

## THE DEVELOPMENT OF AN INNOVATIVE TECHNOLOGY FOR BIOMASS UTILIZATION USING ARTIFICIAL INTELLIGENCE

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### **Abstract**

The paper aims at the development of an innovative technology for biomass utilization using artificial intelligence. For the elaboration of the technical solution a very important role is played by the efficient pre-treatment of the reed which is characterised by several criteria. Biomass preparation involved the following methods: physical and chemical methods of biomass pretreatment. The samples were mechanically prepared, followed by preliminary characterization analyses: moisture, total solids content, determination of total organic carbon content, qualitative analysis by FT-IR spectroscopy, SEM - EDAX scanning electron microscopy and metal concentration.

The studies were performed using a PGZ 402 Radiometer Analytical potentiostat using a classical 3-electrode electrochemical study setup. To begin with we investigated the behaviour of both solutions obtained on the bright nickel electrode, platinum counter electrode and ESC reference electrode.

Obtaining hydrogen in an electrolyzer without separation of the electrode spaces is possible. Depending on the working conditions and the electrolyte solution obtained from the enzymatic fermentation of reed - or cellulose extract - it is possible to obtain hydrogen without oxygen being released from the anode. This can only happen if there is ethyl alcohol in the electrolyte. The higher the amount of ethyl alcohol in the electrolyte, the more hydrogen can be obtained. As the electrode reactions proceed the ethyl alcohol is consumed. When its concentration becomes very low, the anode potential increases and the release of oxygen begins.

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### **References**

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