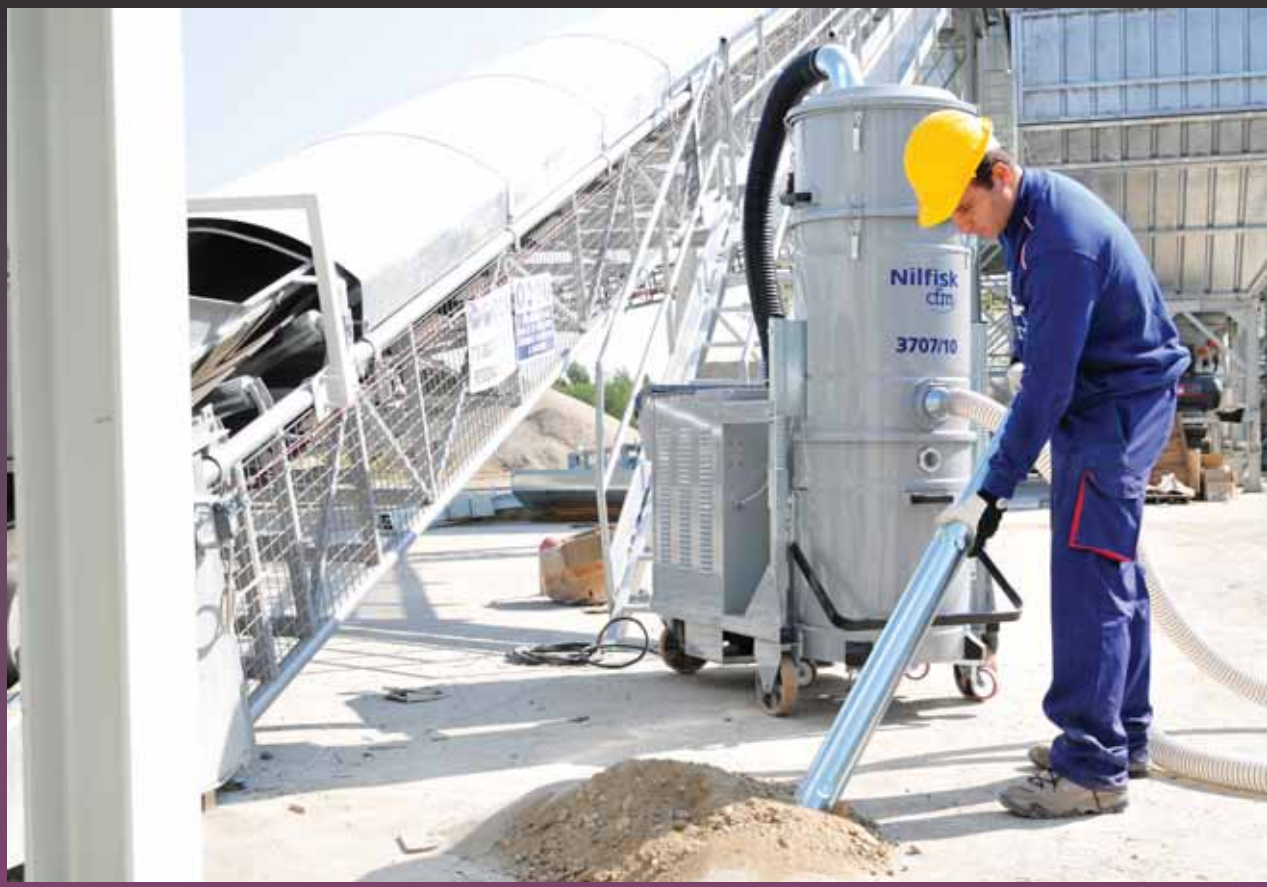
Industrial vacuums from Nilfisk-CFM offer power and reliability



Milan-based Nilfisk CFM supplies industrial vacuums, pneumatic conveyors, centralized vacuum systems and high power vacuums to the worldwide market.

Its 3707 and 3907 series of industrial vacuums are strong, powerful and reliable, and are therefore ideal for continuous and heavy-duty uses. The wide filter area and the great capacity of the container allow the operator to work without any interruption to operations.

These vacuums are very popular with heavy industry, and offer the following benefits:

❖ power: they are equipped with three-phase suction units which don't need any maintenance, thanks to the direct motor/fan coupling so without any transmission. They offer high performances in the recovery of great quantities of heavy materials even at a considerable distance.

❖ safety: the wide star filter surface grants a long operational autonomy; filters are available for hazardous dust, for high temperatures and for very fine dust. The filter shaker, manual or electric, enables the maintenance of high filtration efficiency. The vacuometer constantly controls the filter efficiency.

❖ comfort: removable container thanks to a practical release system. The electrical box contains the on-off buttons, hour counter and vacuum gauge. The two big rear castors, with brakes and Vulkolan tyres, allow an easy manoeuvrability of the vacuum.

❖ customized: stainless steel and ATEX versions are available; different power, size and capacity can be supplied on demand.

Tenova TAKRAF – combining Italian and German expertise

Tenova TAKRAF, a subsidiary of Tenova SpA, is a major force in the bulk handling equipment market. It is a global leader specializing in the design, manufacturing, installation and commissioning of complete systems and equipment for bulk materials (open cast mine equipment, continuous ship unloaders, grab ship unloaders, shiploaders, stackers, reclaimers, scrapers, traditional and tubular conveyors, enclosed storage systems and rail/road wagon loading/unloading).

Being the result of the successful merger between Tenova bulk handling activities, of the renowned Italimpianti heritage, and TAKRAF, with origins that can be traced back to 1725 and that has been designing and supplying equipment and technology to the mining industry for almost a century, it therefore combines German and Italian engineering skills. A strong worldwide organization, Tenova TAKRAF has over 600 employees and subsidiaries in Canada, USA, Chile, Brazil, India, Australia, South Africa and Bulgaria. It has representative offices on all five continents and develops system solutions in a way to be close to the customers.

Tenova TAKRAF benefits from a global network of highly qualified staff; their technological know-how and proficiency ensures the supply of reliable, high-capacity and durable plants and machines, equipped with the most modern key technologies.

Industries served include prestigious clients in power, iron and steel, aluminium, cement, fertilizers, marine terminals etc. Close association with engineering and construction segment of

A stacker reclaimer supplied to CVRD (now VALE) in Sao Luis, Brazil.

the Techint Group allows it to provide turnkey design and installation of complete systems, as well as project financing assistance and BOT (build, own, operate, transfer) concessions.

Products handled include: iron ore, DRI, pellets, slag, coal, coke, pet-coke, bauxite, alumina, salt, cement, clinker, gypsum, limestone, marl, phosphate rock, urea, DAP, MAP, NPKs and other fertilizer products etc.

Recent contracts

In February 2008, Tenova TAKRAF was contracted to supply new handling machines for the upgrading of VALE – Northern Iron Ore System in Brazil.

Once More, Tenova was selected by Companhia Vale do Rio Doce, the world's leading iron ore mining company recently rebranded as VALE, for a new expansion step of its Brazilian Northern Iron Ore System. The global development plan of VALE is bound to expand the Northern system shipping terminal, expected to reach an iron ore export capacity of 130mt (million tonnes) per year, as well as to improve the up-stream production capacity at its Carajas mine. Within this framework, Tenova was awarded a first contract for the turnkey supply of two identical stackers of 16,000tph (tonnes per hour) capacity, 55 metres boom length each, at Carajas mine site. Furthermore, at St Luis iron ore shipping terminal, Tenova won another contract for one 20,000tph stacker with a 55 metre boom length, and one 11,000tph reclaimer, 50 metre boom length. A further five machines with the same technical features are expected to be supplied later on. The long-lasting and fruitful co-operation between VALE and Tenova is best exemplified at Northern St Luis Terminal where all shiploaders in operation have been supplied by Tenova during the past 30 years.

In April 2008, Tenova TAKRAF was contracted to supply a new grab ship-unloader to ILVA Plant Taranto (Italy)

Tenova TAKRAF Italy won a contract from the leading Italian steel producer Riva Group for the turnkey supply of a grab ship-unloader for iron ore and coal to be installed at ILVA plant in Taranto (Italy). The new unloader will be one of the biggest in the world both in terms of its operating capacity — 3,300tph — and its size: it will be able to unload ships of up to 330,000dwt. The contract was awarded after fierce competition with the most prestigious European suppliers and it is expected to be operative as from the end of August 2009. This new order comes after constant dialogue between ILVA and Tenova during the bidding stage, creating operating synergies and mutual understanding with ILVA, a long-standing and prestigious customer.

In April 2008, Tenova TAKRAF Germany (TAKRAF GmbH) commissioned Asia's largest spreader. The largest operating spreader in Asia built by Tenova TAKRAF was commissioned after a test period in April this year. Neyveli Lignite Corporation Ltd., an Indian State Company acquired the 3,000-tonne machine for its Mine-II expansion project. Mine-II is located 5km south of Mine-I, which is located on the northern part of the field adjacent to the Neyveli Township. Mine-II is spread over an area of 26km² with 390mt lignite reserves.

The seam of overburden, mostly consisting of Cuddalore strand stone that is very hard and abrasive, exists in layers of 45 to 103 metres covering lignite seams of 8 to 22 metres thickness. Equipped with a discharge boom of 90 metres length and a receiving boom of 45 metres length and with a capacity of 20,000tph capacity, the spreader will dump and level the mined overburden. The erection of the spreader was completed within 12 month against the schedule of 16 months.

TAKRAF India (Pvt) Ltd. and Tenova TAKRAF Germany (TAKRAF GmbH) were both responsible as erection supervisors and sent 8 engineers from Chennai/India and 2 engineers from Germany to the assembly site.

In July 2008, Tenova TAKRAF won a contract to supply a new lump iron ore stockyard in Argentina. Tenova TAKRAF Italy won the contract for the new lump iron ore stockyard of Ternium Siderar Plant, San Nicolas, Argentina.

The new conveyor and yard system, including 20 conveyors for a total length of 4km, has a capacity ranging between 650tph and 3,000tph. The scope of Tenova supply covers also the connection with the existing one, environmental devices, sampling and screening stations.

Rulmeca rollers integral to Yara Italia plant

Yara Italia SpA in Ravenna, Italy, is controlled by HYRO, an international group with headquarters in Sweden, active in petrol extraction and in the production of aluminium, ammonia and fertilizers.

The Ravenna plant works 24 hours a day and produces urea and complex manure.

The production capacity is 800,000 tonnes/day: 350,000 tonnes in sacks on pallets and 450,000 tonnes of bulk material, of which 80% is transported by seafreight.

The environment is very corrosive and marine.

There are 18km of conveyors, belt width 650, 800 and 1,200mm with some of them working continuously. The company is connected to the dock of Ravenna harbour having a Bedeschi-branded ship loader-unloader with Rulmeca PSV rollers, shaft diameter 20mm.

In a reconditioning process the belts were changed into a system equipped with Rulmeca 3 roll garlands diameter 108, PLF and PSV series, all rubber coated.

The new system is expected to be operational by January 2010.

Tenova TAKRAF is proud of this new achievement with such a reliable customer as Ternium Siderar, leader in South America for the production of steel flat products.

In August 2008, Tenova TAKRAF was awarded the Practical Completion Certificate for two stackers in Australia. Tenova TAKRAF, through Tenova-Semf (Australia), has recently obtained the Practical Completion Certificate for the two identical Sonoma mine radial coal stackers. The machines, owned by Q Coal and located in the Bowen Basin coal fields of far North Queensland, were each designed to receive and stockpile raw coal at the rate of 700tph to form two separate radial stockpiles each through 120° for consolidating the coal prior to outloading by rail. The annual throughput for each machine is 3mt. Tenova-Semf's scope of the contract included the design, supply, delivery, erection and commissioning supervision for both radial stackers. Each of the stackers has a boom length of 90 metres and is inclined from the fixed pivot at ground level at an angle of 15°. They are supported on the bogies and running rails at 60 metres radius and can form a stockpile of nominally 20 metres overall height. The machines operate fully automatically without the need of any on-board operator interface.

Due to the tight time frame for the delivery and erection of the first stacker, Tenova Semf adopted the same structural design as the Wilpinjong Stacker and only modified the mechanical components to reduce the handling rate from 1,600tph down to 700tph. This enabled Tenova Semf to supply and erect the first machine in 44 weeks from placement of order and complete the second machine 28 weeks later giving a total time for both machines of 72 weeks.

This was the first repeat business following on from the Wilpinjong stacker and represented another successful project to strengthen Tenova Semf's reputation in the Australian coal handling market.

In August 2008, Tenova TAKRAF, through Tenova-Semf (Australia), completed the defects liability period for the Wilpinjong radial coal stacker located in the central coal fields of New South Wales (Australia). Tenova-Semf's part of the contract included design, supply, delivery, provision of erection and commissioning supervision. The client was Excel Coal and the consulting engineers and mine developers were Thiess Sedgman Joint Venture.

The machine has a boom length of 90 metres and was designed to receive and stockpile raw coal at the rate of 1,600tph to form a radial stockpile through 180° for consolidating the coal prior to outloading by rail. Annual throughput is 8mt. The stacker has a boom length of 90 metres and is inclined from the fixed pivot at ground level at an angle of 15°. It is supported on the bogies and running rail at 60 metres radius and can form a stockpile of nominally 20 metres overall height. The discharge chute is fitted with a telescopic chute to control dust emission and the machine operates fully automatically without the need of any on-board operator interface.

This stacker represented the first Tenova-Semf success in the Australian coal handling market and its good results enabled Tenova-Semf to replicate with further five machines all based on this original design concept.

In August 2008, Tenova TAKRAF Italy signed a contract with Engro Chemical Pakistan Ltd (ECPL) for product movement and storage facility in Pakistan. This a contract with ECPL is for the design and supply of a new urea handling facility dedicated to the new urea plant at Daharki site, Sind State, Pakistan. Upon completion, the new urea plant at Daharki site will be the largest single train ammonia-urea complex in the world.

The Tenova TAKRAF Italy contract will cover the requirements for a prilled urea handling, screening, reclaiming, fines conveying, bagging and truck loadings systems package.

The above systems will permit to top the capacity of 8,000 urea bags (50kg) per hour as nominal output from the new plant. The scope of the contract includes the design, supply, transport, erection and commissioning supervision.

Delivery at site is expected by September 2009 while the commissioning of the systems is planned by July 2010.

In August 2008, Tenova TAKRAF Germany (TAKRAF GmbH) was awarded by Krutrade the contract for the stage IV, final stage of Ust-Luga coal Terminal expansion. The new contract is relevant to the supply, transport and erection supervision of following installations: one stacker with tripper car; one reclaimer; several conveyors.

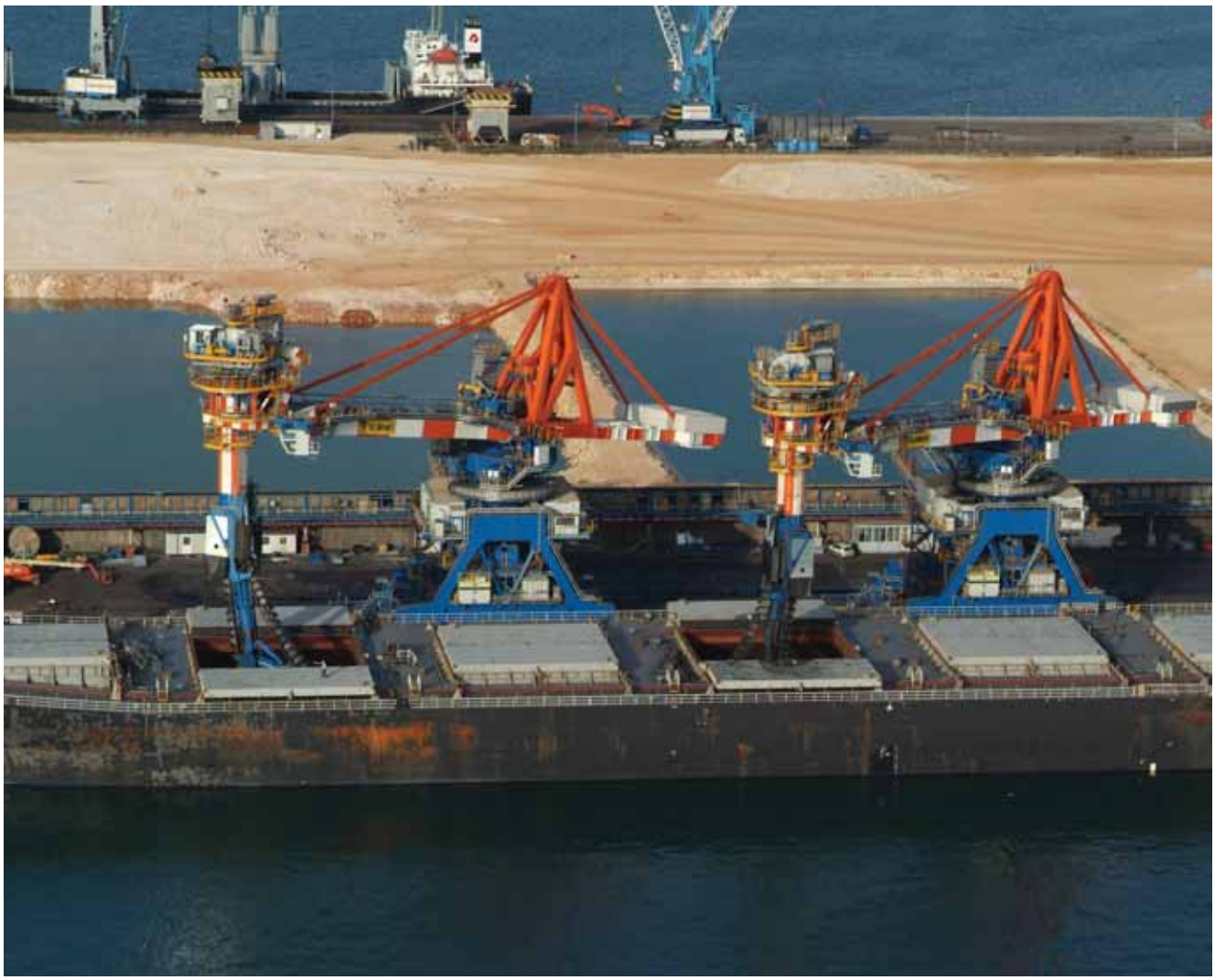
The stockyard equipment, as well as the conveyors will operate at a capacity of 3,500tph. The stacker will have a boom length of 55 metres, and the reclaimer will have a wheel boom with a length of 58 metres. Aligned to the already existing conveyor system, the new conveyors will have a belt width of 1,600mm and will transport the coal at a speed of 4.5 metres/second. In total the new conveyors will reach a length of 1.5 kilometres.

The commissioning of the fourth expansion-stage is expected in 24 months.

Tenova TAKRAF is particularly proud of this order awarded even before the delivery of the first structural and pre-assembled parts for the stacker/reclaimer and conveyors of the Ust-Luga III Expansion Contract. As part of the coal terminal's fourth expansion stage, a fourth stockpile area, in addition to the three already existing pile-tracks, will be built. The realization of expansion stage IV will enable the operator to reach an annual handling capacity exceeding 15mt of coal. This exceeds the original planned handling capacity of 12mt per year.

The performance increase has been achieved thanks to the excellent technical equipment supplied by Tenova TAKRAF as well as by Rosterminalugol terminal operator's skill. Ust-Luga IV is a further proof of Tenova TAKRAF competency and reliability as well as of the customer's trust in Tenova TAKRAF's installations and equipment.

In September 2008, Tenova TAKRAF Italy was awarded a contract to supply the refurbishment of La Spezia Power Plant, Italy. Once again, Tenova TAKRAF's is co-operating with major Italian power company Enel to refurbish the 'Eugenio Montale' powerplant, located in the municipality of La Spezia, including two combined cycle units, 340MW each, and one 600MW coal firing unit. Some areas of jetty, some parts of coal conveying



plant (already supplied by Tenova dozen years ago) and the auxiliary boilers are going to be refurbished in order to have environmental improvements. Tenova TAKRAF will upgrade the screening and crushing system installed inside the Tower T2, with particular reference and care to powder and noise pollution, due to the fact that the tower is located nearby the port boundary, close to a road beyond which a church and a school are located. The job includes on-site erection of all supplied items, including supports, framework, electrical and I&C equipment and connections.

In September 2008, Tenova TAKRAF was awarded a contract by Sedgman for two more radial stackers (Australia). Tenova TAKRAF, through Tenova-Semf (Australia), won the order from Sedgman for the supply of two identical radial coal stackers for the new Daunia Mine in the Bowen Basin coal fields of far North Queensland.

The scope of the contract includes the design, supply, delivery and provision of erection and commissioning supervision for the two radial stackers. The client is BMA (BHP Billiton Mitsubishi Alliance) and the consulting engineers and mine developers are Sedgman.

The machines are identical to the ones just delivered to Lake Vermont and each are designed to receive and stockpile raw coal at the rate of 700tph to form two separate radial stockpiles each through 120° for consolidating the coal prior to outloading by rail. Annual throughput for each machine is 2mt.

Each of the stackers has a boom length of 75 metres and is inclined from the fixed pivot at ground level at an angle of 15°. They are supported on the bogies and running rail at 40 metres radius and can form a stockpile of nominally 20 metres overall height. The machines will operate fully automatically without the need of any on-board operator interface. The machines are expected to be delivered early 2010.

In September 2008, Tenova TAKRAF, through Tenova-Semf (Australia), signed a contract for the design and supply of a luffing stacker with HWE Mining at RioTinto's Mesa A iron ore operation, located 50 kilometres from Pannawonica in Western Australia's Pilbara region.

Tenova Semf signed the contract with HWE Mining (a Leighton Contractors-owned subsidiary) which will develop the whole mine. The scope of the contract includes the design, supply, transport, erection supervision and commissioning supervision of a fixed luffing stacker for lump ore.

The stacker features a boom length of 50 metres and the luff range is ±12°. It will operate at an average capacity of 3,846tph with a peak rate of 5,000tph. The annual capacity will be 25mt.

The stacker will be delivered to the site by 1 May 2009.

In September 2008, Tenova TAKRAF, through Tenova-Semf (Australia), completed the final deliveries of the structural, mechanical and electrical components for the Lake Vermont coal stacker respecting the tight delivery time of 24 weeks from award of contract.

the scope of the contract included the design, supply, delivery and provision of erection and commissioning supervision for the radial stacker. The client was Lake Vermont Coal Resources and the consulting engineers and mine developers were Thiess Sedgman Joint Venture.

The machine located in the Bowen Basin coal fields of far North Queensland was designed to receive and stockpile raw coal at the rate of 700tph to form a radial stockpile through 120° for consolidating the coal prior to outloading by rail. The annual throughput is 5.3mt. The stacker has a boom length of 75 metres and is inclined from the fixed pivot at ground level at an angle of 15°. It is supported on the bogies and running rail at 40 metres radius and can form a stockpile of nominally 20 metres overall height.

The machine operates fully automatically without the need for any on-board operator interface. Due to the boom's length reduction of this machine compared with the earlier models supplied, Tenova Semf carried out a complete re-design of the structure so as to reduce the cross section of the machine to better suit the smaller 700tph conveyor dimensions. This very positive result provided also Tenova Semf with a dedicated smaller model in the range of machines manufactured at a very cost competitive price.

This achievement was another step in strengthening Tenova's position in the Australian coal handling market.