



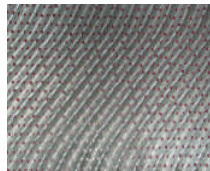
Welcome to the latest newsletter from HAT International, aimed at keeping all our customers up to date with the latest products and developments within our company, as well as some general news on what's going on in the industry. We trust you find it informative and we welcome any comments or suggestions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

June and July saw in many orders for our **separator and demister internals** for customers in the Middle East and Russia. Also from Saudi we received a contract for a large **polypropylene vane mist eliminator** for a quench tower; from Pakistan an order for a special **mixer-distributor** for a urea plant; and destined for the Ukraine a contract for the internals for two **condensate stabilizer towers**. A large volume order was received for our new **AlphaPLUS SF+ random packing** in polypropylene ('snowflake' type). We also received a design study for an offshore, middle east glycol plant upgrade and subsequently the associated internals including our **high capacity structured packing DHC-252**.



DHC-252 Pack in SS316

RECENT DELIVERIES

Recently completed contracts include numerous **separator internals** including baffles, vane inlet distributors and demisters for several customers in the UAE; a CO2 **absorber column packing**, distributor and supports for the UK; fuel gas **KO drum internals** for an FPSO also to a UK client; and a **special liquid distributor** for an Australian client's column.

MEET US AT THESE EXHIBITIONS

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

CHEMENG 08
NEC Birmingham, UK, 28-30 Oct

ADIPEC
Abu Dhabi, UAE, 03-06 Nov

NEW REPRESENTATIVE IN MALAYSIA

We are pleased to announce the appointment of a new representative for HAT International in Malaysia and Brunei:

CENSERV Sdn Bhd

"Think Global, Act Local"

Mr Ahmad Arham Talib – Managing Director

A-43, Jalan Gebeng 2/6

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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

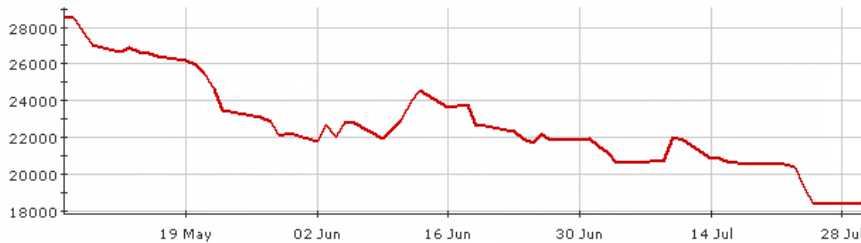
West Texas Intermediate Crude Oil \$/barrel



OIL SOLIDIFIES...

Fears of lower demand on a poor OECD economic outlook caused a sharp trend reversal in price in the latter part of July. It starts the month of August at \$125/bbl and falling.

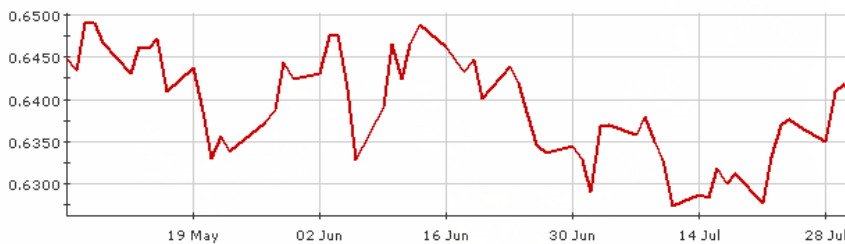
Nickel 3mo Unofficial \$/m tonne



NICKEL SINKS...

Increased production is meeting reduced demand as global slowdown bites, resulting in price weakness. The metal traded at \$19/kg 1st August on a downward trend.

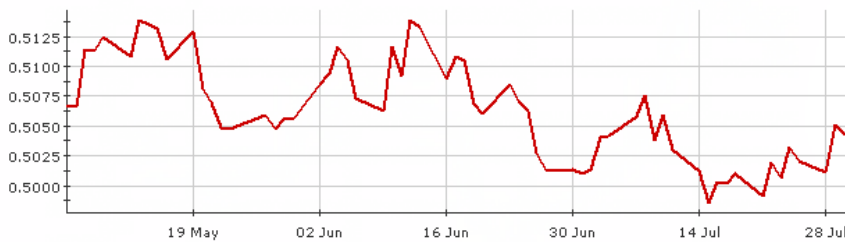
United States Dollar - Euro



DOLLAR STEADIES...

The major currencies have lacked direction reflecting uncertainty about the direction of interest rates. The key rates stand at £1.00 = \$1.96 and €1.00 = \$1.55 on 6th August following the FED hold on rates at 2%.

United States Dollar - GBP





EUROPE

DENMARK - KBR has announced that it has been awarded a \$16.5 million contract for detailed engineering for the SMOE Maersk Olie Gas (MOG) Halfdan Phase IV project. KBR will be responsible for designing a new platform as part of the continued development of the Halfdan field located 120 miles west of Esbjerg, Denmark. The platform will be constructed at SMOE's Singapore fabrication yard and transported to the North Sea upon completion.

MIDDLE EAST

SAUDI – Aramco have finalized the contracts for their 900,000 BPD offshore Manifa field. The largest package at \$1.7bn went to Italy's Snamprogetti for the central processing facilities and GOSP.

LIBYA – In a \$2bn deal, the Star Consortium last week concluded a shareholder agreement with the National Oil Company (NOC) of Libya to form a joint venture company to purchase and upgrade its 10m tpa Ras Lanuf refinery. TransAsia Gas International, a subsidiary of Al Ghuaier Investments, and Star Petro Energy, part of Dubai based ETA Ascon Star Group, make-up the Star Consortium which will hold a 50 per cent share of the JV along with NOC of Libya.

QATAR – Reliance Industries and gas company Gail India have agreed a \$1.3bn deal to establish a new petrochemicals complex.

ABU DHABI – ConocoPhillips and ADNOC have agreed a preliminary \$10bn deal to develop the Shah sour gas field at a capacity of 1bn SCF/D.

ASIA - PACIFIC

VIETNAM - Foster Wheeler Energy Limited has been awarded a contract by Nghi Son Refinery & Petrochemical Company (NSRP LLC) for the planned Nghi Son refinery, which will be Vietnam's

second refinery. FW will execute the pre-front-end engineering design (pre-FEED) followed by the FEED for this new complex, which will include a 10 million tpa refinery and a petrochemical complex. The FEED phase is expected to be completed during Q4 2009.

CHINA – China's National Development & Economic Reform Commission (NDRC) is drafting a regulation to require 75% of the country's oil and petrochemical equipment to be domestically produced between 2006-2010.

AFRICA

ANGOLA - Sonangol EP has authorised BP and its co-venturers to develop a series of deepwater oil discoveries in offshore Angola's Block 31. The Block 31 developments programme is based on a standardised development concept, which is intended to reduce cycle time, optimise capital and maximise operating efficiency through standardised design, fabrication and commissioning. The first project in the programme will comprise the Pluto, Saturn, Venus and Mars (PSVM) fields which lie in the north east sector of Block 31, in a water depth of approximately 2000m, some 400 kilometers north west of Luanda. Construction work is expected to start during 2008 with first oil planned in 2011 and building to a plateau of about 150,000 barrels per day by 2012.

ELSEWHERE

The Arctic contains just over a fifth of the world's undiscovered, recoverable oil and natural gas resources, according to a long-awaited review. A report by the US Geological Survey found that the area north of the Arctic Circle has an estimated 90 billion barrels of crude oil and 1,670 trillion cubic feet of natural gas - more than the proved oil and gas reserves of Russia, the world's no 2 crude producer after Saudi Arabia.

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



Feature: Common Alloy Compositions and Uses...

Material Spec.	Properties	Applications
<p>Stainless Steel 304</p> <p>Carbon 0.08 max Chromium 18 - 20 Iron Balance Manganese 2 max Nickel 8 - 10.5 Phosphorus 0.045 max Silicon 1 max Sulphur 0.03 max SG 7.90</p>	<p>One of the most widely used and oldest of the stainless steels. This was originally called 18-8 which stood for its chromium and nickel content. It possesses an excellent combination of strength, corrosion resistance and fabricability. It is available in the widest variety of forms and sizes of any stainless steel. Weld using 304L filler.</p>	<p>General purpose internals for all applications where corrosive or aggressive components in the process fluids are at low level.</p>
<p>Stainless Steel 316</p> <p>Carbon 0.08 max Chromium 16 - 18 Iron Balance Manganese 2 max Molybdenum 2 - 3 Nickel 10 - 14 Phosphorus 0.045 max Silicon 1 max Sulphur 0.03 max SG 7.95</p>	<p>This austenitic stainless steel has an increased molybdenum content to improve its resistance to corrosion when compared to other 300 series alloys (particularly pitting and crevice corrosion in chloride environments). It will resist scaling at temperatures up to 1600 F (871 C) and maintains good mechanical properties and creep strength at high temperatures. Weld using 316L filler.</p>	<p>Commonly used for oil and gas treatment plants where moderate levels of CO₂ and H₂S and some chlorides are present.</p> <p>Grade 316L should be used for heavy gauge, welded components (above 6mm). For elevated temperatures 316Ti (Titanium stabilized) should be used.</p>
<p>Stainless Steel 321</p> <p>Carbon 0.08 max Chromium 17 - 19 Iron Balance Manganese 2 max Nickel 9 - 12 Phosphorus 0.045 max Silicon 1 max Sulphur 0.03 max Titanium Min: 5 x C SG 7.90</p>	<p>The key feature of 321 stainless is its resistance to intergranular corrosion. It employs titanium as a stabilizing element against chromium carbide formation. This alloy also exhibits strength characteristics superior to those of 304 stainless. Weld using 321 or 347 filler.</p>	<p>Commonly used in reactor internals (distributors, screens, etc) where regeneration temperatures are elevated.</p> <p>Also in furnaces, expansion joints, turbo/superchargers, exhaust manifolds and high temperature chemical production / oil refinery equipment.</p>



Material Spec.	Properties	Applications
<p>Stainless Steel 347</p> <p>Carbon 0.08 max Chromium 17 - 19 Iron Balance Manganese 2 max Nickel 9 - 13 Niobium Min: 5 x C Phosphorus 0.045 max Silicon 1 max Sulphur 0.03 max SG 8.03</p>	<p>Similar to 321 stainless, 347 uses Niobium as a stabilizing element to maximize its principal feature: resistance to inter-granular corrosion. It can be used in applications requiring repeated heating in the range of 800 and 1650 F (427-900 C). Weld using 347 filler.</p>	<p>Similar applications to SS321.</p> <p>High temperature gaskets and expansion joints, fired heater parts, jet engine parts and exhaust manifolds and high temperature chemical / oil production equipment.</p>
<p>Stainless Steel 410</p> <p>Carbon 0.15 max Chromium 11.5 - 13.5 Iron Balance Manganese 1 max Phosphorus 0.04 max Silicon 1 max Sulphur 0.03 max SG 7.70</p>	<p>410 is the basic martensitic stainless which will attain high mechanical properties after heat treatment. It has good impact strength, corrosion and scaling resistance up to 1200 F (650 C). Weld using 410 filler.</p>	<p>This higher strength material is useful for larger components such as trays and support beams in non-corrosive service.</p> <p>General uses include cutlery, steam and gas turbine blades and buckets, bushings, valve components, fasteners, screens and kitchen utensils.</p>
<p>Stainless Steel 6Mo</p> <p>Carbon 0.02 max Chromium 19.5 - 20.5 Copper 0.5 - 1 Iron Balance Manganese 1 max Molybdenum 6 - 6.5 Nickel 17.5 - 18.5 Nitrogen 0.18 - 0.22 Phosphorus 0.03 max Silicon 0.8 max Sulphur 0.01 max SG 7.80</p>	<p>This is a very high end austenitic stainless steel that combines impact toughness resistance to chloride stress corrosion cracking, pitting and crevice corrosion with strength nearly twice that of 300 series stainless steels. In some applications it has been found to be a more cost effective substitute for high nickel and titanium alloys. Alloy 625 is an acceptable filler.</p>	<p>Used in offshore petroleum production, saltwater handling, food processing and chemical processing equipment, pulp mill bleach systems, flue gas desulfurization scrubbers and tall oil distillation columns.</p>



Material Spec.	Properties	Applications
<p>Stainless Steel 904L</p> <p>Carbon 0.02 max Chromium 19 - 23 Copper 1 - 2 Iron Balance Manganese 2 max Molybdenum 4 - 5 Nickel 23 - 28 Phosphorus 0.045 max Silicon 1 max Sulphur 0.035 max SG 7.90</p>	<p>904L is an austenitic stainless steel designed for moderate to high corrosion resistance. Its low carbon content improves cleanliness and weld strength and retains its properties at low temperatures.</p>	<p>Found in utility scrubber assemblies, acid and fertilizer production equipment, also has cryogenic applications.</p>
<p>Duplex 2205</p> <p>Carbon 0.03 max Chromium 21 - 23 Iron Balance Manganese 2 max Molybdenum 2.5 - 3.5 Nickel 4.5 - 6.5 Nitrogen 0.08 - 0.2 Phosphorus 0.03 max Silicon 1 max Sulphur 0.02 max SG 7.85</p>	<p>2205 is a duplex stainless steel designed to combine improved resistance to stress corrosion cracking, pitting, crevice corrosion and high strength when compared with other stainless alloys. This alloy resists chloride environments and sulfide stress corrosion. It is also roughly double the strength of standard austenitic stainless steels. Care is needed during welding, use 2209 filler.</p>	<p>Duplex stainless steels are magnetic, so can be differentiated from austenitic varieties.</p> <p>Most often employed in welded pipe and tube in chemical tanks, offshore oil and gas production, flue gas filters, acetic acid distillation components and heat exchangers.</p>
<p>Incoloy 825</p> <p>Aluminum 0.2 max Carbon 0.05 max Chromium 19.5 - 23.5 Copper 1.5 - 3 Iron Balance Manganese 1 max Molybdenum 2.5 - 3.5 Nickel 38 - 46 Phosphorus 0.03 max Silicon 0.5 max Sulphur 0.03 max Titanium 0.6 - 1.2 SG 8.15</p>	<p>An austenitic nickel-iron-chromium alloy with additions of other alloying elements to enhance resistance to chemical corrosion. The commonly used welding methods work well with this alloy. Matching alloy filler metal should be used.</p>	<p>Corrosive service oil and chemical process equipment, pickling plant, acid production, piping and vessels.</p>



Material Spec.		Properties	Applications
Inconel 625		<p>This nickel-chromium-molybdenum wrought alloy is an excellent general purpose material for elevated temperature use in high strength, oxidation problem applications. It also has excellent corrosion resistance to many acids and resists intergranular attack and stress-corrosion cracking. Welding is readily accomplished using matching alloy filler metal for the conventional welding techniques.</p>	<p>The alloy finds use in high temperature applications such as heat exchangers and gas turbine components. Because of its good corrosion resistance it is also used in wet scrubbers and some acid process equipment.</p>
Aluminum	0.4 max		
Carbon	0.1 max		
Chromium	20 - 23		
Cobalt	1 max		
Iron	5 max		
Manganese	0.5 max		
Molybdenum	8 - 10		
Nickel	Balance		
Niobium	3.15 - 4.15		
Phosphorus	0.015 max		
Silicon	0.5 max		
Sulphur	0.015 max		
Titanium	0.4 max		
SG	8.45		
Monel 400		<p>This alloy of nickel-copper is resistant to sea water corrosion as well as to a variety of acids and other corrosive media. The commonly used welding methods work well with this alloy. Matching alloy filler metal should be used.</p>	<p>Marine fixtures, pumps, valves and piping systems for sea water application. Because of its good corrosion resistance it is also used in chemical plant equipment.</p>
Carbon	0.3 max		
Copper	28 - 34		
Iron	2.5 max		
Manganese	2 max		
Nickel	Balance		
Silicon	0.5 max		
Sulphur	0.024 max		
SG	8.80		