



what's inside

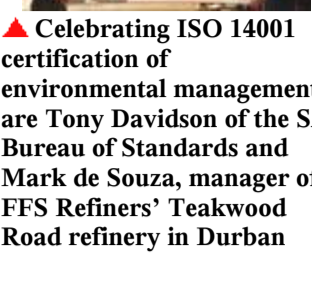
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September 1999

High standards set tone at FFS refineries

FFS Management are totally committed to reaching ever-improving standards in its projects and operations. The last issue illustrated the standard achieved at the new oil-heating installation for the new Durban Academic Hospital boilerhouse, which was built to the SABS 0131-1977 code of practice and the company's own quality control plan.

A further step along the road to maintaining first world standards has been achieved at the Teakwood Road refinery in Durban, and the Vissershok refinery in Cape Town. Both these plants have been awarded the prestigious ISO 14001 certificate to join a select group of just over 30 South African companies that have achieved this certification for environmental management. The FFS refinery in Pietermaritzburg is also well on track to follow suit.



▲ Celebrating ISO 14001 certification of environmental management are Tony Davidson of the SA Bureau of Standards and Mark de Souza, manager of FFS Refiners' Teakwood Road refinery in Durban

The South African Bureau of Standards KwaZulu-Natal regional office manager, Tony Davidson, congratulated FFS for taking the initiative and putting an environmental management system in place in the Teakwood Road refinery. FFS makes a huge contribution to environmental clean up in South Africa by accepting contaminated oils and slugs at its facilities in Durban, Pietermaritzburg, Cape Town and Secunda. Handling such hazardous materials poses potential threats to the environment surrounding the plants, so it is especially important to manage correctly any potential threats from these operations.

Tony Hurter, major shareholder and founder of FFS, said at a presentation function that Teakwood Road refinery was the company's oldest factory site and he was especially proud that it had been the first to achieve the award. "Some years ago we realised that we needed some structured way to improve and manage our environmental performance. At this plant alone we process some three to four million litres of waste lubrication oil, ships' slugs and refinery residual fuels every year and there is a high potential for the refinery to cause environmental harm." He paid special tribute to FFS environmental manager, Bruce Savage, Teakwood Plant Manager, Mark de Souza, and the 46 employees at the refinery for their fine achievement. The company was committed to achieving ISO 14001 certification for all its plants. The programme to achieve ISO 14001 compliance began two years ago at Teakwood Road by making an inventory of the aspects of the refinery's operations which could possibly impact on the environment.



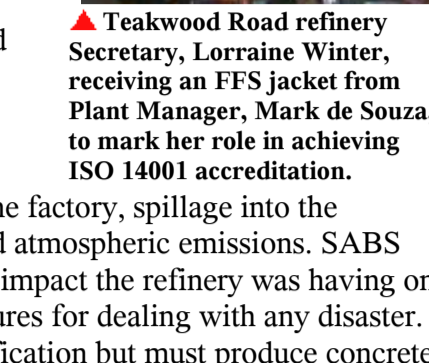
Employees at Teakwood Road refinery sporting new company jackets to mark the presentation of the ISO 14001 award. On the right are Gregg Hurter, Senior Project Manager, and Tony and Diane Hurter, founders of FFS Refiners

Among those aspects identified were the possibility of fuel spills, contamination of the ground water underneath the factory, spillage into the Umhlatuzana canal which discharges into the harbour, fire or explosions, the disposal of solid waste products, and atmospheric emissions. SABS was appointed as the Environment Auditor and with their assistance, work began to devise systems to monitor the impact the refinery was having on the environment, to reduce those levels, to minimise the chance of a disaster occurring, and to put in place procedures for dealing with any disaster. "We were not only required to achieve a minimum level of compliance before being awarded the ISO 14001 certification but must produce concrete evidence at bi-annual audits by the SABS that we are improving our performance. We will, for example, be required to show an improvement in the percentage of waste oil recovered and a reduction in atmospheric emissions," said Plant Manager, Mark de Souza.

He said the analysis and procedures that were implemented to gain the ISO 14001 certification not only lessened the impact the refinery was having on the environment, but also improved staff motivation and general operation of the plant and had brought other concrete benefits to the business. Among the benefits he cited were improvements in the production processes, better relationships with staff and regulators, additional marketing advantages, and an enhancement of the company image.



▲ Dave Sands, branch manager of FFS Refiners in the Western Cape, says accreditation for the Vissershok refinery was done in phases over 15 months. The six-year-old refinery has 50 employees and the processes harbour slugs, industrial waste oils and waste lube oils. The processed products are used in boilers and furnaces in the Western Cape.



▲ Teakwood Road refinery Secretary, Lorraine Winter, receiving an FFS jacket from Plant Manager, Mark de Souza, to mark her role in achieving ISO 14001 accreditation.

FFS fuels put the red back into Eston bricks

Fuel related problems have plagued Eston Brick and Tile since their oil fired tunnel kiln was commissioned about two years ago. The modern brick making facility south of Pietermaritzburg produces three million bricks a month. The kiln was originally fired with Fuel Oil 150 but the sulphur in the fuel reacted with the Eston clay, causing a mottled purple sheen on the bricks. Production of first grade bricks was unacceptably low. Eston experienced high wear and tear on burner components from FO150 and its high sulphur content resulted in sulphuric acid-related corrosion problems. Reprocessed recovered lube oils from another supplier were then tried as an alternative to Fuel Oil 150, but sulphur and other metal contaminants in the new fuel reacted with the clay of the raw brick, causing unsightly whitish/yellow markings.



▲ FFS client services manager Carl Frankenveld at the offloading pump and filter unit at the start of the fuel system for the brickworks. The oil product is offloaded from road tankers through the pump and filter unit into storage tanks

Eston then approached FFS Refiners for the supply of suitable fuel oils for this specialised application. Coker Gas Oil (CGO), with its low sulphur and metal content as well as competitive pricing, was selected as a possible fuel, and a two week trial was agreed. Since the CGO is a highly aromatic product and therefore incompatible with the normal paraffinic oils, the fuel reticulation and burner system was flushed with naphtha, a light fuel oil, before introducing the CGO.

The first CGO fired bricks appeared about 24 hours later, and the improvement was immediately apparent. Bricks were no longer discoloured, and were now the deep, rich red colour which typified the Eston clay. Carl Frankenveld, FFS Refiners' client services manager, who had previous experience in the brick industry, then assisted in fine tuning the kiln to allow for the change in fuels. Air flow through the kiln was increased, and burner nozzle sizes were altered to allow for a more even temperature curve. The oil fired air heater for the drying tunnels was also successfully modified to run on CGO.

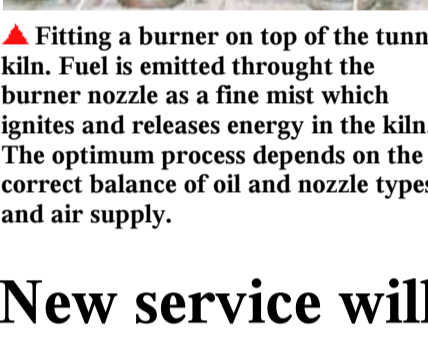
Says Eston Brick and Tile production director Barto Pienaar: "Productivity has improved since the new fuel system was introduced several months ago and there is a substantial increase in the output of first grade face bricks."



▲ View from the top of fuel burning in the kiln.



▲ FFS manager of fuel oil sales Petrus Scholtz admiring the end product.



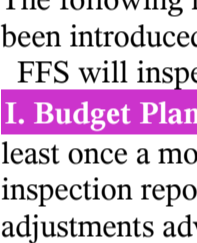
▲ Fitting a burner on top of the tunnel kiln. Fuel is emitted through the burner nozzle as a fine mist which ignites and releases energy in the kiln. The optimum process depends on the correct balance of oil and nozzle types and air supply.

To further improve the kiln operation, an additional burner system was added to the cooler pre-heating zone of the kiln. It is difficult to burn heavy fuels in this cooler section, so a second storage and reticulation system was installed with additional burners in the pre-heating zone of the kiln. A lighter Naphtha was chosen for this application, as it has a lower flash point and combusts cleanly in the low temperature zone. This allowed the firing zone to be extended with increased efficiency and brick output.

This success story is another example of how FFS Refiners uses its in depth knowledge of heat related processes, its extensive product range and high level of customer support to meet customers requirements. ■

New service will keep home fires burning

There is increasing evidence that harsh economic pressures and retrenchments are causing a decline in the maintenance of fuel oil reticulation systems. This has become a major obstacle to the successful operation of heating fuel plants. Often, fuel quality is blamed as a source of all problems, when in fact, problems are often caused by faulty fuel systems, which can lead to fuel wastage, loss of production and environmental incidents. To counter this, FFS has inaugurated a maintenance service headed by their client services manager, Mr Carl Frankenveld.



▲ Carl Frankenveld

FFS has been involved in designing and installing fuel reticulation systems for 25 years and is well placed to manage maintenance.

Although it is usual for the consumer to maintain the fuel oil reticulation systems, FFS may be able to improve the standard of operation at lower cost. The following maintenance service plans have been introduced:

1. Budget Plan

FFS will inspect the fuel reticulation system at least once a month and submit a comprehensive inspection report. A quotation for repairs and adjustments advised in the report, will be attached.

2. Comprehensive Plan

This plan includes all aspects of the Budget Plan, and will include the repair and/or replacement of all fuel reticulation equipment required due to normal wear and tear. The maintenance of burners is excluded.

There is a choice of a fixed monthly fee or a fuel price levy as payment for the preferred plan. Please contact Carl Frankenveld or Petrus Scholtz on 031-4653103 for more information. ■

Get the most out of your fuel

Poor operation of your combustion appliance can result in very significant energy losses. However, there are many simple and practical actions that can be taken to ensure that you are getting the maximum value from fuel oil.

The inefficiencies that can lead to fuel wastage are:

- Too much or too little free air. If there is more air than is required for complete combustion, then heat is wasted in heating up the excess air. If there is too little air for complete combustion then carbon monoxide is formed instead of carbon dioxide, which results in a loss of heat generation.
- Fuel mixture settings can be measured and corrected with the use of a combustion gas oxygen, CO and CO2 optimiser.

- High stack temperatures. Dirty or clogged heating surfaces can lead to excessive heat loss going up the chimney stack.
- Poor atomisation of the fuel. If the fuel droplet size is too large this will result in incomplete combustion occurring. When this happens the full heat potential of the fuel is lost. Poor atomisation can occur as a result of dirty nozzles, incorrect fuel pressures or temperatures and insufficient primary air.

If your combustion appliance is properly set up, cleaned regularly and the vital signs are monitored you can effect meaningful savings in your fuel bill.

FFS is putting the final touches to the 'Combustion Handbook'. This comprehensive booklet will assist clients in getting the most out of their fuels. ■

Sulphur - a burning enviro issue

Pollution of the air with sulphur compounds, present in coal and most liquid fuels, is one of today's "burning" environmental issues, writes FFS Refiners' divisional general manager Don Hunter.

When fuels are burnt in a combustion appliance most of the sulphur combines with oxygen and goes up the chimney as a gas, usually sulphur dioxide. When this gas mixes with moisture or rainwater various sulphur acids are formed. This is a nasty for many reasons.

The acids are highly corrosive in a combustion appliance and may lead to expensive equipment damage. Condensation in stacks and on buildings causes intensive corrosion, as well as extensive damage to other people's properties.

Acid rain is detrimental to plant-life because it leeches out from the soil various minerals which are essential for plant growth.

Other toxic minerals are dissolved and absorbed by plants.

Sulphur gasses are harmful to people, causing respiratory problems such as asthma or bronchial irritation. They also have an extremely unpleasant odour.

Sulphur in petroleum products originates in the crude oil. Synthetically produced Sasol fuels do not have any sulphur content. ■

Effluent treatment plants clear the way

Gregg Hurter, FFS Refiners' senior project engineer, describes how water can best be removed from waste oil, and disposed of.

Disposal of waste water from oil processing plants can be an environmental headache unless treated effectively. This waste water originates in contaminating in waste oil, in the slugs received from the shipping industry, from plant process water, and from rain water run off in operating areas of plant.

'Given the diverse nature of the waste water sources, it is no mean achievement to be able to treat your waste water to reach sufficient purity for discharge into the municipal sewers,' says Gregg Hurter, FFS Refiners senior project engineer.

'The key to good results is a systematic procedure of pre-treatment, correct dosing of chemicals to promote flocculation, followed by the Dissolved Air-Flotation (DAF) process', he says.

FFS has done detailed research into, and developed processes for treating effluent in the various refineries, and has designed suitable effluent treatment plants, which are constructed in the Umhlatuzana workshops.

The latest FFS dissolved air-effluent treatment plant is a compact 4,8m by 2,4m skid-mounted unit comprising a saturator, coagulator and flocculation tanks, dosing equipment and a dissolved air-flotation tank capable of a throughput of more than 5000 litres per hour.

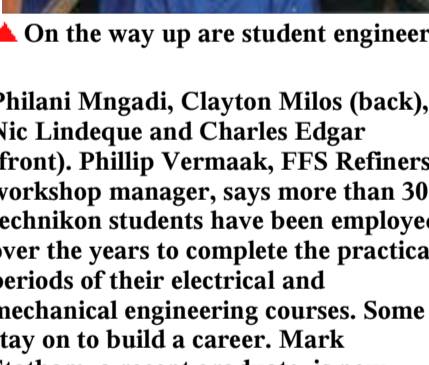
DAF separation is achieved by dissolving air into water under pressure in a saturator. This air-saturated water is introduced into the reaction zone of the flotation tank. As the pressure is released, the air comes out of solution as finely dispersed bubbles which adhere to the suspended material in the effluent. This transports the oily suspensions to the surface and forms a floc blanket in the flotation zone. The floc is then scrapped off by a mechanical conveyor.

Chemical treatment is used to enhance the coagulation and flocculation of the suspended material. The air coming out of solution can also be used successfully to coalesce and bring oil to the surface without a flocculant. ■



▲ An effluent treatment plant ready for delivery at the Umhlatuzana workshops.

Engineers of the future



▲ On the way up are student engineers Philani Mngadi, Clayton Milos (back), Nic Lindeque and Charles Edgar (front). Phillip Vermaak, FFS Refiners' workshop manager, says more than 30 technician students have been employed over the years to complete the practical periods of their electrical and mechanical engineering courses. Some stay on to build a career. Mark Statham, a recent graduate, is now process engineer for FFS at the Sapref division in Durban.

FFS Bunkers vessels ready to take a salute



▲ Fuel' Harris, one of the top bunker operators in the world.

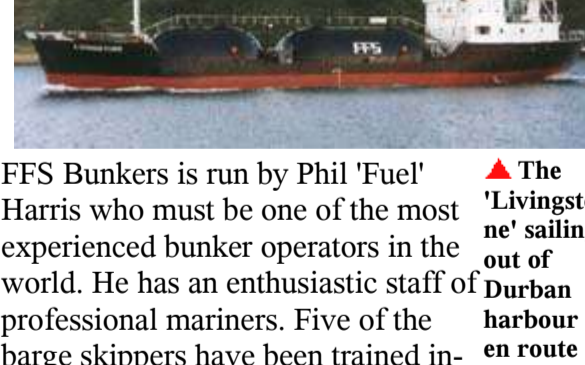
"All three ships in the FFS Bunkers fleet have been through a major refit and dry-docking in the past six months. These vessels are maintained to the highest environmental, safety and operational standards required in the international arena," says Peter Froude, managing director of FFS Bunkers.

The company is opting to obtain international safety management (ISM) rating later this year, although it is not a legal requirement for coastal vessels.

Up to four years ago, one bunker vessel competition vessels in the port of Durban. Today, there are four bunker vessels, which increases the competition for business. Despite this, the FFS Bunkers barge "Stanley", has increased throughput considerably. She has been on 24-hour, seven-day-a-week mode for the past two months and there is no sign of the pace slackening.

The utilisation of the Richards Bay based "Livingstone" had been lower last year than previous years, but volumes are now back to normal.

The "Dolphin Coast" is a versatile vessel. It not only carries bunker fuel between Durban and Richards Bay, usually managing 14 trips a month, but is also fully equipped as a bunker barge, and can supplement in the port bunkering vessels as required.



▲ The "Livingstone" sailing out of Durban harbour en route to Richards Bay after a recent R1 million refit. She has been brought up to international marine standards and will soon be audited for ISM accreditation.

FFS Bunkers is run by Phil 'Fuel' Harris who must be one of the most experienced bunker operators in the world. He has an enthusiastic staff of professional mariners. Five of the barge skippers have been trained in-house, and are an excellent example of the company's commitment to equal opportunity. ■

LETTERS

Thanks for the copy of the FFS News. I found it most interesting as I dealt with Tony (Hurter) many years ago when he first started taking sludge from Sapref. His outfit was very small at that time, very different to what it is nowadays. His work in keeping sludge etc. from being dumped is extremely commendable.

Eddie Chiassaro
Environmental Officer, Sapref

Many thanks for the copy of your FFS News. I have had associations with your company over the past 10 years (especially Mark de Souza) and really enjoyed reading about your successes. Well done and thank you. Dawn Morgan - Benyi Island View Storage

If you would like to receive a copy of FFS News, please write to:
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