

Starting Stage

(Fiscal Year 2003-2005)

Yoneshiro River Basin Area

Finding out Various Possibility of Akita-sugi and Building up a Cooperative Network of Industry-Academia-Government

Akita Wood Technology Transfer Foundation
 11-1 Aza-Kaieizaka Noshiro City, Akita 016-0876 JAPAN
 TEL: +81-185-52-7000



Major Participating Research Organizations

Industry... OODATE KITA AKITA SHINRIN KUMIAI, KUDO HAJIME ZAIMOKUTEN KK., WATANABE ZIGYOU SHO, Aizawa Meimoku K.K. AKIMOKU BOARD CO.,LTD, MARUSHIN SEISAKUSHO, KK. SUZUKOU, Yasuikoumuten co.,Ltd., YASUTOKU, Daiichikankou, NISHIKATA & ASSOCIATES ARCHITECTS, KITANIHON ZEORAITO HANBAI, AKITA MINAMI KYOUDOU BIRU ZIGYOUBU, KAN ARCHITECTS & ENGINEERS, and others

Academia... Akita Prefectural University, Institute of Wood Technology
 Akita Prefectural University, Faculty of Bioresource Science
 Akita Prefectural University, Faculty of System Science and Technology
 Akita University, Faculty of Engineering and Resource Science

Government... Akita Prefectural Forest Technical Center
 Environmental Research and Information Center of Akita Prefecture
 Akita Prefectural Industrial Technology Center

Project Promotion

Chief Scientist... Masaaki Kuwahara
 (Director Professor, Akita Prefectural University, Institute of Wood Technology)

Supporting Scientist... Yasuo Iijima
 (Professor, Akita Prefectural University, Institute of Wood Technology)

Yasuji Kurimoto
 (Assistant Professor, Akita Prefectural University, Institute of Wood Technology)

Science and Technology Coordinators... Kazunari Ohtaka
 Sumio Nikuni

Core Research Organizations

Akita Prefectural University (Institute of Wood Technology, Faculty of Bioresource Sciences, Faculty of System Science and Technology),
 Akita University (Faculty of Engineering and Resource Science)

Aim of research and development

In this project, it aims at preparing a cooperative network of Industry-Academia-Government to transfer their study results of the intellectual core institute of Institute of Wood Technology, Akita Prefectural University, and participated other laboratories to wood and related industry-cluster (forestry, logging, lumbering, plywood making, housing, wood waste using and energy converting) in a prompt and effective manner. And also, the construction of the framework will be promoted to reflect industrial needs on study seeds utilizing the network built up in this project.

Moreover, it aims at building up the zero-emission wood industries and relations using Akita-sugi as main raw material with improvement of utilization ratio of resource, product development matching to market and reduction of fossil energy use.

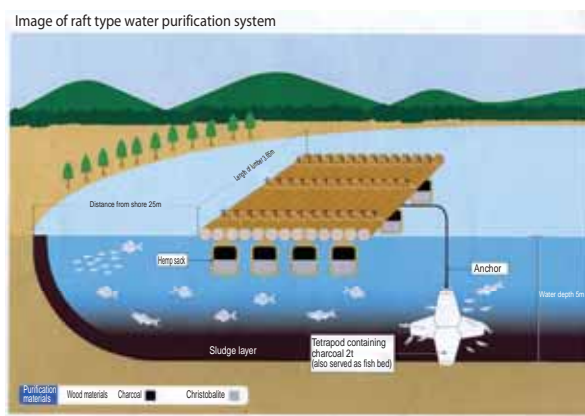
Contents of research

1. Developing wood-based materials and construction system for housing using Akita-sugi

Main products of Akita-sugi from the forests along Yoneshiro River are shifting from large diameter logs of old gross to medium diameter logs including thinning trees. The crucial and immediate issue is how effectively to use those medium diameter logs. According to the achievements of the feasibility tests in FY2003 and 2004, this research project aims at improving the production efficiency of wood based materials for housing, and development of low cost house construction system and building method. Through the analysis of the expenses, it also aims at making the design guidelines of houses using Akita-sugi as well as creating an industry using the newly-developed products.

2. Development of water purification material using thinning tree charcoal of Akita-sugi and zeolite

A water purification material was tentatively produced by mixture of charcoals from thinning trees remained in forests as useless and the natural zeolite abundantly produced from the basin area. The quality and durability of the purification material were also tested and the constituent was analyzed after a certain period of service. In addition, the performance test was conducted for the soil conditioner which is used for organic cultivation of flowers and vegetables.



Demonstration of water purification experiments in Hachirou Lagoon

The main study results

- 1. Characterization of kiln dried Akita-sugi lumber and Proposal of its appropriate usage**
 Observing the detail of material change when drying the of Akita sugi column under high-temperature and low-humid condition, a basic data was obtained to propose the drying method to minimize material damage. It aims at achieving a superior drying method based on the data to provide more marketable and useful wood materials.
- 2. Racking test of the load-bearing wall used Akita-sugi plank material**
 In-plane Shear Test result showed the sufficient durability of the model wall for practical use. Aiming at development of the production systems such as panel making and factory-production, the study will be conducted through calculation of a reduction factor and comparison test between the brace wall and plywood wall to clarify the potential effects of construction for randomness of the materials and the load-bearing performance of walls which experienced drying shrinkages.
- 3. Development of water purification material using thinning tree's charcoal of Akita-sugi and zeolite.**
 An efficient filter medium reducing nitrogen, phosphorous and total organic carbon in the waste water was tentatively produced as a trial for development of a water purification system using a filter medium that can be easily replaced. To evaluate the water purification performance of the filter medium, the verification test will be conducted with the raft method in Hachirougata-lagoon using this medium to verify the performance of the filter medium for commercialization.



Dried timbers



Deformation of plywood after racking test



Filtering materials made from Akita cedar charcoal and zeolite

