

PEMANEWS

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DEMAND GROWS FOR HANDLING AND WELDING OF HEAVY WORK-PIECES

Safe material handling requires proper tools

PEMAMEK A SYSTEM PARTNER FOR MOTOMAN

Investments in robotics continue

PRODUCTION MODERNISATION IMPROVES OCCUPATIONAL WELL-BEING

With the help of automation and mechanisation, routine work is done easily and with quality



• HEAVY ROBOTICS AND AUTOMATION • ENERGY
SECTOR AUTOMATION • SHIPBUILDING PRODUCTION
AUTOMATION • POSITIONERS • ROLLER BEDS

THE WORLD IS BECOMING MORE EFFICIENT

All over the world, things are currently going exceptionally well for the heavy metals industry. It is enjoying a real boom and order books are full. At times, the pace of development has been so fast that a lack of raw materials has delayed delivery times by unprecedented amounts. This situation, however, will not last for ever. Now, if ever, is the time to prepare for quieter times and to invest in improving productivity.

Heavy welding has traditionally been very demanding and strenuous work. Young people would rather do something easier and there is starting to be a lack of skilled professionals. Customer demands have changed to such an extent that, even developing countries with cheap labour must be able to manufacture their products in accordance with western quality standards. On its own, a cheap price is no longer enough to ensure competitiveness. With this background, it is clear that production automation and mechanisation will increase. The job description of welders is also changing and they are also becoming skilled operators. With automation, production is becoming systematised and the observance of quality standards is becoming the only acceptable way to operate.

Pemamek has continually been introducing new heavy welding automation systems onto the market. The main



aim of these solutions is the de-bottlenecking of customer production and a significant improvement in productivity. It is a question of a long-term partnership, in which we, together with our customers, develop well-functioning solutions that improve production efficiency. With this development, in addition to individual items of equipment, we have delivered an increasing number of systems that are clearly more extensive than before.

Through a strong emphasis on development, Pemamek is concentrating and will continue to concentrate on top-class expertise in welding automation and mechanisation. In that way, we want to create better possibilities for our customers to specialise and succeed in their own business operations.

Pekka Heikonen, The President

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SPECIAL AUTOMATION INCREASES PRODUCTIVITY AT KVAERNER KAMFAB

Established in 1986, Kvaerner Kamfab is a production unit of Kvaerner Pulping, located in Karlstad, Sweden, and its roots as a KMW (Karlstad Mekaniska Werkstad) company stretch back to 1850. The productivity of this top-class engineering company has also been improved with the help of welding automation.

Kamfab produces, installs and maintains machines and equipment for the paper and chemical industries, and also manufactures components for the nuclear power sector. In the last 20 years, the company's productivity has improved strongly.

In bygone decades, the production processes of this traditional supplier of pressure vessels were quite manual. Since 1986, Kamfab's work force has been reduced from 348 to 220, and, at the same time, turnover has increased almost seven-fold from SEK 65 million to SEK 450 million. The great increase in productivity has taken place by concentrating production on carefully selected core product groups. At the same time, the company has invested strongly in the development and modernisation of production technology and processes. This previously quite general engineering company has methodically reinvented itself as a specialised top-level production plant, which in future will increasingly move the pre-machining of components to subcontracting, and will concentrate on its own core area of expertise, the efficient assembly of machinery.

A reliable entity based on tried-and-tested solutions

The co-operation between Pemamek and the different units of Kvaerner Pulping has already been going on for more than ten years. The volume of Kamfab's products has been continually growing over the years and the need for production capacity has increased. In 2005, in co-operation with Pemamek, the company made the decision to automate not only the assembly of dryer-drum fin profiles made of special stainless steel but



Fin profile assembly- and welding portal above a work-piece attached to a rotation- and support roller bed. Profile cassette on the right.

also the manual welding processes.

At the early stage of the project, Pemamek developed several feasible technical concepts, which, after evaluation together with the client, culminated in the delivered solution. In all, development work for the welding station took about one year.

The efficiency and reliability of the chosen concept is based on solutions that had been proven to work well on the

production lines of shipyards. The total solution was tailored to the customer's needs, combining the processes of assembly and welding at one work-station. In that way, it was possible to significantly shorten the throughput times of both processes and to increase the productivity of drum manufacture.

Since start-up and operator training, the welding station has clearly exceeded the production targets it was set.

Kvaerner Kamfab: dryer-drum welding station

- Order made: February 2005
- Delivery: December 2005
- Contents of delivery: **PEMA profile assembly- and welding portal**
 - movable assembly portal with hydraulic and vacuum clamps
 - automatic profile pick-up from a cassette, indexing of rotation and profile assembly function
 - automatic profile welding
 - 2 x ESAB Aristomig 500 welding sets (monitoring cameras + seam tracking)
 - welding fume extraction system
- **PEMA 20000 HSA rotator and roller bed**
 - capacity 40 tonnes
 - Maximum length of work-piece 8.5 m
- In addition:
 - fixed cassette rack
 - profile cassette
 - operator's working platform with ergonomic height and distance adjustment
 - graphic user interface
 - training
 - start-up



A heavy column & boom/work-piece handling station belonging to COEK Engineering of Belgium. In the small picture, Gigantic 120-tonne positioners awaiting transportation to China.

DEMAND GROWS FOR HANDLING AND WELDING OF HEAVY WORK-PIECES

In Asia's growing economies, like China and India, energy infrastructure is one area experiencing strong development. These countries have an acute need for production equipment such as handling and welding solutions for large and heavy work-pieces. Similar applications can also be made use of in the process and offshore industries.

Process and energy industry production needs heavy pressure vessels, which often contain corrosive materials. The vessels are large pieces weighing as much as 800-1,000 tonnes, with wall thicknesses sometimes reaching 350 mm. Materials used in their manufacture are often not normal steel, and such metals as titanium

might be used. The safe and precise handling and high-quality, fast welding of such pressure vessels requires much of the tools that make them. These special, highly valuable materials must not be damaged, and the end result must always be guaranteed to be perfect.

In autumn 2005, Pemamek delivered some massive work-piece handling equipment to Dong Fang Heavy Machinery, a Chinese supplier of parts for the process industry. This delivery included two giant positioners with a loading capacity of up to 120 tonnes, and 300- and 500-tonne rotating roller beds.

A demanding end product requires faultless production

COEK Engineering NV, based in Geel in Belgium, is one of Europe's leading suppliers of process industry pressure vessels and reactors. The project timetables

of its customers are tight, so the supplier's production technology must be in good shape. Products must be manufactured within the promised timescale, and it must always be possible to guarantee their top quality. The guiding principle is always to complete things in one go. Because cost control is an important part of efficient production, the importance of good tools becomes a key factor.

Because of the high demands of production, welding solutions for pressure vessels and reactors are always designed and built based on customer need. The total life time for individual machines varies between ten and thirty years. A basic solution is usually a column and boom system linked together with welding and work-piece handling equipment. This solution functions as an integrated unit. In order to achieve an efficient and reliable end result, solid

co-operation between the supplier of the solution and the customer's operators is of utmost importance.

With the help of a column & boom/work-piece handling station delivered by Pemamek in co-operation with ESAB in 2005, COEK manufactures and processes the end pieces of large tanks using double wired submerged arc welding. These pieces might weigh as much as 150 tonnes and have a diameter of 11 metres.

Narrow gap welding cannot be done by hand

The welding process most suitable for thick-walled work-pieces is narrow gap welding, in which the movements of both the welding head and the object to be welded must be controlled very precisely. It's not allowed any welding errors on the work-pieces, so the tolerances of the equipment are very small. To do this work by hand is impossible. The seam can be pre-heated up to 400° C. The synchronisation of the welding process and piece handling uses numerical control: information about the movement of the work-piece is transferred to the welding head, which, when beginning a new cycle, moves to a new position and begins a new layer. The only job for the welder is to monitor the process and, if necessary, to correct the positioning of the welding head.

Precise work-piece handling improves productivity

Filling a thick-walled welding gap requires dozens of welding layers. Therefore, the roller beds used in work-piece handling are usually equipped with an automatic anti-creep device, which corrects the tendency of the work-piece to move longitudinally, and guarantees precise rotation. With the help of a hydraulic fit-up function, pieces to be welded together can be levelled to exactly the same height on the roller bed. The work pieces can be moved easily, quickly and precisely by way of rail bogies. These accessories not only increase the productivity of the welding by speeding up the work stages, but also significantly improve the quality of the end product.

During the coming spring, Pemamek will also deliver 500-1,200-tonne rotating roller beds for the needs of component production in the Chinese energy industry.

COEK Engineering NV: 150-tonne positioner and column & boom

- Order made: May 2005
- Delivery: January 2006
- Thickness of material: 50-200 mm
- Contents of delivery: **PEMA 150000 FA positioner**
PEMA column & boom 12 m x 10
 - ESAB Tandem Narrow Gap welding head
 - numerical control
 - movements synchronised with the positioner
- In addition:
 - installation
 - start-up
 - training

Dong Fang Heavy Machinery: work-piece handling equipment

- Order made: February 2005
- Delivery: November 2005
- Thickness of material 50-200 mm
- Contents of delivery: **2 x PEMA 120000 FA positioners**
1 pair of PEMA 350 TNA rotating roller beds with anti-creep mechanism
1 pair of PEMA 500 TNA rotating roller beds with anti-creep mechanism
- In addition:
 - installation
 - start-up
 - training

Undisclosed customer: work-piece handling equipment

- Order made: August 2006
- Delivery: March 2007
- Thickness of material 50-200 mm
- Contents of delivery: **1 pair of PEMA 700 TNA rotating roller beds with anti-creep mechanism**
3 pairs of PEMA 500 TNA rotating roller beds with anti-creep mechanism
1 pair of PEMA 1200 TNA rotating roller beds with anti-creep mechanism
- In addition:
 - installation
 - start-up
 - training



Narrow gap welding using a column & boom and heavy roller bed at the factory of Dong Fang Heavy Machinery.



A windmill tower section is moved to a hydraulic jig.

SPECIAL EXPERTISE IN WINDMILL TOWER PRODUCTION

The tower section of a windmill is a slightly conical structure tens of meters high, the manufacture of which might seem at a glance to be simple. Closer inspection of the matter, however, reveals several things that could be developed to improve productivity and the quality of the end product.

Conicality of tower section strains roller beds

The tower section of a windmill is made up of several 2-3-meter-long sections, with a material thickness of 12-45 mm. The 2-3 degree conicality of these sections strains the roller beds used to rotate them, so that it is difficult for standard roller beds to cope with the additional stress.

Pemamek has developed a special TAW roller bed equipped with highly durable PU rollers, which is ideal for dealing with the conical loads that result from the handling of windmill tower sec-

Aerisyn LLC: assembly and welding line for windmill tower sections

- Order made: January 2005
- Delivery: July 2005
- Thickness of material 12-45 mm
- Contents of delivery: **PEMA 80000 HTLMS windmill tower section assembly and welding line**
 - 80-tonne hydraulic head and tailstock for the assembly of the tower sections
 - 80 RJ hydraulic assembly jig for evening out the section edges
 - 80 TNE roller bed for handling the towers during assembly
- PEMA 70 TAW roller beds**
 - 3 x 70 TAW roller beds for welding
 - 1 x 70 TAW Fit-up roller bed for tower tack-welding and butt welding

GAMESA S.A.: roller beds

- Order made: December 2005
- Delivery: first roller beds three weeks from order, last ones in spring 2006
- Thickness of material 12-35 mm
- Contents of delivery: **12 pairs of 70 TAW roller beds with rail bogies for the assembly and welding of towers**
5 pairs of explosion-protected 70 TAW-Ex roller beds for painting

tions. The integration of the movements of roller beds and the column & boom used in welding is of key importance from the point of view of production efficiency. So the column & boom controls can be used to control the operation and rotational speed of the roller beds.

Several pairs of TAW roller beds were recently delivered to the assembly and paint shops of the new windmill factory established in Pennsylvania, USA, by the Spanish company Gamesa S.A.

Increased productivity by shortening assembly times

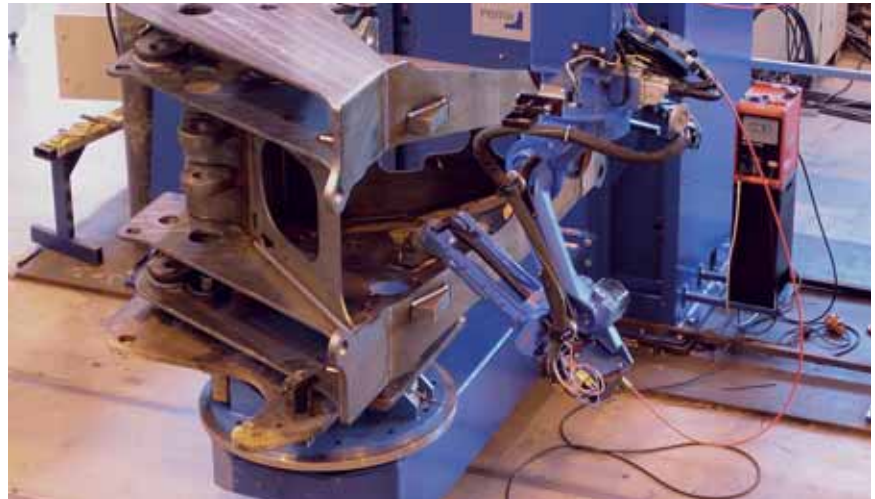
Tower assembly often causes problems, because the tower sections waiting to be assembled on their sides become slightly compressed under their own weight.

Their cross-sections cannot then remain circular and tend to become slightly oval in shape. The shapes of the pieces to be connected must then be corrected to be the same before they can be welded to each other. This troublesome process of correction is traditionally done by wedging. Now there is an assembly line specifically for this purpose: a head and tailstock system where the sections to be connected are lifted next to each other, the edges of their plates are compressed together using a hydraulic assembly jig, they are tack-welded and finally butt welded together both internally and externally using a column & boom above roller beds.

Using the PEMA HTMLS assembly line developed by Pemamek, the assembly and tack-welding of one part of a tower section can be shortened from the 1½-2 hours needed for traditional roller beds to do the job to just 20 minutes. The acquisition of such a line is a profitable investment for companies with annual production quantities of as little as roughly one hundred towers. Such a line was recently delivered to Aerisyn LLC, an American company operating out of Chattanooga in Tennessee.



Tower sections attached to a PEMA head and tailstock system.



A work piece attached to a welding robot station.

FOCUS ON HEAVY ROBOTICS AND AUTOMATION

For several years now, Pemamek has been investing in the development of heavy welding robotics and automation. Ever closer cooperation with the world's largest robot manufacturer will in future offer more possibilities to increase the efficiency of our customers' production.

The production of Pemamek concentrates on smart products that improve the competitiveness of our customers and it will continue to do so in the future. Work to develop the mechanisation and automation of our customers' production is a continuous process. In product development, we are investing strongly in such things as a hybrid laser welding, which combines MIG welding with laser beam technology. Investments in robotics are also continuing. Robotics solutions that are more productive, easier to programme and more reliable are being developed and constantly added to our product range.

Pemamek a System Partner for Motoman



Motoman is the world's largest manufacturer of robots, producing about 24,000 units per year. The company is part of the

Japanese YASKAWA Electric Corporation. The headquarters of European operations, Motoman Robotics Europe Ab, is located in Kalmar in Sweden, where robot systems for delivery to the European market are manufactured. The company has subsidiaries in almost every European country, and employs more than 600 professionals in the field of robotics. MOTOMAN robots are known for their reliability and durability. The standard product range has 3-600 kg robots for welding and work-piece handling functions.

Pemamek has concluded a System Partner agreement with Motoman Robotics Europe, which defines the partners' roles in delivering welding robot applications in Europe. In future, Pemamek will design and manufacture welding robot applications, with which, as things stand, Motoman's standard products are not compatible.



A Motoman standard welding robot in operation.



17.1 x 10.5 m panel line belonging to Baltia Shipbuilding Yard.

MODERNISATION OF PRODUCTION IMPROVES OCCUPATIONAL WELL-BEING AT SHIPYARDS

A skilled work force can move easily from the liberated economies of Eastern Europe to the better paid and developed labour markets of Central and Western Europe. There is already a lack of trained welders at many shipyards. Investments in capacity-increasing, modern production lines clearly also improve occupational wellbeing. The following are three examples of what has been done in this respect.

Using automation and mechanisation to improve shipyard productivity requires long-term co-operation between the supplier and the customer. Making production more efficient, improving the quality of the end product and making the most effective possible use of the work force, are becoming significant areas of business development, not only in Western but also in Eastern Europe. Production lines are often built in the middle of a non-stop production process. Shutdowns disturbing production must be minimised. For this reason Pemamek tests, and the customer approves, all line equipment before they are delivered. The customer's responsibility is to prepare the production area before installation.

A panel production line for Croatia

Croatia has six state-owned shipyards, of which the 3rd May located at Rijeka is one of the biggest. This site employs about 2,000 people to build 5-6 vessels

annually - mainly LNG and chemical tankers - for European customers. So far the majority of work done in the yard has been by traditional methods, that is to say, manually. Automation and mechanisation have only been used rarely.

Croatia has long traditions in shipbuilding. The shipyard workers know their trade and are proud of it. Rijeka is situated about 60 km from the Italian border. The skilled work force is therefore easily employed at such sites as the Fincantieri Shipyard in Trieste, where the working environment is more up-to-date and the wage levels higher.

By 2004, the Croatian yard was driven into a situation in which insufficient manpower was available to meet the growing demand for shipbuilding. Production capacity needed to increase by about one-fifth. What's more, work done by hand wasn't any longer sufficient to satisfy the quality requirements of western countries.

Manufacturing of subassemblies is one of the yard's core functions, so the company invited suppliers to tender for a panel production line. The aim was to improve the quality of subassemblies, increase production capacity remarkably, keep production control and production flows simple and efficient, make use of the professional skill of welders in the essential work-stages and transfer routine tasks for robots to take care of.

Pemamek won the tender and delivered to the yard a panel production line based on the machine Vision robot system for micro panels of maximum size 4 x 12.5 metres. On the line, the tack-welding of profiles into a panel takes place manually, but the final welding is done using a robot portal. The installation of the line into the existing production area was quick and easy, and its successful start-up was trouble-free and on time.

During the first year, the system did not suffer a single unscheduled shutdown. Rare breaks in operation have been caused by operational errors such as collisions and the mechanical damage they cause. Since its introduction, the robot has welded record amounts and achieved an arc time ratio of as much as 80%.

This deal was a significant introduction to the Croatian market: other Croatia yards are also wrestling with similar problems.

BSY, Lithuania

Baltia Shipbuilding Yard (BSY) situated in Klaipeda, Lithuania, is no conventional shipbuilder. It produces sections for giant container ships, which are then towed to the Möller Group's parent yard in Denmark for final assembly. The operating environment is relentless, even though the yard does not actually complete vessels itself: for a subcontractor, quality defects and late deliveries might prove fatal.

A new PEMA panel production line was installed in BSY's existing panel production hall. This line consists of a BWS butt-joint welding station with a magnetic plate clamping, an SMP-profile assembly and tack-welding station and an SWP-profile welding station. All the equipment is hi-tech: as for welding, the BWS- and SWP-stations use the tried-and-tested double-wired submerged arc welding method. The profile cassettes are

3. MAY: panel production line 4 x 12.5 m

- Order made: January 2005
- Delivery: August 2005
- Thickness of material 6-30 mm
- Contents of delivery: **1 x VRWP-4000/1 movable robot welding portal**
 - robot carriage with Motoman UP-6 robot
 - Motoman XRC control
 - ESAB AristoMig 500A power source
 - 2 x Motoman wire-feed devices
 - Vision system based programming
 - digital camera
 - WeldControl macro software
- In addition:
 - basic planning and implementation for the existing production area
 - turn-key delivery of the line
 - training
 - start-up

transferred to the SMP station from the next-door production hall by means of a conveyor. An intranet connection between PEMA PLC and the shipyard was set up to gather production information.

Because of tight subcontractor schedules, there was no time to waste in installing the production line. BSY's panel line installation caused only very short breaks in production, because the work was carefully planned together with the shipyard.

Because of the new line, the targets set by the yard's production management have been reached.

Panel lines for thin plates

Extreme sheet thicknesses are the speciality of the Naval Shipyard, based in Gdansk, Poland. The end products of this

yard are fast warships, whose manufacture entails the use of sheet steel as thin as 3 mm.

Thin materials always create special challenges for a supplier of automation solutions. Thin sheet steel is easily susceptible to deformations. For that reason, the structures of material conveyors, for example, must be especially designed for thin material that is sensitive to bending.

The 10 m x 100 m panel production line delivered by Pemamek to Gdansk has great prospects in the field of the handling of thin materials. All the solutions employed by the line have been made taking into account the special requirements of the customer's product. The equipment comprises one-side welding station, a profile assembly station and a profile welding station. A chain



Work area of Vision welding robot at the 4 x 12.5 m panel line at the 3rd May Shipyard.

conveyor integrated into the welding floor moves the material onwards.

The Naval Shipyard was Pemamek's first customer amongst Polish shipyards. Poland has long traditions in shipbuilding and the country's yards are currently being resurrected after some difficult times. In the future, the yards machinery range will be completely renewed. Pemamek fully intends to be involved in this process of development.



Assembly of stiffener profiles at the Naval Yard's thin plate line in Poland.

NAVAL: panel production line 10 x 100 m

- Order made: April 2004
- Delivery: March 2005
- Thickness of material 3-12 mm
- Panel size 10 x 10 m
- Contents of delivery:
 - PEMA OSW-V 10000/2 one-side welding station for butt joints**
 - vacuum clamping of plates
 - ESAB DC/AC submerged arc equipment
 - PEMA SMP-10000/2 profile assembly station**
 - automatic tack-welding function and fixed magnetic assembly boom
 - PEMA STS -profile feed equipment**
 - fixed cassette rack
 - profile cassette
 - automatic cassette infeed trolley
 - PEMA SWP-10000/2 MIG profile welding portal**
 - twin-head 500 A single-wired MIG welding equipment
 - PEMA floor equipment for transporting panels and plates**
 - tailored chain conveyor system for welding thin (3mm) plates
 - ascending and descending chains + covered welding floor system
- In addition:
 - installation supervision
 - training
 - start-up
 - production support



Stiffener profiles are assembled semi-automatically on Baltija Shipbuilding Yards panel production line in Lithuania.

BALTIJA SHIPBUILDING YARD, JSC: panel production line 17.1 x 10.5 m

- Order made: April 2005
- Delivery: January 2006
- Thickness of material 6-45 mm
- Contents of delivery:
 - PEMA BWP-17100/2 two-side welding station for butt joints**
 - magnetic clamping for plates
 - ESAB DC/AC submerged arc equipment
 - PEMA SMP-17100/2 profile assembly station**
 - automatic tack-welding function and fixed magnetic assembly boom
 - PEMA STS -profile feed equipment**
 - movable cassette trolley
 - profile cassette
 - cassette's positioning automation
 - PEMA SWP-17100/2 SAW profile welding portal**
 - twin-head double-wired submerged arc welding equipment
- In addition:
 - production data collection system at all stations
 - installation supervision
 - training
 - start-up
 - production support



Membrane wall-panel being manufactured on Rafako's new welding line.

POLISH BOILER-MAKER PRODUCES MILE AFTER MILE OF HIGH-QUALITY WELDS

Rafako S.A., a company from Racibórz in south-west Poland near the Czech border, is the country's largest manufacturer of power-plant boilers. The company also makes other steel structures such as air-conditioning and smoke exhaust ducts. A significant part of the company's production goes for export: Rafako boilers have been delivered to such countries as China, Turkey, India, Germany and Switzerland.

The quality standards for power-plant boilers – as indeed for pressure vessels in general – are extremely stringent. The quality of the welding contributes significantly to the overall quality of the boilers. For more than ten years now, Rafako has invested in the systematic development of its quality systems, and today its production meets the requirements of the PN-EN 9001:200 and PN-ISO 14001 quality and environmental systems.

Using automation to increase productivity and improve quality

In 2005, Rafako decided to invest in two welding lines for membrane wall panels. The old lines were already more than 30 years old, so their productivity was no longer at the level required today.

Clear improvement in productivity and welding quality was set as a target of the investment. The manufacture of membrane wall-panels gives rise to many miles of welding seams and the work involves a great deal of material handling.

An extremely productive combina-

tion of two parallel panel production lines was chosen as the solution. Both lines have been equipped with automatic panel conveyors. Both of the line's automatic welding units have six submerged arc welding heads and the line also has an automatic fin-bar and tube feeding line and equipment to calibrate the width of fin bars, which also bevels the edges of the bar.

The new lines were installed and commissioned in late summer 2006. This solution has clearly reached the targets that it was set.

RAFAKO S.A.: membrane wall-panel welding lines

- Order made: November 2005
- Delivery: July 2006
- Contents of delivery: **2 x PEMA 2000/6 membrane wall-panel welding lines**
 - fin-bar width calibration and bevelling equipment
 - SAW welding equipment 6 pcs/line
 - automatic fin bar and tube handling
- In addition:
 - training
 - start-up

EFFICIENT CUSTOMER SUPPORT AS A GUARANTEE OF PRODUCTIVITY

Pemamek's new after-sales concept was introduced late in 2005. The goal of this renewed concept is to better respond to the needs of customers and to the challenges of our own business as it continually grows. Now these goals are being realised.

Early in 2006, Pemamek formed a customer support group, which began a customer service operation with aims based on the new after-sales concept. Rather than forming a separate after-sales team apart from the other company organisation, customer support functions were looked after in a matrix organisation headed by mr. Timo Kopra, who is in charge of after-sales. In that way, information about customer needs travels as directly as possible to the correct area of responsibility within the company, and the customers receive the services they need quickly and flexibly.

The efficiency of this new system has already been noticed in the field. The improvement of the service has attracted attention and customer feedback has been positive.



With the help of preventive maintenance, machines work.

Service agreement saves both equipment and money

Compared to maintenance that merely reacts to breakdowns, methodical, preventive servicing is a considerably more efficient way to take care of machinery. With preventive maintenance, most production stoppages caused by broken or malfunctioning equipment can be avoided, and therefore also needless post-incident enquiries. With the PEMA preventive maintenance and service agreement, machines work continuously and quickly pay back the resources invested in them.

A new service agreement model was developed in 2005, and it has now been

refined into a well-working product. This agreement helps customers better to control the risks involved in their production systems: contract customers know in advance the scale of their servicing costs and can budget for them accordingly. The service agreement, which has been carefully productised, has left room for a fair amount of tailoring, so that, with time, it can be edited to suit the changing needs of the customer. It is therefore a suitable servicing system for everything, be it older standard or special items of equipment or complete production lines.

Development work continues

The first phase of the customer support development project was completed in spring 2006. At that time, routines were developed and introduced for spare part deliveries and service operations, making them run efficiently right up to the present day.

The next phase will emphasise the development of support for the wider field of automation and mechanisation systems. Support for start-up activities will also be strengthened.

With the help of a remote diagnostic solution that is under development, it will be possible to support customer production even more effectively. According to this solution, the customer support department at Pemamek will have a network connection to the customer's production line – if the customer's data system allows it – and it will be able to monitor the operation of the system and parameters linked to productivity, such as the arc time ratio and number of metres welded. Based on this, it will be possible optimally to organise equipment maintenance and to react quickly to such events as breakdowns.

For further information on preventive maintenance and service agreements and other after-sales services, please contact Timo Kopra, timo.kopra@pemamek.com or +358 (0)2 7607 7238.



PEMA's customer support serves every corner of the world.

APPOINTMENTS NEWS

During the past year, Pemamek has strengthened its strategy by new recruitments. The company has appointed mr. **Jukka Rantala** M.Sc. (Ind. Econ.) as director in charge of international marketing. In addition to his marketing tasks, he will also work in solution sales, with responsibility for his own sales area. Jukka has more than ten year's experience in the sales and marketing of industrial investment commodities.

