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| FUEL CELL INDUSTRY ANALYSIS REPORT |
| 01/01/2015 |

Bambu, the team

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# Introduction

## Intentions

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## History of fuel cells

## Fuel cell as an alternative

## Short industry overview

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# Product description

In this second part, we will provide the reader with an explanation on the way a fuel cell works. A listing of the different technologies available today will also be made according to their characteristics. These define the application perspectives for the product. Eventually, we will dedicate a whole part to the infrastructure necessary to the production and the distribution of hydrogen.

The aim of the section is to give the reader the keys to understand the results of the market analysis that will be led farther in this report with a product view.

***The basic principle is to combine oxygen and hydrogen to produce electricity.***

## Introduction

The basic principle underlying in the fuel cell technology is to combine oxygen and hydrogen to produce electricity (nedstack).

The structure of the product is meant to enable such a chemical reaction. It consists of an electrolyte and 2 electrodes. The electrolyte is the element that sets the temperature of operation. This range of temperature then determines what catalyst is to be used in order to accelerate the reaction and what fuel can be used. What with the electrodes, they are of two types: the anode where the fuel is being oxidized, and the cathode where oxygen gets reduced. As a result, the voltage of a fuel cell circuit has an order of magnitude of 1 V. Higher values can be reached by combining several fuel cells in stacks.

**Reduction :** Chemical reaction during which an element gains electrons.

**Oxydation :** Chemical reaction during which an elements gives electrons away.

## Technologies

### PEMFC

### AFC

### PAFC

### SOFC

### MCFC

### DMFC

### Summary

## Applications

### Categorisation choices

### Transport

### Portable

### Stationary

## Infrastructure

### Distribution facilities

#### Delivery

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### Hydrogen production

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#### Electrolysis

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#### Summary

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References

nedstack. *Fuel Cell Principle*. Retrieved from http://www.nedstack.com/technology/fuel-cell-principle