

Analysis on the trends of a biomass utilization technology

-Analysis on Technology Development Trends by XLUS®-

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*We provide the APS service of XLUS and conduct research. If you have any interest in our services, please contact the above.

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1. Introduction

It is fresh in memory that President U.S. OBAMA launched the program as part of business stimulating measures. Also in Japan, a Japanese version green New Deal (reform of Green economics and society) policy is worked on mainly by the Ministry of Environment. Realization of low carbon society takes these lead, and energy is regarded as one of the spindle of the. Especially as renewable energy in Japan, attention to photovoltaics or wind power was high, and when compared, the biomass had the admiration whose degree of attention was slightly low.

afterwards (posting number in national newspaper 4 paper) is seen, photovoltaics is order which overwhelmingly and is subsequently called wind powers and the biomass (Fig.1). However, it comes here and the motion about biomass use is activating. The one example is inception (February, 2009) of "bio-Ethanol research and innovative technology associations" by NIPPON OIL, Mitsubishi Heavy Industries, Toyota Motor, KAJIMA, the SAPPORO ENGINEERING, and Toray. This association aims at performing cellulose system bioethanol manufacture technical development. It is considered materialization of working biomass utilization completely as the industry.

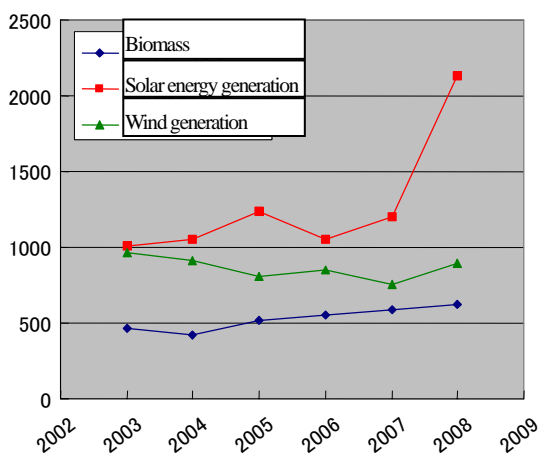


Fig 1: Transition of the article which is written in the newspaper about solar energy generation and wind generation

In fact, if the newspaper article number of cases in 2003 and

2. Bird's-eye View of Biomass Use Technology

In order to grasp the latest biomass use technology trends in Japan, the biomass related technologies was analyzed employing our company XLUS. The patents which include the term the "biomass" in a patents specification were collected in the scope in 2006 to 2008, and it analyzed as a cluster and visualized two-dimension. The result is shown in Fig.2. What has the near contents with patent application full text is collected by one circle (cluster) among the figure. The magnitude of circle is varying with number of patents contained. Furthermore, the high clusters of similarity are arranged in the neighborhood. Therefore, a domain will be formed with similar technical works and structure like island will be taken.

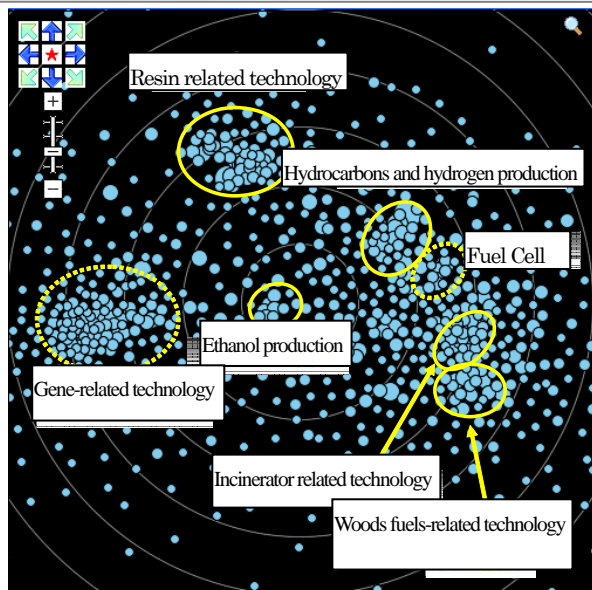


Fig2: The bird's-eye view of biomass related technology (2006-)

As seen in Fig.2, there are the following as the major application of the domestic biomass.

- (1) fueled production of hydrocarbon, hydrogen, etc.
- (2) Combustion of the biomass (woody biomass and combustion furnace Seki)

Continuous technology

- (3) Manufacturing related technology, such as ethanol
- (4) Resin manufacture pertinent arts, such as a biodegradable films

Although there are fuel cells-related technologies and gene-related technology in addition to this, there is much notation of being able to use with some fuel about a fuel cells. Moreover, in the gene-related technology, much low technology of the biomass intended here and relevance was seen. Since the relevant advanced technology was concentrated as a characteristic of XLUS, these domains were carried out the outside for analysis.

It looked down about the major players on the biomass utilization field of. As for the main players in fuel manufacture of hydrocarbon, hydrogen, etc., NIPPON OIL is mentioned as a domestic company. On the other hand, with the biomass burning related technologies, Mitsubishi Heavy Industries, Ltd., IHI, Mitsui Engineering & Shipbuilding, etc. are mentioned. Moreover, about ethanol production, although the National Institute of Advanced

Industrial Science and Technology is the major player, by the maker system, Tsukishima Kikai, Mitsui Engineering & Shipbuilding, etc. have entered. As the major player relevant to the resin material manufacture from the biomass, Mitsubishi Chemical Corporation, Teijin kasei, Unitika, Ltd. fibers, etc. are mentioned. Mitsubishi Chemical Corporation has the characteristic in polyester fabric, Teijin Chemicals is in polycarbonate system fabric, and the Unitika, Ltd. fibers have the characteristic in the fibers applied products which employed biomass derived polymers rather than a fabric.

3. Recent annual trends

Recent annual trend on biomass utilization is shown in Fig.3.

Although there is no big change for the trend tracking for the past three years, it turns out that manufacture technology, such as a resin pertinent art, and hydrocarbon, hydrogen, is activating. Moreover, it turns out among a figure that the technology Portfolio is formed in the area displayed by the red-light district.

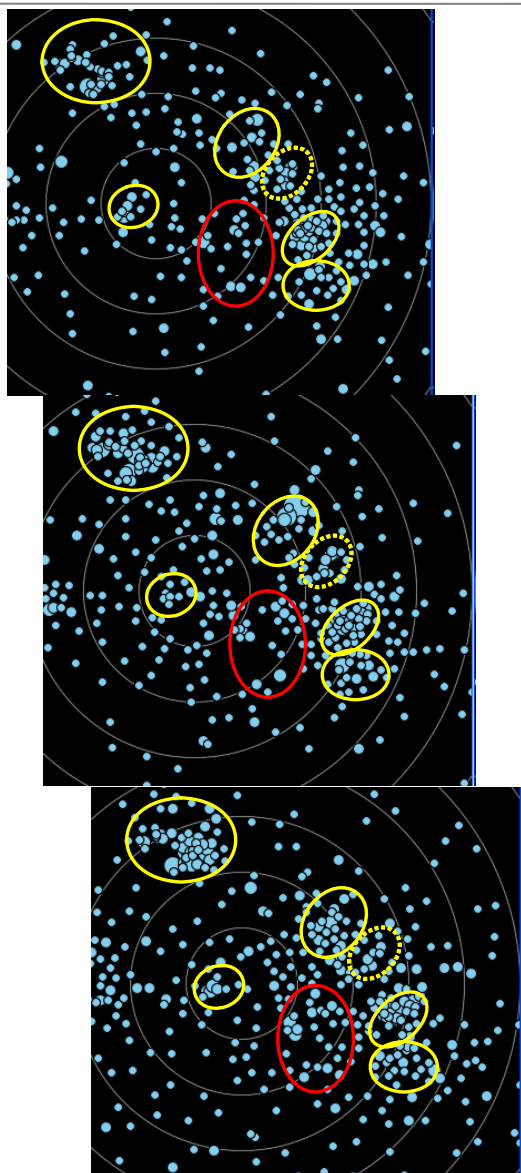


Fig3: The latest trend about biomass use

Although the domain displayed by red box in Fig.3 does not form a still clear domain very much as compared with other domains, the technology in which it has appeared here is the technology relevant to processing of drainage, such as exhaust gas and sludge, extraction of the useful substance by it, etc. When set especially to 2008, it is in the Tendenz which technology, such as useful substance recovery by effluent treatment etc., increases. As a player relevant to technological domain, a large number, such as joint application of the National Institute of Advanced Industrial Science and

Technology, NGK Insulators, Nippon Steel, Japan Sewage Works Agency, and Unitika, JFE engineering, and Mitsubishi Kakoki, are taking part in the planning. Under the present circumstances, the projected player does not be.

If the technology of extracting a useful substance further is globally added to predominance as technology of a book in exhaust gas disposal and wastewater area one day, the tendency to heighten the added value as green engineering is expectable. Market in Asian countries including China which tends to be in environmental technology especially as compared with industrial development is expected.

4. Summary

It looked down about the technology trends of the latest development / in Japan / biomass pertinent art in 2006 and afterwards. As recent technology trend, manufacture technology, such as a resin pertinent art, and hydrocarbon, hydrogen, is activating. Moreover, the technology integration is being performed in exhaust gas processing or the effluent treatment field. It is thought that the projected player does not be about useful substance recovery / manufacturing technology especially by effluent treatment.

In the biomass, not only energy application but application deployment as chemistry article materials is achieved from a viewpoint of post fossil resources. If the biomass utilization technology in which economy and environmental soundness are compatible is established by the new effort by private enterprises, activation of the Japanese business which used environmental technology as weapons will not be a dream, either.

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