Green Gown Awards 2011
Highly Commended

Blackpool and The Fylde College

Highly commended – Colleges and smaller institutions

"Driving Ahead With Waste Oil"

Profile

- FE
- 20000 FTE students
- 1400 staff
- Urban
- 27 buildings on 7 sites

Summary

Blackpool and The Fylde College is moving forward with its initiatives and promotion of sustainable travel. In July 2010 the College began recycling waste vegetable oil from the School of Catering and Food Production and the College's refectories, the oil is used to make biodiesel fuel, virtually no additional resources are required and there are no environmental impacts from waste oil transportation.

Project partners

The College first discovered the company Green Fuels Ltd at an EAUC annual conference where they were show casing one of their fuel pods which produced "homemade" biodiesel from waste vegetable oil.

The College Estates team worked in conjunction with a Foundation Degree Eco-technology student and used waste vegetable oil from the School of Catering and Food Production to produce low cost, low emission fuel in 50 litre batches.

The College involved a variety of students from Engineering and Computing and Academic Studies in the production of the biodiesel as elements of the project were relevant to subjects such as chemistry, environmental science, motor vehicle and business studies. From September 2011 the motor vehicle students from the School of Engineering and Computing then began using the fuel pod to produce biodiesel to run a number of the School's vehicles.

The problem

There were a number of problems with choosing a safe environment for the fuel pod, including where the waste oil and hazardous chemicals could be stored. As a result there were a number of Health and Safety issues that needed to be considered before the project could go ahead. This was initally a difficult process ensuring all the correct safety procedures were in place and all the risk assessments had been carried out so that the biodiesel production could begin.

The approach

The College is driving ahead with its latest environmental initiatives to produce our very own biodiesel to fuel College vehicles. The project is an excellent learning resource which offers a unique learning experience and allows students to experience all the aspects and procedures of Health and Safety that the project entails. The project utilises the College's waste vegetable oil and in return produces a low carbon fuel which eliminates hazardous gases and particulates like those produced from mineral diesel fuel.

Our goals

- To raise awareness for environmental technologies and demonstrate the College's commitment to improving the local environment.
- To produce and utilise a fuel for College vehicles that is more energy efficient, less time consuming and produces fewer pollutants than traditional diesel fuel production.
- To demonstrate our commitment to environmentally friendly fuels that not only help maintain our environment, but do not negatively impact the health of the people around us.
- To provide a learning resource and integrate the project into the Motor Vehicle curriculum to offer a unique learning experience for the students.

Registered Office : EAUC UK Office, University of Gloucestershire, The Park, Cheltenham, GL50 2RH
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Green Gown Awards case study

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Obstacles and solutions

Obstacle/challenge	Solution
Limited number of staff working on the project in the first 12 months	The School of Engineering and Computing took over the project and two designated staff and students now work on the project to produce biodiesel on a weekly basis.
Staff concerns with the use of hazardous chemicals	Staff were trained to use the correct handling techniques and safety equipment during the chemical procedures.
Limited access to the fuel pod at certain periods	It was decided to move the fuel pod from its original location into the School of Engineering and Computing where there are no access restrictions.
Disposal of unused waste vegetable oil	The waste oil was sent to a local recycling oil company at zero cost to the College.

Performance and results

Cost Saving Analysis	Year 1	Year 2	Year 3	Year 4	Year 5
Diesel Price	138p	138p	138p	138p	138p
Fuel Used	1100 lts	2500lts	2,500lts	2,500lts	2,500lts
Cumulative Total	1100 lts	3,600lts	6,100lts	8,600lts	11,100lts
Cost of Diesel	£1,518	£3,450	£3,450	£3,450	£3,450
Cumulative Total	£1,518	£4,968	£8,418	£11,868	£15,318
Annual CO_2 emissions (2.672 Kg CO_2 per litre)	2939	6680	6680	6680	6680
Biodiesel Operating					
Biodiesel Price (includes the cost of methanol and sodium hydroxide used to produce biodiesel)	15p	15p	15p	15p	15p
Costs (ltrs x 15p)	£165.00	£375	£375	£375	£375
Cumulative Op. Costs	£165.00	£540.00	£915	£1,290	£1,665
Capital Outlay	£3807	0	0	0	0
Labour Costs	£500	£500	£500	£500	£500
Lost income from waste oil (50p per 20 ltrs)	£27.50	£62.50	£62.50	£62.50	£62.50
Biodiesel total	£4,499.50	£937.50	£937.50	£937.50	£937.50
Cumulative Annual CO_2 emissions (1.06 Kg CO_2 per litre)	1166	2650	2650	2650	2650
Cumulative Savings	**-£2,981.50**	**-£496.00**	**£2,016.50**	**£4529**	**£7,041.50**
Annual CO_2 savings (Kg CO_2 per litre)	1773	4030	4030	4030	4030
*Biodiesel fuels also provided significant reductions in particulates, carbon monoxide, and unburned hydrocarbons					

Lessons learned

- The College decided to run the delivery van on a 70:30 biodiesel to mineral diesel ratio to minimise the chances of engine problems if a poor quality batch of biodiesel was used on a vehicle.
- During the coldest months of the year, the biodiesel ratio was changed to a 50:50 ratio to prevent the biodiesel freezing in the engine.
- Biodiesel is also the only alternative fuel that runs in any conventional, unmodified mineral diesel engine and should not be used on newer diesel engines.
- Glycerine produced as a by-product can be recycled and can actually be used as a detergent for cleaning our own vehicle.

Further information

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