CLAIMS

1. A power-generation system having a combined heat and power plant and a fermentation plant, wherein the power-generation system has an electrolysis plant, which is connected via lines to both the combined heat and power plant and to the fermentation plant, wherein the combined heat and power plant is a waste incineration plant, wherein the fermentation plant has a plant for dry fermentation, wherein the combined heat and power plant and the fermentation plant are directly connected with each other via a first power line in order to use power generated by the combined heat and power plant for the fermentation plant, wherein the electrolysis plant and the fermentation plant are connected with each other via a line for heat in order to use heat generated during electrolysis for the fermentation plant, or wherein a line is arranged between the combined heat and power plant and the fermentation plant in order that heat generated by the combined heat and power plant can be used for the fermentation plant, and wherein the electrolysis plant and the combined heat and power plant are directly connected to one another via a second power line in order to use the power generated by the combined heat and power plant for the electrolysis plant.

2. The power-generation system according to claim 1, wherein the electrolysis plant and the fermentation plant are connected to one another via a line for gas, in order to use hydrogen produced during the electrolysis for the fermentation plant.

3. The power-generation system according to claim 1, wherein the electrolysis plant and the fermentation plant are connected to one another via a line for gas, in order to mix hydrogen, produced during the electrolysis, with gas, produced in the fermentation plant, in a gas-refinement plant.

4. The power-generation system according to claim 1, wherein the electrolysis plant and the combined heat and power plant are connected to one another via a line, in order to use steam or heat produced at the combined heat and power plant for the electrolysis plant.

5. The power-generation system according to claim 1, wherein the electrolysis plant and the combined heat and power plant are connected to one another via a line for gas, in order to use oxygen produced during the electrolysis for the combined heat and power plant.

6. The power-generation system according to claim 1, wherein the power-generation system has at least one gas storage device which has a volume of more than 50 m^3.

7. The power-generation system according to claim 1, wherein the power-generation system has a methane-gas production plant, which is connected to the combined heat and power plant and/or the fermentation plant via lines for carbon dioxide and to the electrolysis plant via a line for hydrogen.

8. The power-generation system according to claim 7, wherein the methane-gas production plant is connected to the combined heat and power plant and/or to the electrolysis plant via a line for heat.

9. The power-generation system according to claim 7, wherein the methane-gas production plant is directly connected to the combined heat and power plant via a power line, in order to use power generated at the combined heat and power plant for the methane-gas production plant.

10. A method for power generation using the system according to claim 1, in which heat of the combined heat and power plant is delivered to the fermentation plant, wherein heat of the electrolysis plant is additionally delivered to the fermentation plant and the oxygen from the electrolysis plant is delivered to the combined heat and power plant.

11. The method according to claim 10, wherein hydrogen of the electrolysis plant is converted to methane using carbon dioxide from the fermentation.

12. The method according to claim 10, wherein at least one gas flow produced in the power-generation system is stored.

13. The method according to claim 10, wherein gas which is produced and stored is supplied for further use in a controlled manner.