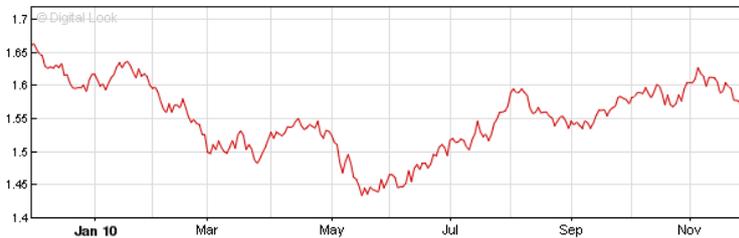


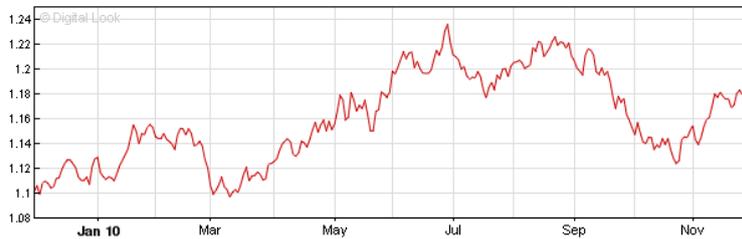
### Welcome...

Welcome to the December 2010 *Highspeed™* e-newsletter from KIRK Process Solutions Limited. This edition brings you... market data tracking key exchange rates, commodity and share prices....industry news and project awards....the latest news from ourselves....and a special feature article!

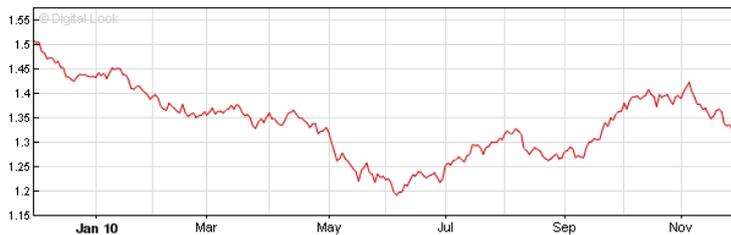
#### 1 Pound Sterling = US Dollars



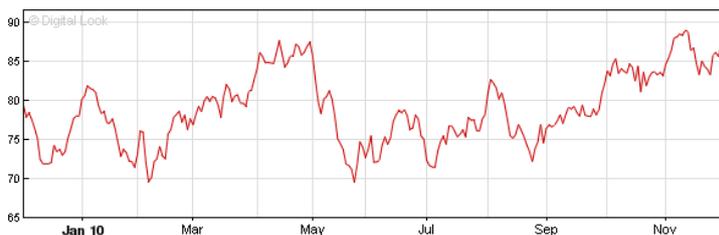
#### 1 Pound Sterling = Euros



#### 1 Euro = US Dollars



#### Brent Crude Oil: US Dollars/Bbl



### What we do...

For those unfamiliar with our company, we are a process engineering business providing specialist vessel internals, software and design support to the oil, gas and petrochemical industries.

### Market View...

The momentum of major projects seems to be slowing, with contractors and suppliers seeing a noticeable dip in enquiry and commitment levels in many (although not all) regions and sectors.

Oil prices have traded in a relatively narrow band over recent months and trending upwards, albeit with some volatility reflecting the underlying economic concerns. In contrast, gas prices remain under pressure due to marginal over-supply and depressed demand.

November witnessed deterioration in Ireland's financial position, causing the Euro to weaken against other major currencies, particularly the Dollar.

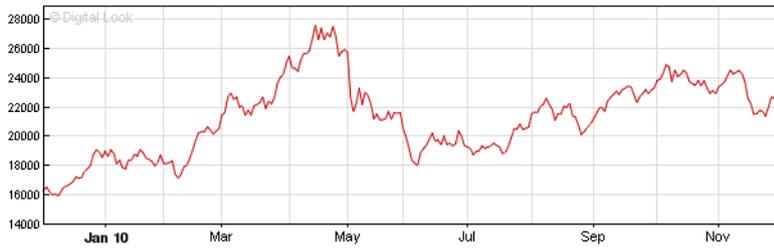
### News from KIRK Process Solutions...

#### HIGHSPEED CYCLONE DELIVERIES

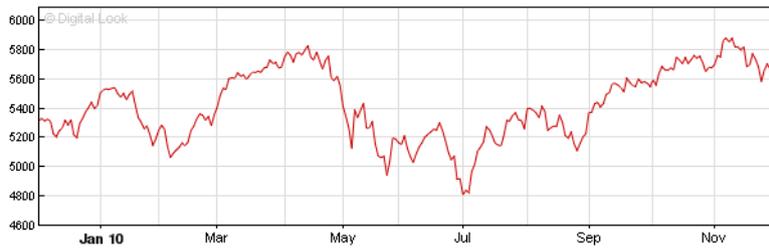
Some 400 stainless steel cyclones were manufactured in the last 2-3 months and shipped to customers and end users in the UK, USA and Russia.



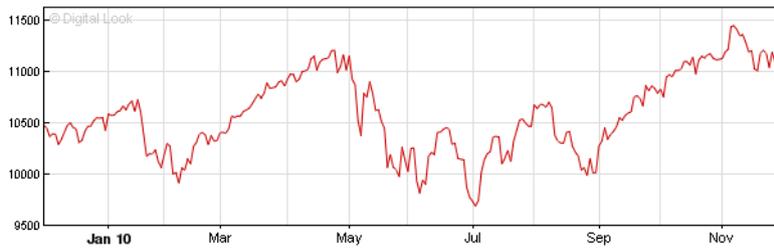
**Nickel Price: US Dollars/tonne**



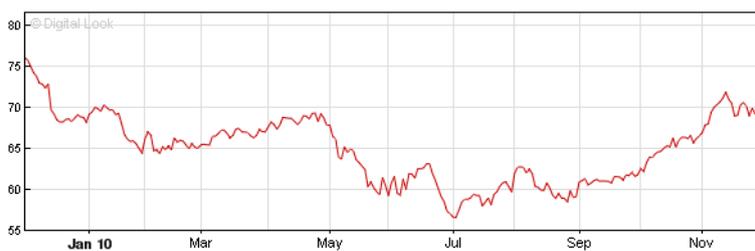
**London FTSE-100 Stock Market Chart**



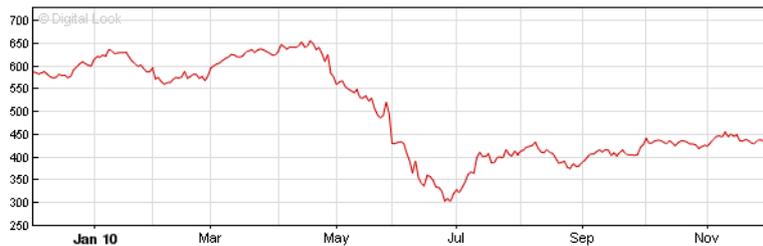
**NY Dow Jones Stock Market Chart**



**Exxon-Mobil Corp. Share Price**



**BP Share Price**



**News from KIRK Process Solutions...**

**ADIPEC SHOW SUCCESSFUL**

The Abu Dhabi International Petroleum Exhibition & Conference held in early November proved very popular with over 45,000 visitors and 1,500 exhibitors. Many of our customers had a stand, including Process Group International, Cameron Process Systems, Global Process Solutions, Frames, Pall Filtration, Pietro Fiorentini and Oil & Gas Systems, to name just a few...



**SEPARATOR DESIGNS FOR INDIA / USA**

KPS has been supporting several clients in India and the USA with the detailed process and internals design of a range of gas mist eliminators and liquid/liquid coalescer packs. In addition, we are supplying various key components for their manufacture.

**SEP-CALC SOFTWARE**

KPS has received more orders for its specialist design software from customers in Houston (USA), Pune (India) and London (UK). Further details are available on our website.

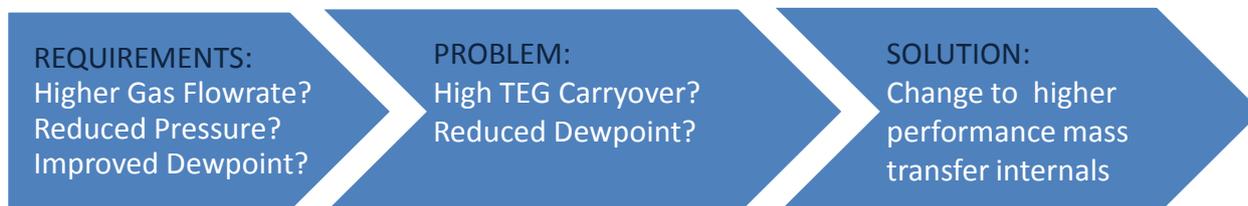
**GAS PROCESSORS ASSOCIATION LONDON**

We add our thanks to Don Cooney, retiring as Administration Officer after 5 years sterling service; and send our best wishes to the new incumbent Sandy Dunlop.



## DESIGN GUIDE

### MAXIMISING PERFORMANCE IN GLYCOL CONTACTOR COLUMNS



For new and retrofit applications there are a variety of products available to ensure the optimum performance can be achieved throughout the required operating envelope. New projects will tend to specify standard or high capacity structured packing by default, although significant savings in capex, size and weight can be made by using the latest generation of swirl tube trays. These are often overlooked and have a particular role to play in revamps as well as for high pressure mist removal.

*Comparison of absorber column size required to dehydrate 10 MM Nm<sup>3</sup>/d (373 MMSCFD) of Natural Gas at 30°C and 60 Bar using 7500 kg/h of 99.0% wt TEG*

Style	Bubble Cap Trays	Generic Type 250 Structured Packing	Type 252 High-Capacity Structured Packing	Highspeed Swirltube Mass Transfer Trays
Description	 <p><i>Traditional bubble cap trays are designed with a Capacity Factor of 1.0</i></p>	 <p><i>Standard 250 m<sup>2</sup>/m<sup>3</sup> structured packing achieves a Capacity Factor of approx 1.8</i></p>	 <p><i>New high capacity (profiled) structured packing can achieve a Capacity Factor of 2.2</i></p>	 <p><i>Highspeed™ high performance swirl tube trays with a Capacity Factor up to 4.0</i></p>
Column Area	8.0 m <sup>2</sup>	4.5 m <sup>2</sup>	3.6 m <sup>2</sup>	<b>2.0 m<sup>2</sup></b>
Column ID	3200 mm	2400 mm	2150 mm	<b>1600 mm</b>
Mass Transfer Height	6000 mm	4600 mm	4600 mm	<b>3500 mm</b>
Column Wall thk @ 70 barg	87 mm	66 mm	60 mm	<b>45 mm</b>
Column Mass (ASME 8 Div 1)	96,500 kg	46,500 kg	37,750 kg	<b>18,000 kg</b>

## PRO'S AND CON'S OF MAKING THE SELECTION

Small columns (below 450-600mm) may be fitted with random packing (such as Pall rings) as these are cheap and easily installed. Whilst not the most effective for mass transfer, the additional cost of making the column slightly larger is probably better than the cost of more complex internals. Check the liquid rate is sufficient though.

Large vessels – the designer will favour a higher performance mass transfer internal such as the high capacity structured packing. Swirl tubes should also be considered, particularly if the gas flow is relatively stable with limited turndown, or the dew point requires a tall column.

Low pressure systems tend to need a low pressure solution so structured packing is most commonly used. High pressure applications on the other hand can accommodate the pressure drop associated with swirl tube trays very easily.

For low liquid irrigation rates (below  $1-2 \text{ m}^3/\text{m}^2/\text{h}$ ) the tray column designs can be considered as they suffer less from liquid mal-distribution under these conditions. Structured packing requires a minimum effective wetting rate of  $1 \text{ m}^3/\text{m}^2/\text{h}$  for static (non-moving) vessels.

Floating production columns need to consider motion effects on the internals and also the possibility of permanent list. Properly designed, both structured packings and swirl tubes can be used here.

Heavily contaminated gas can also be best treated using swirl tubes, as these are very effective foam breakers and do not suffer from as many low velocity fouling or plugging issues.

When revamping columns fitted with bubble cap trays, the specifier should seriously consider partial replacement with swirl tube trays as this adds capacity and flexibility with minimum of downtime and cost compared with replacement using structured packing.

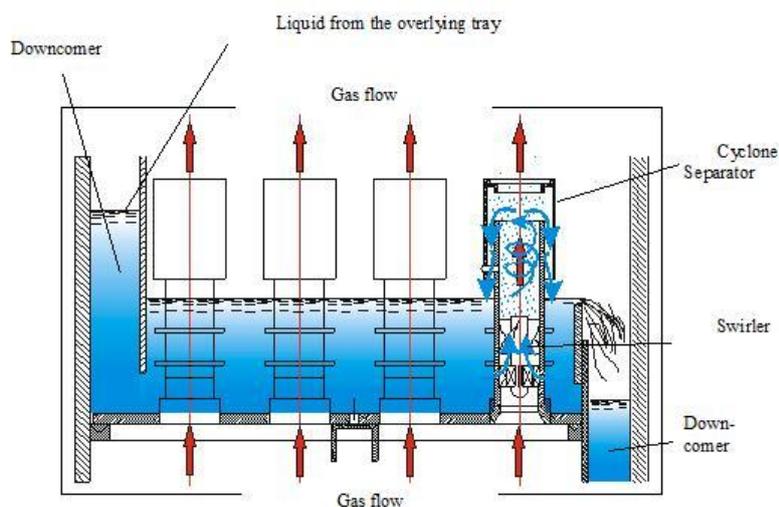


Illustration of the Highspeed axial swirl tray which can be used to replace bubble cap trays

## MIST ELIMINATOR CONSIDERATIONS

Modern wire mesh mist eliminators can be installed in the same column diameter as standard structured packing requires. High capacity structured packing may well require a mesh/vane combination due to the higher velocities.

A good general purpose mist eliminator at the top of the column (for TEG removal) will comprise 150-200mm of mesh with a wire diameter of 0.27mm and a pad density of 195 kg/m<sup>3</sup>. For improved efficiency this can be made a dual layer pad with a secondary 150mm layer of finer wire (0.15mm). Vane style (where used) should be a hooked or pocketed type for best efficiency and the vane-vane spacing should be reduced at higher pressures to maintain reasonable droplet capture.

Note that if the column is fitted with an inlet scrubber, the demister duty here is often more arduous as the liquid may be a light condensate / brine mixture which will require a specific check of the demister type and size. Note also that in such pre-separators the raw gas inlet device needs to provide good distribution across any mesh or vane device. Axial swirl cyclones do not have this disadvantage due to their slightly high pressure drop and better self-distributing characteristics.

As mentioned above, vane mist eliminators are much less efficient at high pressures and so consideration should be given to the use of axial swirl cyclone mist eliminators in difficult situations. These may have a conventional wire mesh or vane below for turndown as well as for enhancing overall removal efficiency.



## INDUSTRY NEWS & HEADLINES

Courtesy of [www.yourprojectnews.com](http://www.yourprojectnews.com) and [www.the-eic.com](http://www.the-eic.com)

### West Franklin Gas Field

1<sup>st</sup> December 2010

Total has launched the US \$1bn Phase 2 development of its UK North Sea West Franklin field, after receiving approval from the UK government's Department of Energy and Climate Change. The West Franklin field is located in Blocks 29/5b and 29/4d in the UK sector of the North Sea. The West Franklin Phase 2 development is aimed at producing estimated reserves of 85m boe. It involves the drilling of three wells and the installation of a new platform tied back to the Elgin/Franklin facilities. Production is expected to start by the end of 2013 and should reach 40,000boe/d. The new development will use the same export facilities as Phase 1 and will require the installation of a Normally Unattended Installation (NUI) wellhead platform at West Franklin. A new 6.2km multiphase pipeline will also be installed to connect the West Franklin NUI to the Elgin Wellhead Platform (from where gas and liquids will be processed on the Elgin PUQ platform before export.)

### Jubail Synthetic Rubber Products Plant (Yanbu)

1<sup>st</sup> December 2010

Arabian Industrial Fibre Company (Ibn Rushd) has received technical bids for the engineering procurement and construction (EPC) contract for the planned \$500m polyethylene terephthalate (PET) plant at Yanbu in Saudi Arabia. Technical bids went in on 15 November and commercial bids are due for the project on 15 December. The award will be announced in the first quarter of 2011 and completion is expected for the first quarter of 2014. The PET plant is part of an expansion of the current facilities and when completed will double the capacity to 700,000 tonne-a-year. PET is used in the production of plastic bottles and is sold by Ibn Rushd in resin form. The feedstock for the plant will be Purified Terephthalic Acid (PTA), of which a plant will be located at the same complex.

### Bergen Group Offshore awarded major EPCIC modification project for Kvitebjørn pre-compression

Friday, Nov 26, 2010

Bergen Group Offshore has, through its subsidiary Bergen Group Rosenberg AS, been awarded a major offshore modification project by Statoil. The contract value for the project is between 1 - 1,5 BNOK, and it will generate activity from Q4 2010 until Q1 2014.

The EPCIC-contract (Engineering, Procurement, Construction, Installation & commissioning) involves modifications to the Kvitebjørn platform to improve its compression capacity. The contract also includes modifications to Kvitebjørn for tie in of the future Valemon Platform. Bergen Group Rosenberg shall perform project-management, engineering, fabrication, installation and commissioning of the new facilities integrated on the Kvitebjørn platform. Installation of the modules will take place during spring/summer of 2013 and project completion is scheduled for Q1 2014.

### DONG Energy invests in further development of South Arne field

Friday, Nov 26, 2010

DONG Energy has decided - together with the operator Hess and the licence partners - to develop the Danish North Sea field South Arne. DONG Energy's share of the investment amounts to about DKK 2.5 billion.

The development's expected commercial reserves is about 15 million barrels of oil equivalent (boe) in DONG Energy's share and is made up of both oil and natural gas.

"The further development of the South Arne field contributes to extend the time period for Danish self supply of oil and gas. At the same time we utilize the investments, which have already been made in the existing South Arne platform and the gas pipeline going in to shore", says Søren Gath Hansen, Executive Vice President of DONG Energy.

The development includes 11 new wells and two new platforms, one unmanned platform 2½ km north of the existing South Arne platform and another platform immediately adjoining the existing platform.

## Aker Solutions wins oil separation contract in Brazil

Friday, Nov 19, 2010

Aker Solutions has signed a contract to design, build and supply heavy oil separation equipment to an FPSO vessel operated by OSX, an EBX group company, in Brazil. The contract value is approximately NOK 40 million.

"This is a major breakthrough for our in-house heavy oil compact technology. We believe we are well positioned to win more contracts for further FPSO conversions in the Brazilian market," says Børre Sveen, president of Aker Solutions' process systems business in Norway.

The purpose of the EPC (engineering, procurement and construction) contract is to offer new equipment to the existing process facilities, in order to convert the current light oil process system to heavy oil production on board the OSX-1 FPSO, which will operate for OGX, the oil company operating on the Waimea field offshore Brazil.

The contract scope includes design, procurement, fabrication and delivery of the following items:

- New degasser and compact electrostatic coalescer (CEC) mounted on a common skid
- Design modifications to existing second stage separator and delivery of new internals
- New third stage electrostatic 3D coalescer with internals

## Petrobras announces execution of Contract for the construction of pre-salt platforms

Friday, Nov 12, 2010

Petrobras announces that, together with its partners (BG, Galp Energia, and Repsol), and through its Tupi-BV and Guar-BV affiliates, it signed two contracts worth a total of \$3.46 billion, today, with the Brazilian outfit Engevix Engenharia S.A. for the construction of eight hulls for the platforms to be used in the first phase of production development for the pre-salt area in the Santos Basin.

These units are part of the new strategy for the construction of production units, being designed viewing to simplify projects and standardize equipments. Producing identical hulls in series will accelerate the construction phase, and will allow economies of scale and cost minimization.

Each platform, all of which FPSOs (floating, production, storage and offloading units), will have the capacity to process up to 150,000 barrels of oil and 6 million cubic meters of gas per day. All units are expected to start operating by 2017 and aims to reach the production targets set in Petrobras' Business Plan for the pre-salt area. The expectation is that these platforms will add about 900,000 barrels of oil per day to domestic production when operating at maximum capacity.

The hulls will be built at the Rio Grande Naval Pole (state of Rio Grande do Sul), with local content expected to reach around 70%. The first steel shipments will be made in January, and hull construction will start in March. The first two hulls will be delivered in 2013, while the others in 2014 and 2015.

## Petrofac Awarded Gas Plant Contract with Total

Friday, Oct 27, 2010

Petrofac, the international oil & gas facilities service provider, has been awarded a contract worth in excess of £500 million by Total E&P UK Limited (Total) for the development of a gas processing plant on the Shetland Islands. Work is scheduled to begin in October 2010, with first gas expected from the project in Q2 2014.

Petrofac will develop the 500 million standard cubic feet per day gas processing plant through its Offshore Engineering & Operations (OE&O) business unit, supported by Engineering & Construction. The project comprises engineering and procurement, supply, construction, commissioning and start-up. The plant, located on Shetland at Sullom Voe, will facilitate the transportation of gas from Total's Laggan and Tormore fields, which lie 125km North-West of the Shetland Islands, to the Total operated St Fergus Gas Terminal in Aberdeenshire.

## SK E&C secures US\$950 million contract from Jurong to construct aromatic plant in Singapore

Thursday, Sep 30, 2010

SK E&C has won an order to construct an aromatic plant from Jurong Aromatics in Singapore. The construction cost is US\$950 million, which is the largest contract that a Korean company has won in Singapore.

This is a construction project to build a large-scale aromatic factory on the 550,000 m<sup>2</sup> site in the petrochemical industrial complex on the Jurong Island in Singapore. SK E&C will carry out E.P.C. (Engineering, Procurement, and Construction).

The construction period is 36 months, and when the construction completes in 2013, the factory will be able to produce 800,000 tons of paraxylene as well as over 4 million tons of aromatic products and other petrochemical products including benzene, orthoxylene, etc.