total weight:** 450kg  
**Speed:** ~8 km/h



**FC Power supply:** FCS-3000-HYB  
**Nominal power:** 2400W  
**Peak power:** 2700W  
**H<sub>2</sub> consumption:** 41NI/min@2400W  
**H<sub>2</sub> tank:** 10800NI  
**Total weight:** 98 kg

**Original battery:** 8 pcs 6V/220Ah  
**Battery weight:** 250 kg

## Fuel consumption minimalization - ORCA race car

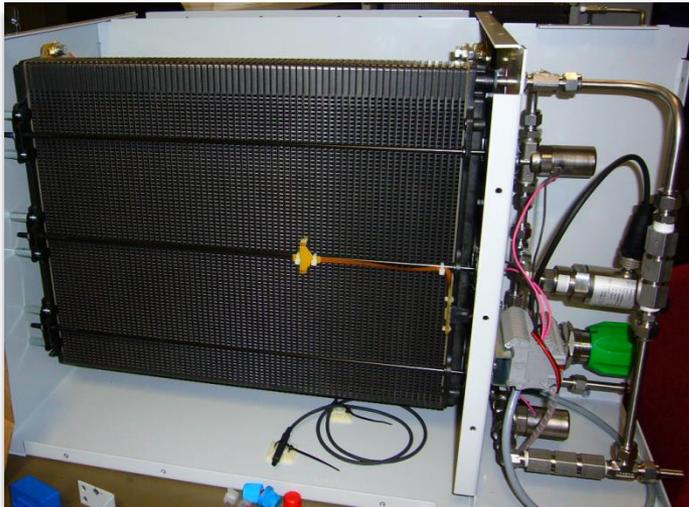
Fuel cell power:	1200W
Motor power:	500W
Ultracapacitor buffer:	70F/28V
Consumption:	86km/kWh
Weight of car:	~50kg



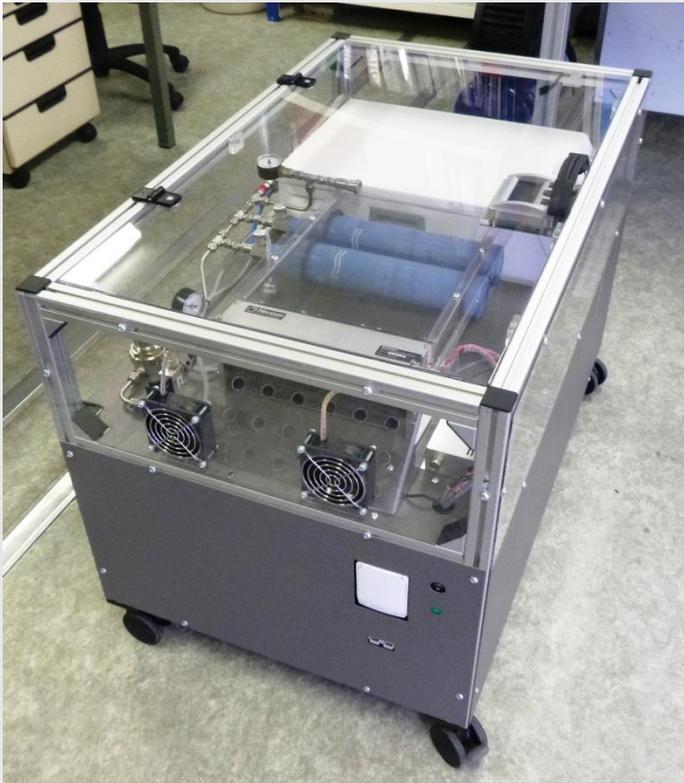
Shell Eco Marathon  
Rotterdam, Nederland

## Uninterrupted Power Supply (UPS)

Stack power:	3000W
Output power:	2500W (modular)
Efficiency:	34% @ 2500W
H <sub>2</sub> consumption:	45NI/min @ 2500W
Bridging buffer:	Ultracapacitors
Output:	48VDC or 230VAC
Remote monitor:	GSM, Ethernet

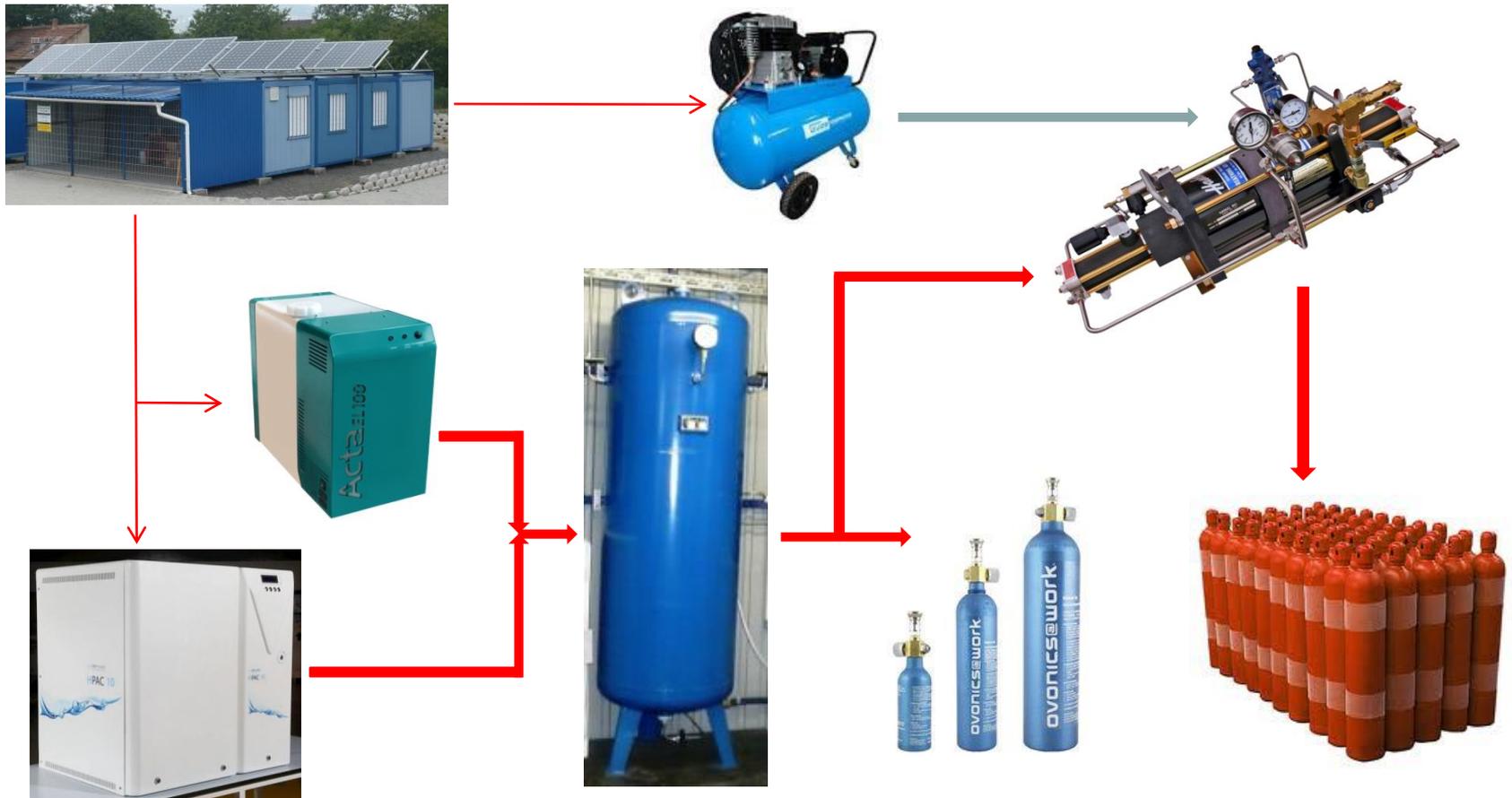


## Renewable hydrogen demonstration



- Fuel cell system: Horizon H-300
- Fuel cell power: 300W
- Electrolyzer: Acta EL100
- H<sub>2</sub> generating capacity: 100Nl/h
- H<sub>2</sub> canister: Palcan H300
- H<sub>2</sub> storage capacity: 2x300Nl
- Battery type: GWL/Power LiFePO
- Battery capacity: 24V / 40Ah
- Ultracapacitor: Maxwell BCAP
- Electric load connection: 220VAC / 500W
- Solar charger connection: 24VDC / 1KW

## Experimental hydrogen filling station



## Experimental hydrogen filling station



**Thank you for your attention!**