



Welcome to the latest newsletter from HAT International, aimed at keeping all our customers up to date with the latest products and developments within our company, as well as some general news on what's going on in the industry. We trust you find it informative and we welcome any comments or suggestions you may have to improve the format.

If you wish to unsubscribe, simply reply at any time with 'UNSUBSCRIBE' in the subject box.

Latest Developments

NEW ORDERS

Orders during February and March include large quantities of Q+ and P+ plastic packings for two UK clients, various vane demisters for customers in Russia and Korea, several metal and plastic mesh demisters for clients in the UK and middle east, and a set of distillation column internals including gauze structured packing for a client in the Asia Pacific region.

RECENT DELIVERIES

Recently completed contracts include the delivery of several FPSO separator internals for a customer in the Far East; a large mesh demister for a UK client supplying a Norwegian project; a set of 3 TEG column internals for a Dutch client for a middle east project; various internals in Duplex for process and utility vessels on an FPSO for a client in Singapore; and the absorber column internals for a TEG unit for a UK client for West Africa.

MEET US AT THESE EXHIBITIONS

HAT International is attending the following exhibitions. If you are in the area, please drop by and say hello:

[OIL & GAS WEST ASIA](#)
Muscat, Oman, 21-23 April

[POGEE](#)
Karachi, Pakistan, 21-24 May

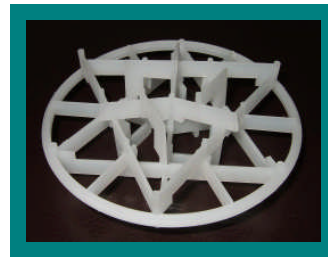
[RIO OIL & GAS](#)
Rio de Janeiro, Brazil, 15-18 Sept

[ADIPEC](#)

[Abu Dhabi, UAE, 03-06 Nov](#)

NEW PRODUCT LAUNCH

We are pleased to announce an extension to our plastic packing range with the launch of our **AlphaPACK SF+** pack.



AlphaPLUS SF+

Taking inspiration from the infinite variety of complex snowflake shapes and sizes, the **SF+** packing combines a flat profile with good mechanical strength, multiple splash zones and high voidage, making it ideal for large volume throughputs.

The **SF+** packing compliments our range of industry equivalent standard packings with proven performance characteristics. Please contact us for further literature or a quotation.



The latest newsletters are available on our [website](#). If you would prefer to receive just a link when they are published, please let us know.



Industry & Market News

West Texas Intermediate Crude Oil \$/barrel



OIL PRICE HOLDS ABOVE \$100....

With winter consumption peaking and stock markets in some turmoil, crude commodity prices started a steady climb to hit the \$110/bbl milestone mid March, ending the month at \$106.

Nickel 3mo Official \$/m tonne



NICKEL EDGES UP...

Chasing the main commodity (oil), a pick-up in early March took the metal to over \$33/kg before slipping back temporarily on the back of underlying economic weakness fears.

United States Dollar - Euro



DOLLAR DRIFTS DOWN...

The Dollar continued its steady decline against the Euro, whilst the Pound sat uncomfortably between the two. The major rates stand at £1.00 = \$1.99 and €1.00 = \$1.58 on 31st March.

United States Dollar - GBP





SHELL is rejuvenating its portfolio for a world of higher and more volatile commodity prices, increased competition, and higher costs. As part of the annual review of strategy, Shell said it is building over 50 large projects that will underpin new cash flows for decades to come.

SHELL has also submitted a proposal to the Iraqi oil ministry to produce about 500 million cubic feet of gas per day from major southern oil fields where most associated gas is now flared.

SHELL GLOBAL SOLUTIONS has announced a license agreement with two subsidiaries from fellow energy superpower China National Petroleum (CNPC) that will lead to the production of 430,000 t/y of ethylene. Both PetroChina Sichuan Petrochemical (PSP) and PetroChina International will be servicing Shell's ethylene oxide and ethylene glycol (EO/EG) technologies to a new petrochemicals complex in Chengdu, Sichuan Province, China. The plant is scheduled to begin production by the end of 2010.

MUSTANG ENGINEERING has signed a Memorandum of Understanding with Australia's AMOG Consulting to jointly undertake business development and project implementation of Floating Production, Storage and Offloading (FPSO), Floating Storage and Offloading (FSO) and other floating facilities.

FLUOR CORPORATION has announced that it has been awarded a contract for engineering, procurement and construction for Total's Port Arthur, Texas, refinery. Fluor's scope of work includes building a coker, a desulfurisation unit, a vacuum distillation unit and other related infrastructure.

CHEVRON CORPORATION has announced that the company and its partners have given the green light to construct the Platong Gas II natural gas project in the Gulf of Thailand.

COSTAIN OIL GAS & PROCESS has been awarded the EPCM services contract for E.ON's Holford underground gas storage project. The scope of work is to design, procure, install and manage the gas plant infrastructure.

AUSTRALIAN FERTILISERS GROUP Incitec Pivot has made a recommended A\$3.3b (\$3.1b cash offer for the Sydney-based explosives group Dyno Nobel. The deal would create a company with sales of over A\$3.5b/y and one of Australia's top-30 companies by market value. The takeover will allow Incitec to cut costs from ammonia production. The company would also use Dyno's manufacturing and distribution base in the US to expand sales of fertiliser

ENERGY AND CHEMICAL giant The Shaw Group will provide technology, engineering and procurement services to a deep catalytic cracking (DCC) unit at the grassroots Punjab Refinery project in Punjab, India. The company has been selected by refinery owner Guru Gobind Singh Refineries. The DCC technology was originally developed by SINOPEC Research Institute of Petroleum Processing (RIPP). It is a proprietary technology for the production of light olefins, particularly propylene and isobutylene, from a variety of hydrocarbon feedstock inputs.

GERMAN CONSTRUCTION COMPANY Uhde is to engineer and supply both a diesel and a gasoline desulphurisation plant for Bulgarian oil company LUKOIL Neftochim Bourgas. The clean-fuel plants, to be built at Lukoil's Burgas refinery on the Black Sea, will have annual capacities of 1.6m t for diesel and 1.1m t for gasoline. Both plants are expected to come on-stream in 2009.

News items courtesy www.the-eic.com and www.tcetoday.com



Feature:

Highspeed® Mass Transfer using Swirl Elements...

HAT International is the exclusive licensee for the GESIP range of technologies

The high-speed mass transfer tray **GESIPHighspeedTray®** (Fig.1 and Fig.2) is an unconventional tray with weir and downcomer. It is equipped with Highspeed Swirl Cyclone (contact and separating) elements (HSC) fixed into the opening of the tray plate. The HSC consists of a vertical cylinder with an annular row of holes in its lower section. The axial swirler, which is firmly attached to the inside of the cylinder has inclined vanes in the upper section and is provided with a net of ribs arranged straight along the nozzle axis at the lower section. The mass exchange zone is directly above the swirler. The cyclone separator with the concentric annular slot separates the liquid from the gas/vapour phase.

The liquid entering through the annular row of holes in the grid zone of the vertical blades is dispersed into small droplets. To maintain a continuous flow of liquid through the annular row of holes, a constant liquid level has to be present on the tray plate. The liquid droplets move in an axial direction together with the gas within the HSC, flow towards the top until the two phases reach the area where the inclined blades of the axial swirler are located. The liquid-gas flow is subject to a rotary motion when passing through this zone causing the drops to be flung on the inside wall of nozzle. This creates a rotating liquid film, which moves upward due to the frictional forces of the gas flow. The final separation of the liquid drops and the liquid film from the gas flow takes place in the separation zone.

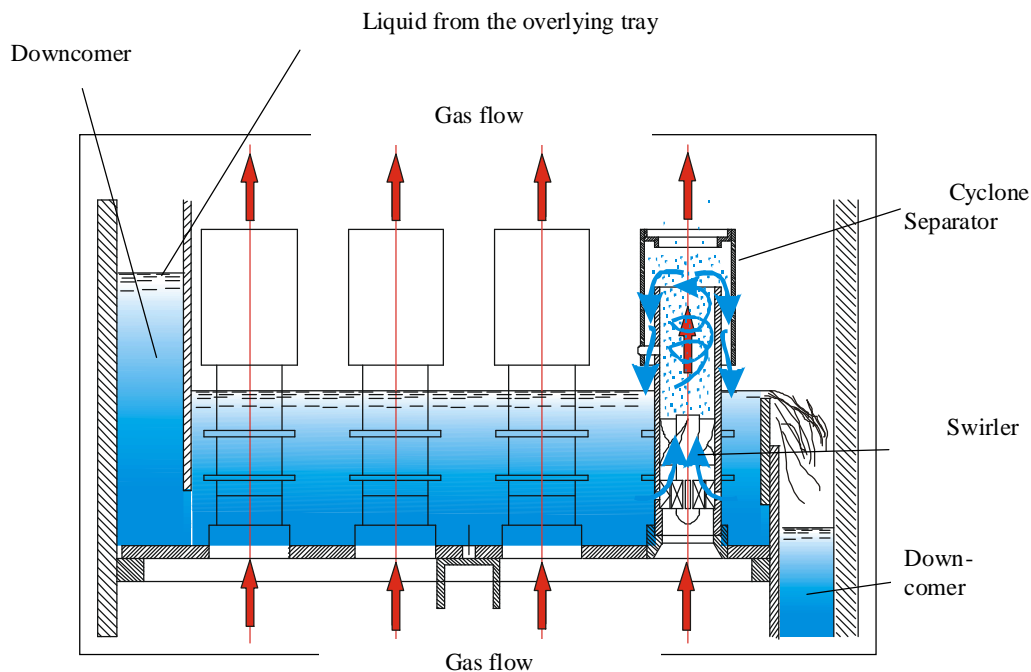
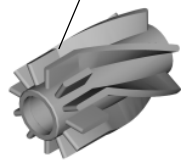
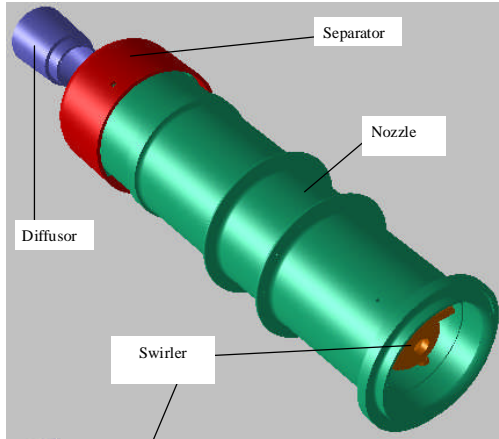


Fig 1: HighspeedTray with contact and separating elements



The separated and turbulized gas exits the separator via a deflection ring, which prevents re-entrainment of the liquid. The separated liquid flows through a concentric annular ring slot on the element, to the tray deck.



Contact and separating elements
Material: Polypropylene,
glasfiberinforced
On the right: Stainles steel



The high flow velocities in the HSC guarantee an intensive atomization of the liquid and, thus, a high intensity mass transfer in the turbulent swirling flow.

Fig 2: Contact and separating elements; Details and Close-up

The most important performance features of the columns with this highspeed tray are:

- Increase in the volume-specific efficiency of mass transfer equipment of between 1.2 to 5 times due to a 1.5 to 2-fold increase in the gas-liquid interfacial area of a tray.
- Realization of 1.5 to 2 theoretical trays for each metre of column height, while maintaining a tray spacing of 400 to 500 mm.

- High level of flexibility concerning a higher solid content for the gas-liquid mixtures to be separated
- Realization of highly compact, multifunctional mass transfer columns, especially for the high-pressure dehydration and separation of gases.
- Indifference to deviations from the horizontal (unevelness) during column operation, a factor especially important for offshore floating facilities.
- Maximum liquid load of up to $100 \text{ m}^3 / \text{m}^2 \text{ h}$, the result of the foam suppressing characteristic of the HSC elements (no foaming, clear (vapour free) liquid in the downcomer)
- A miniaturization of the columns leads to considerable equipment savings with special advantages for offshore facilities (reduction of as much as one-fifth of the column mass compared with traditional constructions).
- This tray can be utilized for the refitting and modernization of existing columns as well as in combination with other mass transfer equipment.
- This tray can also be utilized as a high speed mist eliminator

The preferred application fields are the natural gas, oil and petrochemical industries for onshore but especially of off-shore plants, the gas processing under high pressure as dehydration in glycol columns (see Fig. 3 und 4 for a comparison of different columns designs), gas sweetening, absorption and desorption processes, the rectification of hydrocarbon or other mixtures and in environmental technologies for gas scrubbing.

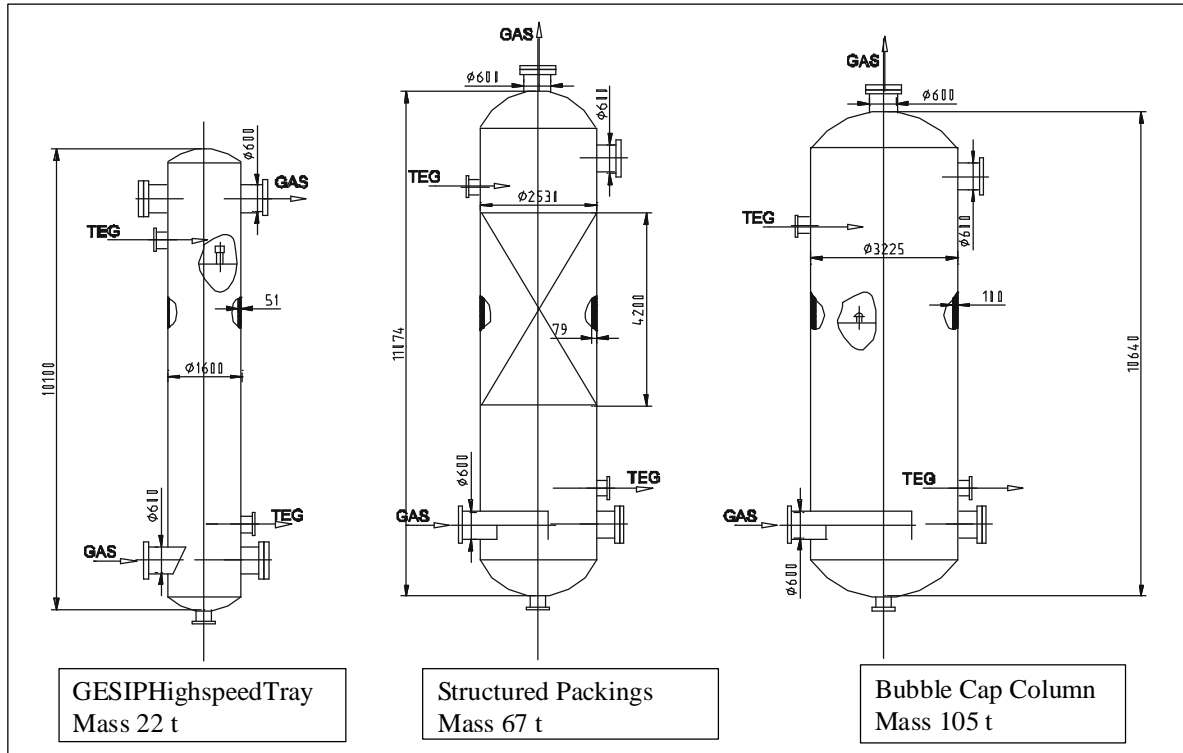


Fig.3: Comparison of column sizes and weight for the dehydration of natural gas (10 MM Nm³/d, at 30°C and 60 bar)

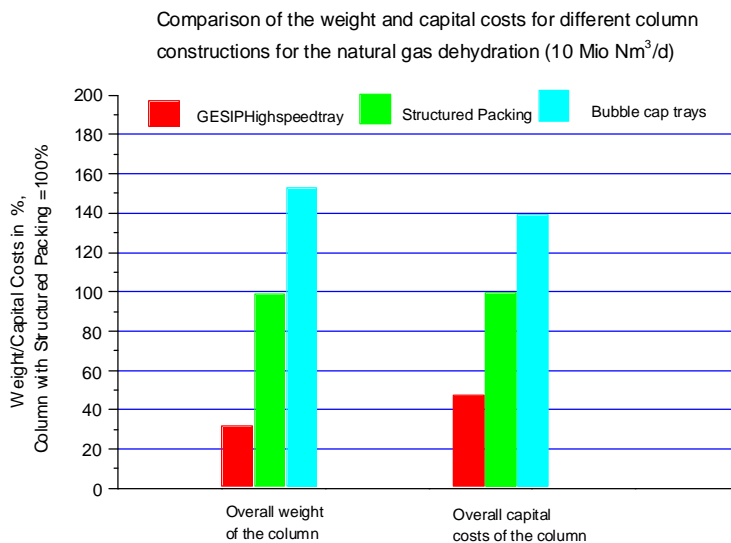


Fig.4: Comparison of column weight and costs for different designs