

Clean Energy Connections

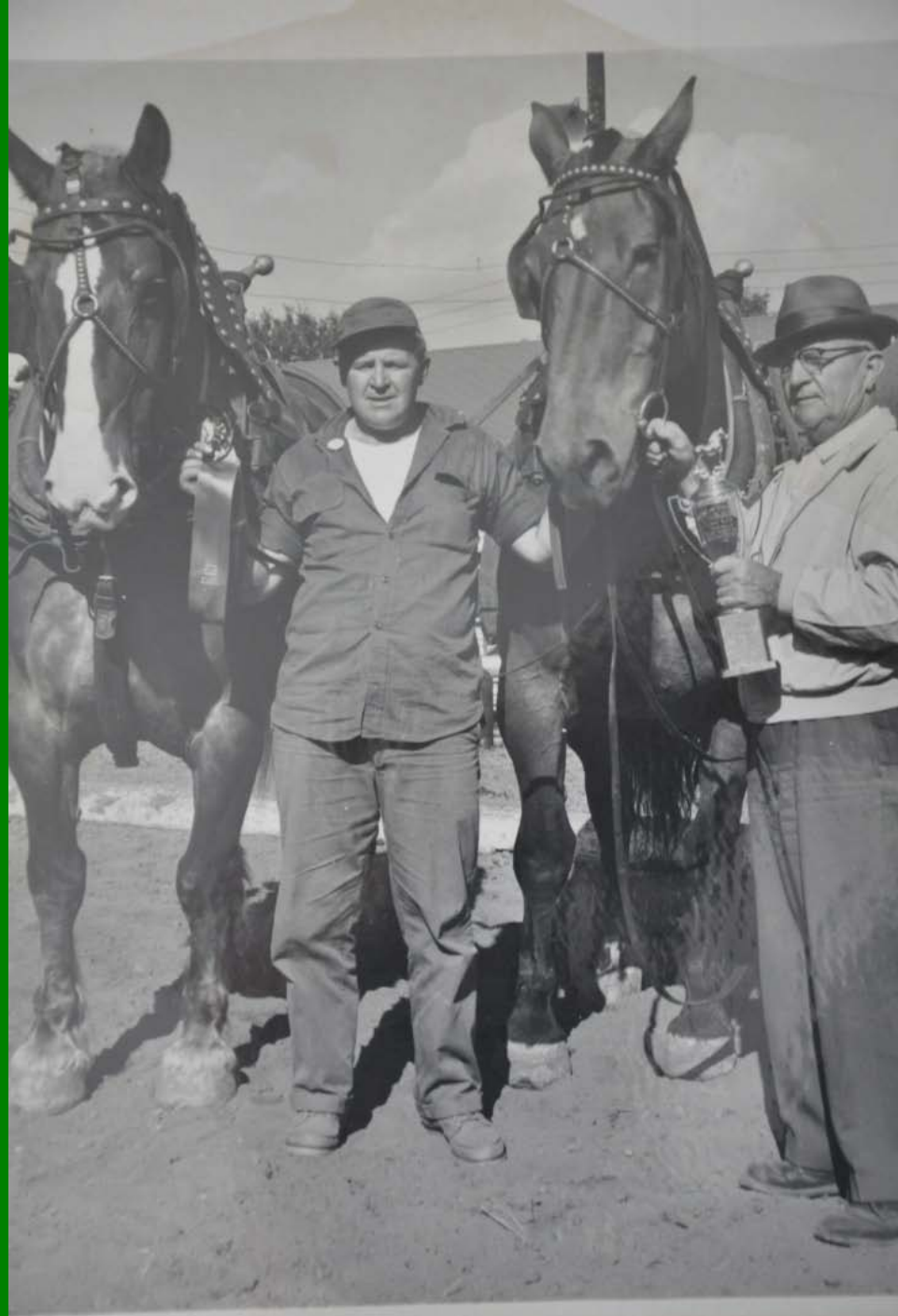
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Wood Products Industry

- Historical perspective
- Environmental advances
- Technological advances
- Economic concerns
- Future
 - Green Energy
 - Wood chips
 - Gasifier



























Wood Chips

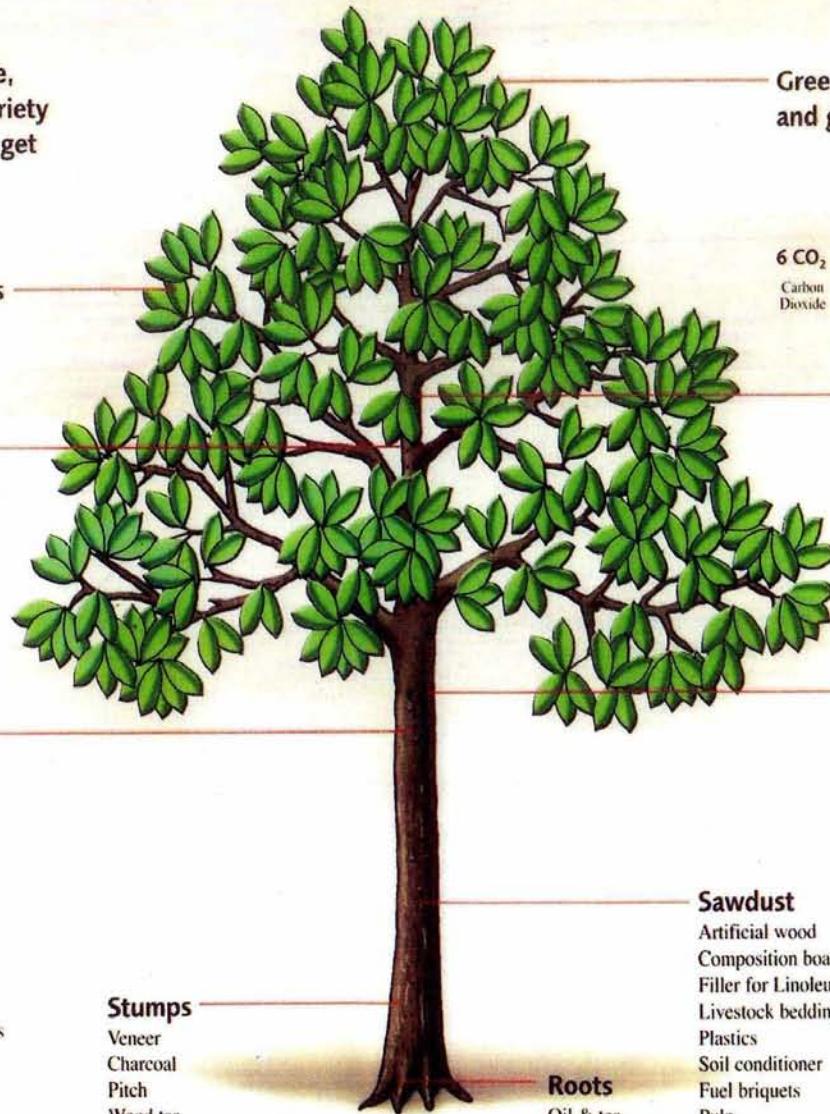
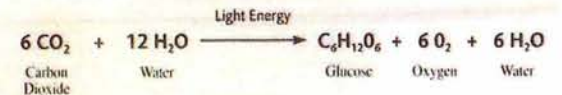


What We Get From Trees

In addition to homes and food for wildlife, trees also give us oxygen and a whole variety of products. How many of the things we get from trees can you find in your home or classroom?

Green plants take in carbon dioxide and give off oxygen during photosynthesis.

PHOTOSYNTHESIS



Leaves & Needles

Pine oil
Cedar oil

Saps, Gums & Resins

Maple syrup
Maple sugar
Adhesives
Chewing gum
Varnish
Turpentine

Medicine
Printing ink
Paints
Stains
Shoe polish
Fireworks

Trunk

Flooring
Toothpicks
Buttons
Furniture
Plywood
Veneer
Baseball bats
Tool handles
Shingles
Moldings
Construction lumber

Pencils
Ship timbers
Fence posts
Railroad ties
Telephone poles
Butcher blocks
Clothespins
Musical instruments
Shoe heels
Popsicle sticks
Doors & window frames

Stumps

Veneer
Charcoal
Pitch
Wood tar

Roots

Oil & tea

Bark

Tannins
Dyes
Adhesives
Flavorings
Medicines
Mulch
Fuel

Pulpwood

Mead notebooks
Textbooks
Stationery
Tissue
Paper towels
Toilet paper
Magazines
Newspapers
Computer paper
Gift boxes
Packaging
Sports cards
Road maps
Greeting cards
Paper plates
Juice boxes
Imitation sponges
Sausage casings
Celluloid
Shatterproof glass
Artificial hair & bristles
Paper board
Rayon
Cellophane
Plastics
Photographic film
Imitation leather
Envelopes
Wrapping paper
Pizza boxes

Sawdust

Artificial wood
Composition board
Filler for Linoleum
Livestock bedding
Plastics
Soil conditioner
Fuel briquets
Pulp

Environmental





Wood turtle protection recognized

By SCOTT MERZBACH
Staff Writer

AMHERST — As habitats for the wood turtle dwindle, area farmers and landowners are stepping up to modify their land-use and agricultural practices to protect this state-listed species of special concern.

Under a new program launched by the Natural Resources Conservation Service, two Franklin County farmers have joined Amherst College in efforts aimed at protecting the hayfields that are a prime habitat for the wood turtle, a brown-shelled turtle that as an adult grows 5½ to 8 inches long, with orange legs, neck and chin.

On Wednesday, those who have protected about 40 acres of agricultural fields in the Connecticut River Valley were recognized at a ceremony on the Amherst College property, located within the Mill River watershed, by officials with the U.S. Department of Agriculture, the state Department of Fish and Game and the state Division of Fisheries and Wildlife.

Jim Brassord, director of facilities, said the college was happy to participate in the protection of the wood turtle because it reflects well on the ideals of sustainability that it wants to promote to students, faculty and staff.

"We feel that this type of program is entirely consistent with the college's mission," Brassord said.

The college designated a 100-foot buffer zone along the perimeter of its properties that border wood turtle habitat, totaling about 5 acres, where no mowing will take place, and received cooperation from the farmer to whom it leases 100 acres of hayfields to delay mowing until mid-September.

"We have taken a real stewardship perspective with these landholdings,"

■ See **WOOD TURTLE** / Page A7

Sept 24, 2009
Hampshire Gazette

The Future





BIOGEN

Renewable Energy through Biomass Gasification

**Clean Energy Connections Conference 2010
MassMutual Center
Springfield, Massachusetts**

Why Gasification?

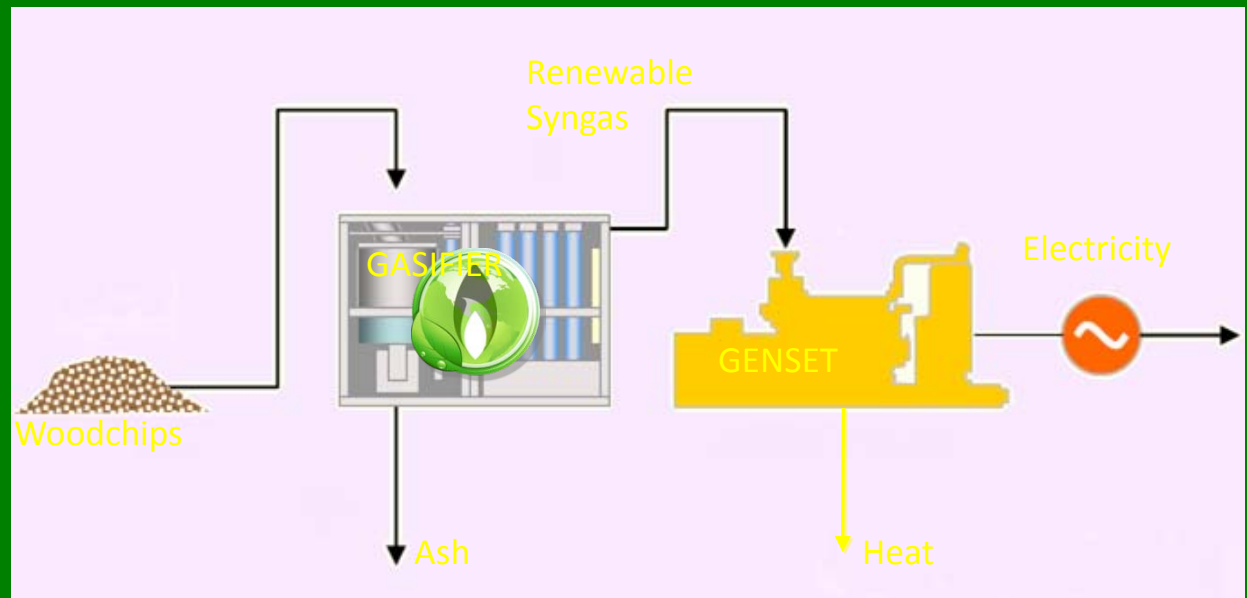
- 🔥 Through the gasification of biomass we obtain SYNGAS.
- 🔥 Interesting opportunity vs. boilers.
 - High efficiencies with low installed capacities.
 - No need of high pressure steam nor steam turbines.
 - Lead-time is short.
 - Syngas can run internal combustion engines (Diesel, Natural Gas) and gas turbines.

Roberts Brothers Lumber Co. Project.

- 🔥 We are going to use our residues to power our facility and inject green electricity to the grid.



From here to
here



What can be Gasified?



WOOD RESIDUES: forestry and lumber residues, etc.



CROPS & RESIDUES: energy crops, corn, soy, sorghum and any other agricultural or agro-industrial residues .



OTHER RESIDUES:
Refuse Derived Fuel, swine residues, etc.

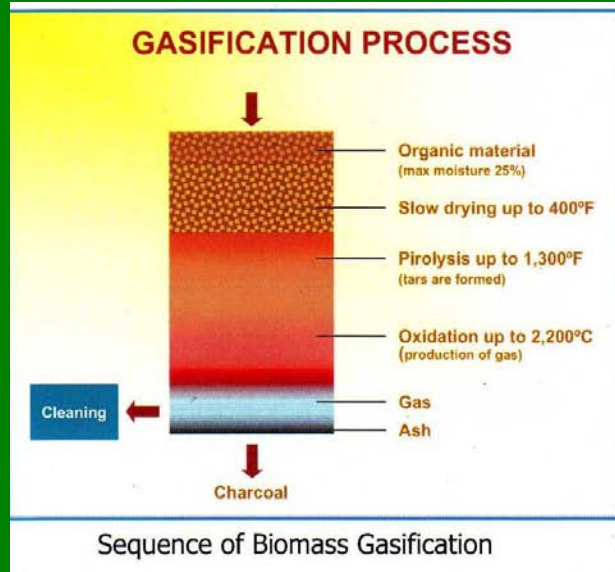


The project (I).

The objective are:

- Decrease the energy cost from the facility to increase our competitiveness.
- Transform residue into heat and power.
- Inject electricity to the grid, generating and additional income.

Gasifier Process



Simply stated (and assuming that the wood fuel has a 20% moisture content) the resulting producer gas is comprised of; carbon monoxide (16.6%), hydrogen (14.0%), methane (3.2%), nitrogen (53.1%), and carbon dioxide (13.1%).

Depending on type and design of the gasifier as well as on the characteristics of the fuel, the gasifier efficiency may vary between 60 and 85%. In the case of thermal applications, this value can be as high as 93%.

Modular implementation.



We can grow step by step.

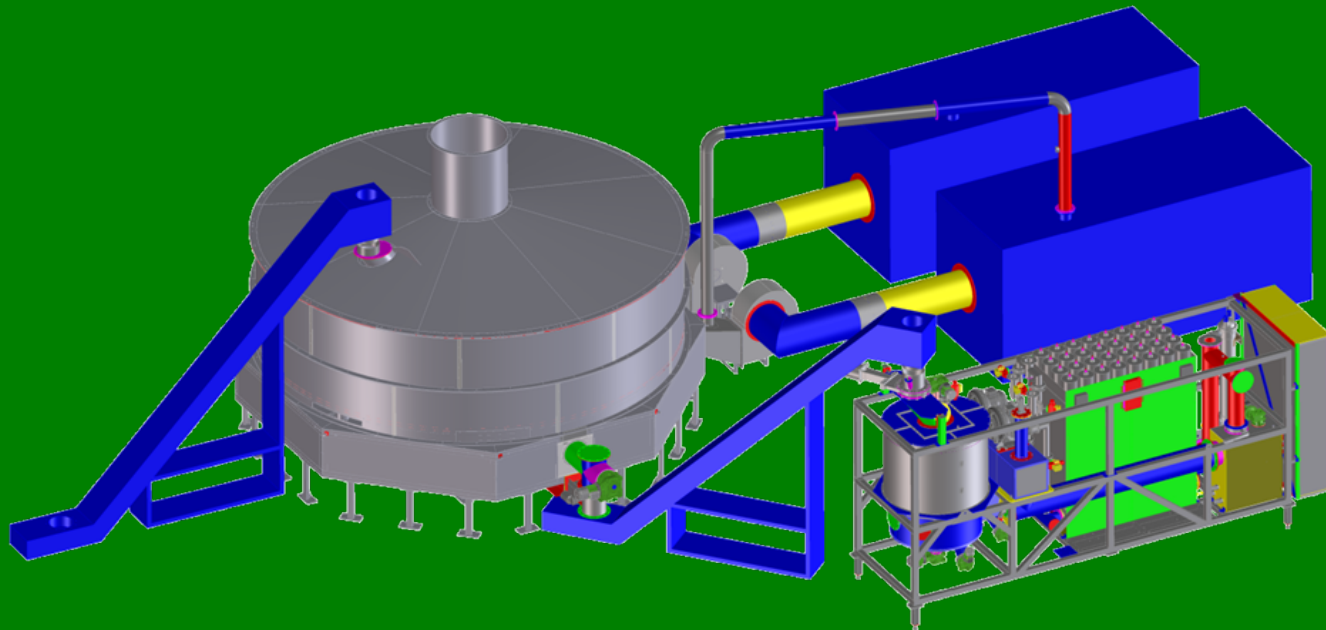
- High efficiency from the start-up with BIOGEN gasification solutions and an appropriate genset.
- Lower financial cost, reduce project risk.
- Ease the learning curve for project operations.
- Time to money is shorter.

Who is BIOGEN?

- ❖ Biogen designs, manufactures and deploys gasification solutions globally .
- ❖ Biogen uses AGT technology:
 - Downdraft-moving bed gasifier.
 - Multiphase cleaning system.
 - Versatile.
 - Modular, scalable.



Schematic of a complete power generation system.



1 Megawatt Energy Farm Example in Cremona, Italy



Implementation of the schematic.



Distributed generation.

- 💧 Perfect for distributed generation scheme:
 - High efficiency: generation close to consumption.
 - Low environmental impact from the power plants, compared to large energy projects.
 - Remote areas can generate with low cost, reliable, renewable energy.

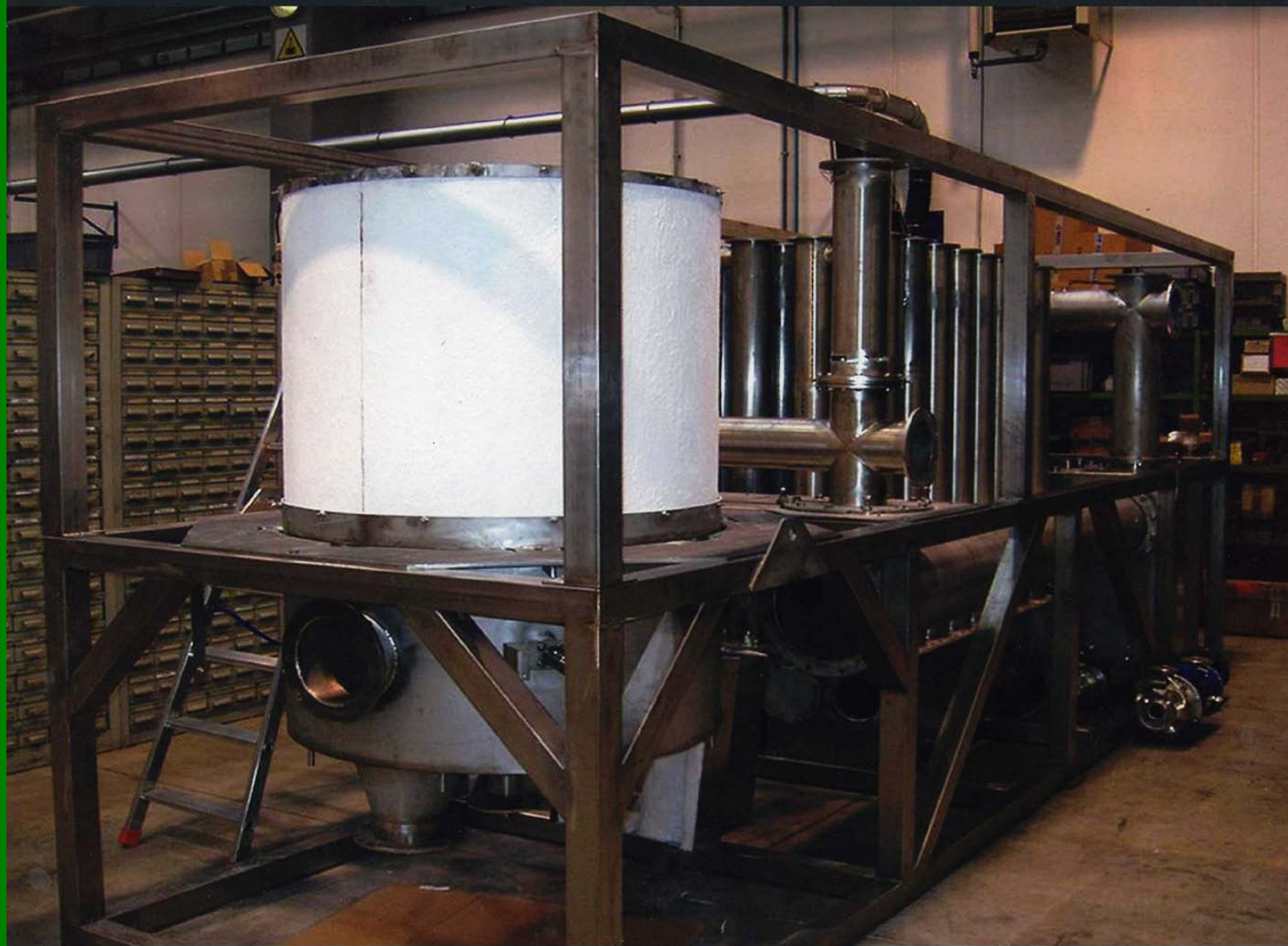






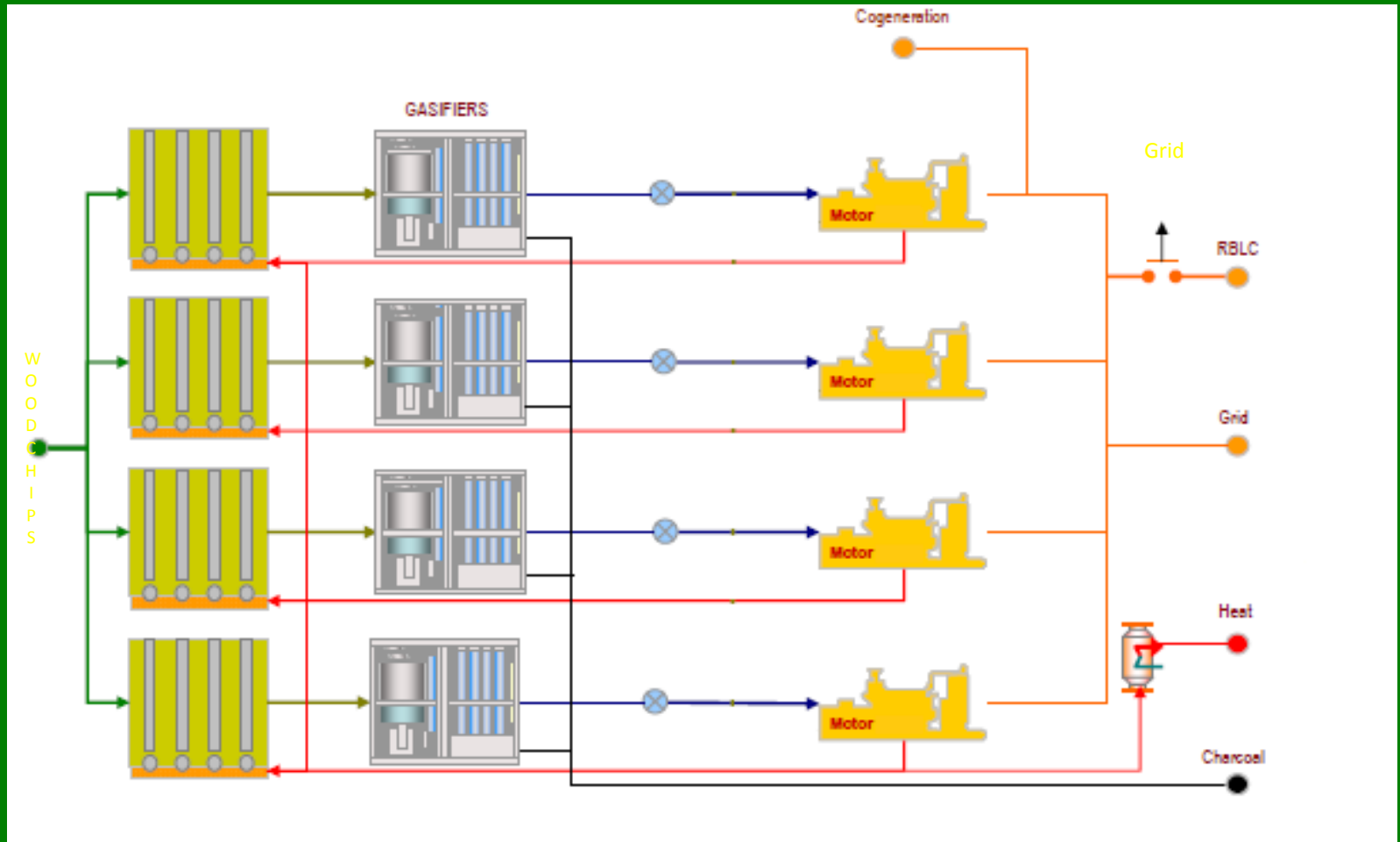




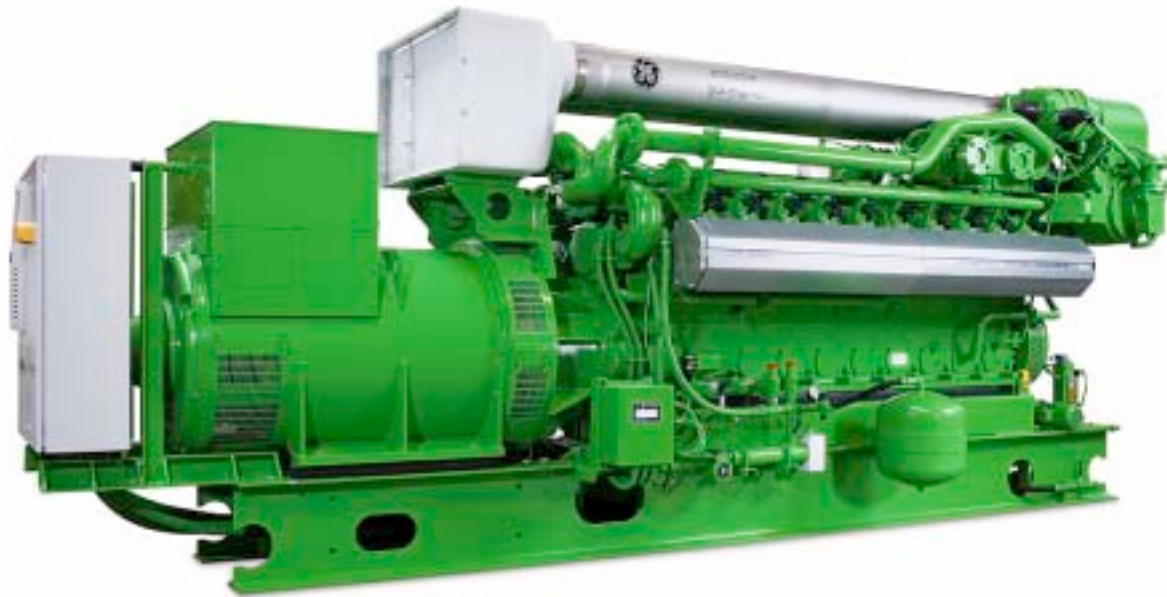




The project (II).



Jenbacher Gas Engine



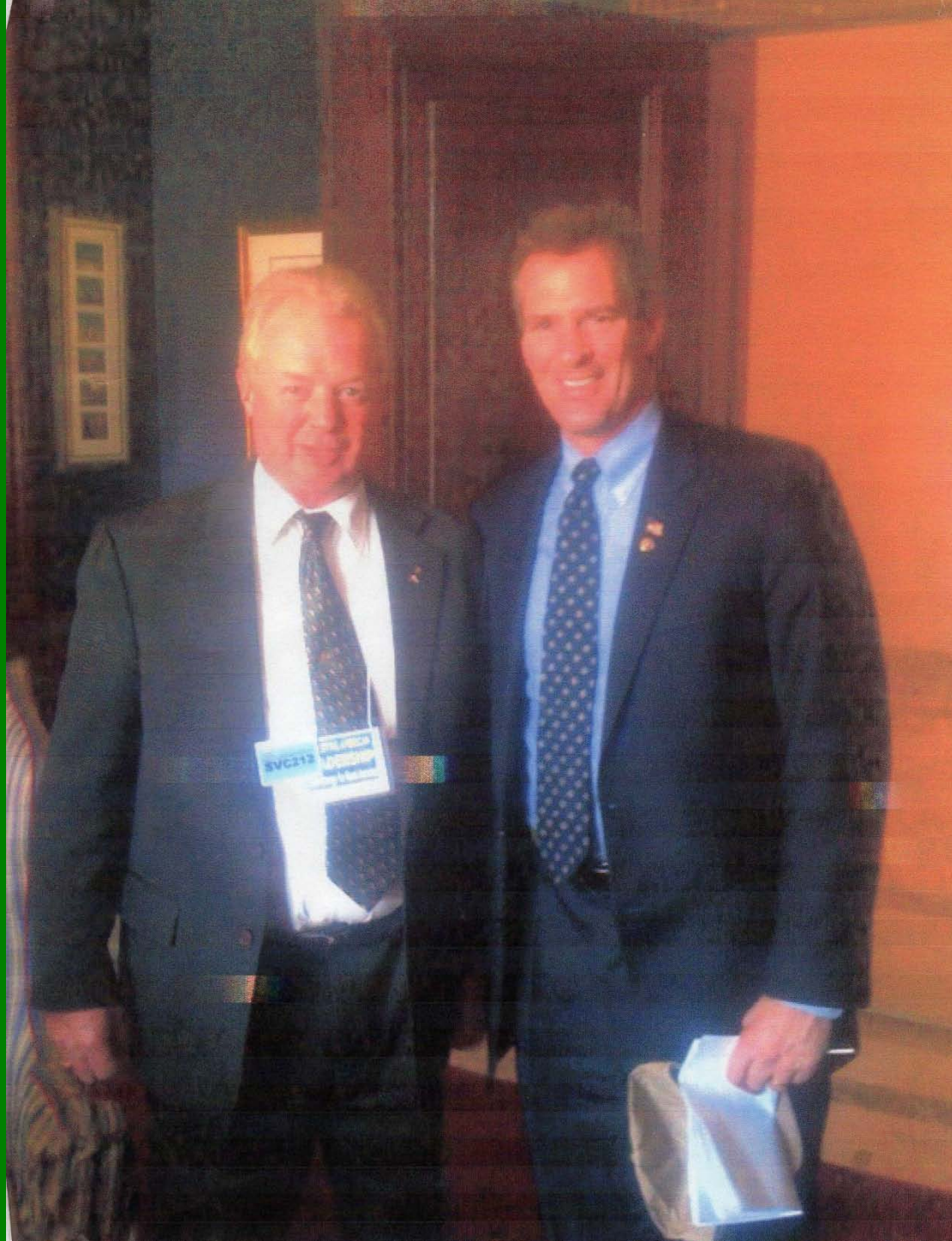
- 💧 Production of G350 in 2010 .
(350kW with woodchips).
- 💧 First year: equivalent of 15 MWe.
- 💧 Production installation designed to support output of one gasifier a day.
- 💧 Production of G700 (.7MW) in 2011.





Recorder/Paul Fran

Nathan L'Etoile of the Massachusetts Farm Bureau, Massachusetts Lt. Gov. Tim Murray, and Leonard Roberts, owner of Roberts Bros. Sawmill in Ashfield, discuss biomass energy alternatives at the mill on Thursday during Murray's visit to Ashfield.



State backs Ashfield mill's biomass methane project

By DIANE BRONCACCIO
Gazette Contributing Writer

ASHFIELD — The Roberts Brothers Lumber Co. has won a \$400,000 grant from the Massachusetts Technology Collaborative to help pay for a \$3 million system that will convert wood-chip waste into methane gas.

The gas will provide clean heat and electricity for the lumber mill.

"This will be the first one in North America," owner Leonard Roberts said of the biomass CHP (combined heat and power) gasification system planned for the lumber mill. He said it can serve as a model for other independent mills in the state.

A biomass CHP gasification unit heats wood waste under high pressure, converting it to methane gas, explained Tyler Leeds, a project manager for the Mass. Technology Collaborative.

The clean-burning methane will then be used to heat the sawmill and fuel an electric generator.

Roberts said the process is extremely clean. "It means no new carbon will be released into the atmosphere beyond what was sequestered by the trees."

He explained that trees absorb carbon while growing, then release it when they are burned. The methane conversion process will not add additional carbon to the air, as is the case with fossil fuels.

Roberts declined to say how much of the company's energy needs will be met by the new system, or when the project would be installed.

In 2006, Roberts received an MTC grant for a feasibility study for this project.

Another grant winner this spring is the Berkshire East Ski Resort of Charlemont, which received \$40,000 to conduct a feasibility study to explore the use of wind turbines to power the ski resort. Owner

Roy Schaeffer could not be reached for comment.

The grants were announced Thursday by area legislators: Sen. Benjamin B. Downing, D-Pittsfield, and Reps. Daniel E. Bosley, D-North Adams and Denis E. Guyer, D-Dalton.

A project description about Roberts' sawmill, provided by Downing's office, says that by converting low-grade timber waste to energy, Roberts Brothers' sawmill "will be a demonstration project for the concept of waste-to-energy, which may be rolled out to, and replicated by, other independent mills in Massachusetts." "This is a major infusion of state dollars into our companies, which will allow us to advance two innovative local projects," Downing said in the news release. "Renewable energy technologies are drivers of the new economy, and once again, western Massachusetts is at the forefront."

Bosley said he is pleased to see the collaborative's support of the development of renewable, clean energy in western Massachusetts. "Wind power at ski resorts has been tested ... and proven to serve great benefits to the mountain, surrounding communities and the environment," he said. "I applaud Berkshire East for their initiative on this issue."

Guyer said he was happy that Roberts got its grant. "Roberts Brothers is a small business, but sees the big picture in this emerging renewable energy field, and had developed a project that will convert timber waste into energy to power its sawmill," he said in a statement. "This is a great initiative and an example for other mills to follow."

The \$40,000 for Berkshire East is to study whether the addition of a 225 or 600 kilowatt wind turbine on the mountaintop would produce substantial power for the resort.

Sawmill power plan gets big boost

Ashfield mill gets \$400,000
to turn wood waste into fuel

By DIANE BRONCACCIO
Recorder Staff

ASHFIELD — The Roberts Brothers Lumber Co. has been given a \$400,000 grant from the Massachusetts Technology Collaborative, to help pay for a \$3 million system that will convert wood-chip waste into methane gas, to provide clean heat and electricity for the lumber mill.

"This will be the first one in North America," owner Leonard Roberts said of the biomass CHP (combined heat and power) gasification system planned for the lumber mill. It will serve as a model for other independent mills in the state.

"Franklin County should be very proud," he said.

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Leonard Roberts
owner Roberts Brothers
Lumber Co

Berkshire East windmill

Another grant winner this spring is the Berkshire East Ski Resort of Charlemont, which received \$40,000



DIANA HARDINA

Leonard Roberts of Ashfield was recently appointed to an eight-person state forestry committee that proposes regulations related to the state's timber cutting law. This appointment comes on the heels of a \$30,000 fine issued to Mr. Roberts by the Department of Environmental Protection for an unpermitted diesel generator used at his sawmill.

Despite DEP Fines, Ashfield Man Named to Forestry Panel

BY JACK FARRELL
Ashfield Correspondent

Leonard Roberts, president of Roberts Brothers Lumber Co. Inc. on Spruce Corner Road in Ashfield, has been appointed to the State Forestry Committee as one of eight members to advise the state on forestry issues such as timber harvesting.

But the appointment comes just as the Department of Environmental Protection is fining Mr. Roberts more than \$30,000 for an unpermitted generator used to power his lumber mill.

The DEP, like the State Forestry Committee, is over-

Affairs.

Joe O'Keefe, chief spokesman for the EOE, said that while the office is aware of Mr. Roberts' problems with the DEP, officials feel he is taking steps to mitigate them.

Mr. O'Keefe also said that the roles on the eight-member committee are narrowly defined, and that Mr. Roberts' recommendation of the Massachusetts Wood Producers Association, on whose board of directors Mr. Roberts says he serves, was the driving force behind the appointment.

"We tend to rely on those recommendations," Mr. O'Keefe said. "He's well

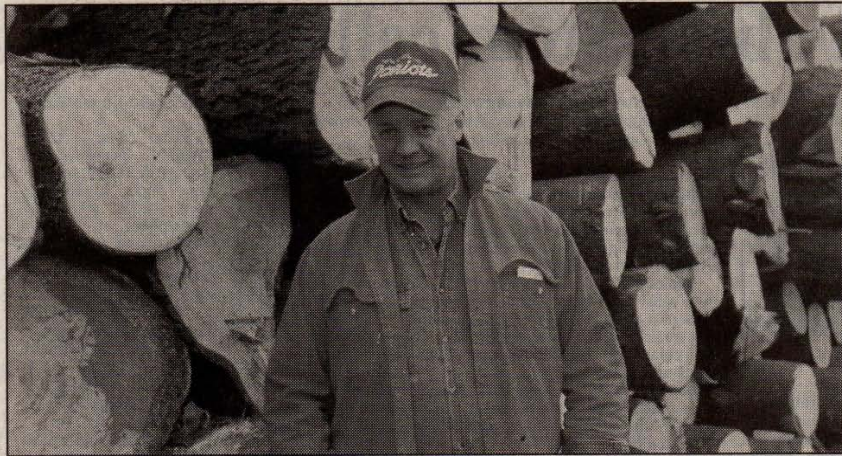
DEP Violations

Mr. Roberts has dealt with the DEP on more than one occasion, beginning in the 1990s regarding alleged wetlands violations and other matters.

While wetlands violations do not appear to be at issue now, the company has been fined \$30,750 for maintaining an unpermitted diesel generator, according to Ed Coletta, a spokesman for the DEP, which levied the fine Feb. 9.

Mr. Roberts has 21 days from that date to file an appeal. None has yet been received by the DEP.

Mr. Roberts has maintained



Recorder/Peter MacDonald

Leonard Robert stands by a large stack of logs at his sawmill in Ashfield. He is being sworn in to the Governor's State Forestry Council.

Ashfield lumberman named to advisory board

Will represent sawmill operators, timber harvesters on state panel

By ADAM ORTH
Recorder Staff

ASHFIELD — Lumberman Leonard Roberts, 54, will put his decades of experience to work on the state's Forest Advisory Board, which is being revived by Gov. Mitt Romney.

"We're basically stewards of the forest," said Roberts. "To make sure that we're not over regulated and that we're not under regulated."

Roberts was sworn in on Thursday at the Franklin Superior Court. He will represent sawmill operators and timber harvesters on the board.

Roberts is the fifth appointment to what will be an eight-member board, according to Joe Ferson, spokesman for the Department of Environmental Affairs, who adds the board was dormant for some time.

Once all its members are appointed, the board will meet four times a year. Its mission is to help the executive branch develop policy and legislation that affects timber harvesting and the management of state forests and parks.

"There's areas in eastern Massachusetts that are the same way," Roberts said.

Roberts believes that, in this area, the majority of residents accept the need for managed timber harvesting. "Generally, 80 to 85 percent understand that it's healthy for the forest," he said.

Roberts was nominated to the board by the Massachusetts Wood Producers Association. Currently on the association's board of directors, Roberts is also one of its past presidents.

He is also a member of the New England Lumbermen's Association

and is chairman of Ashfield's Board of Assessors.

Specifically, the Forest Advisory Board is concerned with the Forest Cutting Preservation Act. Its make-up is outlined in Chapter 132, Section 41 of the Massachusetts General Laws.

In addition to timber harvesters, the members will represent forest landowners, wood-using industries, consulting foresters, environmental organizations, water supply agencies, fishers and wildlife, and one member of the general public.

Massachusetts has about 600 licensed timber harvesters, 40 stationary mills, 20 portable mills and about 165 licensed foresters, according to information provided Roberts by Gordon Boyce of the Massachusetts Department of Conservation and Recreation.



THANK YOU.

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Len Roberts

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