

## Sweden

### *Undisputed Leader in Biomethane for Vehicles Looks to Prove Timber Waste as a Viable Source*

Sweden has thousands of CNG vehicles and upwards of half of their fuel, including fuel for transit buses, is biomethane that's collected from a diversity of sources, primarily agricultural and urban wastes.

"With annual growth of 35% the market share will reach 2% [of all Swedish road vehicles] by 2010,"



says Peter Boisen, the Sweden-based chairman of the European Natural Gas Vehicle Association.

Total annual volume, he reported last year, is about 40 million cubic meters of renewable biomethane, "enough to support 1,000 heavy duty vehicles and 9,000 light duty vehicles."

Sweden has a limited pipeline system so vehicles are an excellent outlet for biomethane.

With a more extensive pipeline network, biomethane has the long term potential to cover all vehicle fuel needs in Sweden, Swedish Gas Centre managing director Jörgen Held said at the ENGVA meeting in Brussels in mid-2006. Sweden could in fact become a net exporter of methane, Held said, if forest and timber waste were utilized as feedstock.

This is an excerpt from a special, all-biomethane issue of *Fleets & Fuels*. Please write or call the publisher, below, for more information.

Sweden's second city, Göteborg (Gothenburg), is doing just that. Göteborg makes biomethane from city sewage via anaerobic digestion today, and is doubling capacity to some 10 million cubic meters per year. But the city also is planning a thermal gasification facility, estimated to cost close to \$200 million, to process forest waste from 2011. Output will be approximately 80 million cubic meters of biomethane per year, which is the equivalent, notes ENGVA's Boisen, of about 24 million gasoline gallons.

But most interesting, Boisen says, is the efficiency of the process: a staggering 70% of the biomass energy input is expected to be recovered as pure biomethane, with 20% recovered as heat. Thus only 10% of the energy in the feed material would be consumed to power the process—far better than even the theoretical efficiencies of liquid biofuels plants.



Christopher Maltin at the ENGVA 2006 meeting in Brussels

### *The UK's Organic Power*

An untiring apostle of biomethane in Great Britain is Christopher Maltin of Organic Power. He's been a backer of alternative fuels since unleaded gasoline was an alternative, he says; this past April Maltin could claim to be the only person to have driven to the ENGVA meeting in Brussels on biomethane.

"The Maltin System" for extracting biomethane from food, farm and other organic waste involves the use of specially shaped, corner-less tanks to eliminate residues and improve overall efficiency. Some systems are solar-powered, all use naturally occurring bacteria.

"Harnessing the damaging greenhouse gas from the millions of tonnes of organic materials produced annually and using it as a transport fuel offers better climate damage mitigation than any other technology," the company says. "Rather than merely reducing climate damage by being 'less bad,' Organic Power's technology actually offers a positive environmental improvement."

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