

# 5<sup>th</sup> World Bioenergy Congress and Expo

June 29-30, 2017 Madrid, Spain

## Technical and biological repowering of biogas plants

Andre Zurwellen

WELTEC BIOPOWER GmbH, Germany

Since the first construction of biogas plants, the technology has developed considerably. In view of this increase in efficiency of individual components and thus also of the overall system, many first-generation AD plants can no longer compete economically with new plants. By optimizing biogas plants by means of technical modifications or adaptations in plant biology, older biogas plants are still able to compete efficiently. The approaches to plant optimization are diverse. First of all, the current plant concept has to be analyzed. Repowering should not be carried out according to the book and should not only include the mere replacement of plant components. On the contrary, an inventory is important and then the individual service packages should be equipped with different modules, depending on the installation, requirements, approval situation and financial strength. Thinking in cycles is becoming more and more important. This starts with the substrates and stops with the optimum heat utilization. However, the weak points of many older plants are similar. Today, there are efficient products for feeding, with long-fiber or sticky substrates. By integrating new technology more cost-efficient input materials can be used. Likewise, technical progress has been made in cogeneration plants. Correspondingly, CHPs now have significantly higher efficiencies. This is also reflected in the efficiency of the entire plant. In practice-oriented examples from Germany and Great Britain the optimization of biogas plants with agricultural substrates and the digestion of organic wastes were presented.

info@weltech-biopower.de

## Cleaning biogas from landfills or anaerobic digesters for valorization

Arantxa Bomboi

LABAQUA, Spain

Landfills and also anaerobic digesters in waste treatment plants or waste water treatment plants, may produce biogas. As we know, this gas is formed by two main compounds which are  $\text{CH}_4$  and  $\text{CO}_2$ , but there are also others like  $\text{H}_2\text{S}$ ,  $\text{H}_2\text{O}$ , oxygen, siloxanes, etc. Biogas energetic valorization can be done in some different ways: obtaining electrical energy through cogeneration engines, also obtaining thermal energy in boilers or even getting biofuel when upgrading it. For these purposes, thorough cleaning will be always needed. This cleaning will be done by removing, depending on each case, some of those compounds that are present in biogas. Therefore,  $\text{H}_2\text{S}$  removal will be performed by chemical scrubbing, biological treatment, biochemical way, or even adsorption. Siloxanes removal will be done using an activated carbon or regenerative thermal adsorption, and  $\text{H}_2\text{O}$  will be removed by decreasing biogas temperature and condensing it. If in addition biogas producer wanted to obtain Biofuel,  $\text{CO}_2$  and other gases still remaining should be separated from  $\text{CH}_4$ . This is called biogas upgrading and will be done by technologies like: water absorption, chemical absorption, membranes filtration, cryogenisation, etc. In my exposition, I'll talk about all those technologies which will be very useful for biogas producers.

arantxa.bomboi@labaqua.com