

IMAL
PAL
GROUP

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IMAL-PAL GROUP

Suppliers of complete solutions

IMAL, PAL and GLOBUS, three well familiar names in the wood-based panel industry for over 45 years, joined forces to form a Group that is renowned worldwide for its long experience in wood particle preparation, gluing and resination, on-line quality controls, process controls, board handling and in particular for its continual innovation. The Group has spent the last few years developing and investing in forming and continuous press technology to complete its range of products and to become a reliable and competitive partner for the supply of complete lines for the production of PB, MDF, OSB, insulation board, pellets and pallet blocks.

The systems and equipment of the IMAL-PAL Group may be found in virtually every PB, MDF and OSB production plant around the world.

The systems and equipment manufactured by the IMAL-PAL Group are renowned worldwide for their high quality construction and design, advanced software and process control and continual innovations to improve product quality and cut production costs.

Over the last ten years however, in their constant endeavour to evolve and progress, the Group has adapted and applied their long experience, know-how and innovative solutions to move into new markets in the wood industry such as biomass energy plants, drying systems and power generation, as well as the treatment of industrial and municipal waste to maximize material recovery for the production of energy and minimize the waste to landfill sites.





OUR MISSION



Always seeking new solutions

Each new project evolves from the close collaboration between the IMAL-PAL team of experts and the customer's experts to ensure both versatility and a successful outcome. Service and post sales assistance is the Group's strong point which, thanks to its trim organization and great flexibility can assist customers rapidly any time.

Long experience in wood particles preparation, continuous innovation, a wide range of machinery and the capability to prove facts in the laboratory, enable the Group to propose the most suitable solution for minimizing production costs and to achieve maximum performance at the same time.

For over 45 years, the Group has manufactured a wide range of equipment for panel production, starting from the log yard through to the forming-pressing area and finishing line.

A fully customer-oriented Group knows exactly what customers need and always makes every effort to meet its requests.



RESEARCH & DEVELOPMENT

Innovation is our strength



One of the keys to the Group's success is the major investments made in R&D. This department, in the specially dedicated R&D facility and run by a team of highly-qualified engineers with great inventive capacity, is constantly at work to design innovations for both existing and future projects, aimed at improving performance, reducing running costs, reducing maintenance with the application of special materials, optimising plant layout with a view to obtaining maximum yield at minimum cost and optimising production processes.

The engineers of the Group's R&D division also collaborate in close conjunction with several Italian University Research laboratories, and the encouragement of this kind of collaboration, along with their annual investment policy, enable the Group to retain its reputation as an avant-garde manufacturer in this industrial sector.

LABORATORY

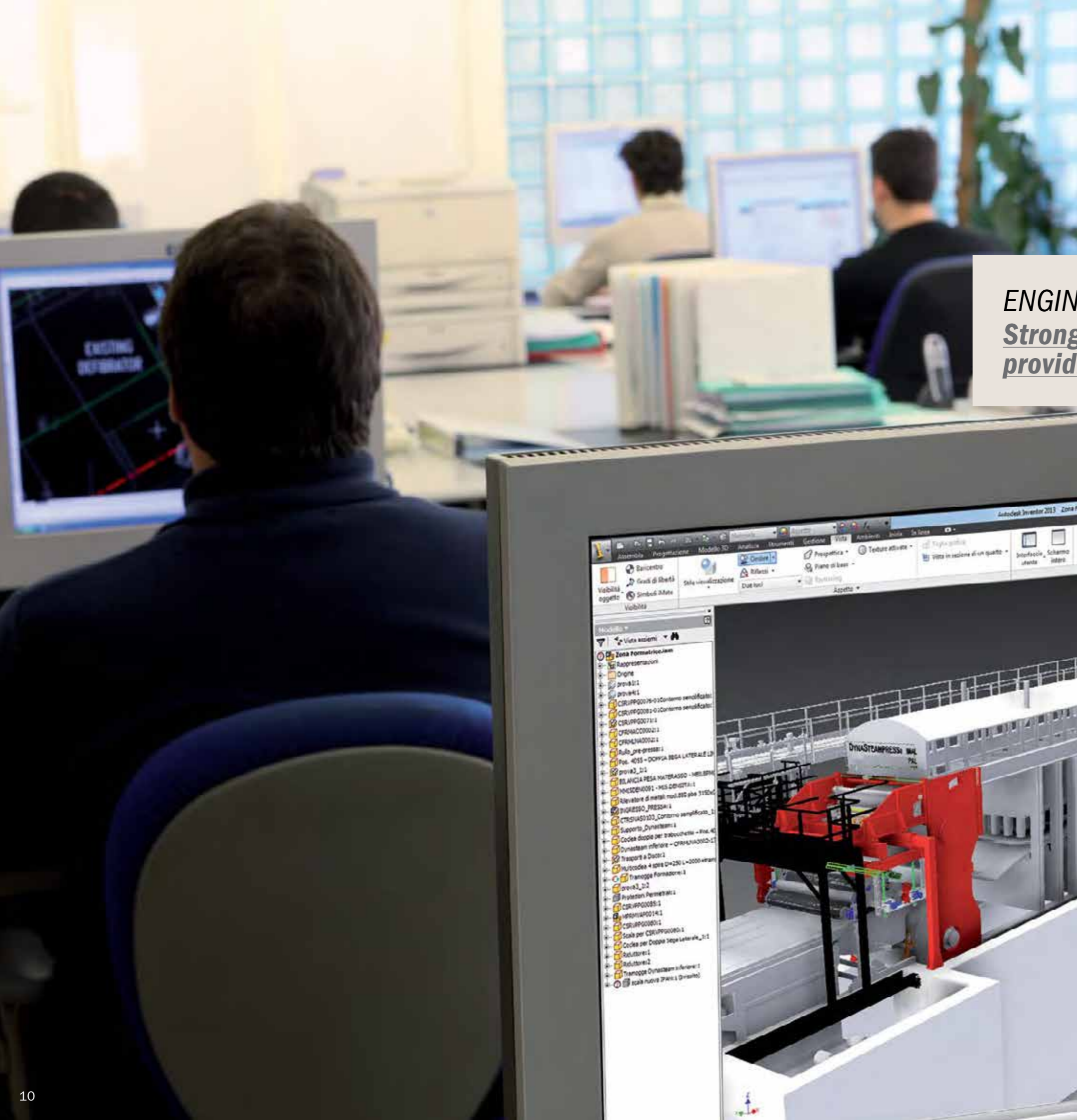
When facts are proved through testing, customers are confident of the result



Testing is carried out in the new, fully equipped laboratory with over 50 testing units. Here, a highly qualified team performs tests on numerous tons of raw materials sent every year by customers from all over the world.

Test results are computer analyzed, recorded and used to design innovations, optimize our industrial equipment and to recommend tailor-made solutions for special applications to our customers.





ENGINEERING

***Strong support to the customers
providing full plant engineering***

Good machines badly incorporated into a plant rapidly become bad machines and we are well aware of this. This is why we've always been committed to developing high quality engineering. The proven expertise of our team, together with the vast experience matured over the years, and hi-tech support tools used by the technical personnel enable us to provide full engineering for new plants or upgrades of existing installations.



SERVICE, REMOTE ON-LINE ASSISTANCE & TRAINING COURSES

Experience and professional support is our priority

Fully customer-oriented service comes first and foremost for a team like ours. This is why our 24/7 service staff never takes a break and is constantly motivated to minimize reaction time.

SERVICE IS EXTENSIVE AND DIVERSIFIED AND INCLUDES:

- *logistics for reliable packaging and shipping*
- *erection, startup and fine tuning*
- *before and after sales assistance*
- *spare parts*
- *on line and on site assistance*

Our subsidiary offices located around the world guarantee closer contact and faster customer service. The Group is equipped with an extremely modern remote service technology to provide an immediate response and on-line assistance which has already been successfully installed by numerous customers.

SEMINARS AND TRAINING

Sharing our knowledge with our customers is essential. Our engineers and technicians regularly attend courses so that they in turn can fine tune their customer training ability.

Furthermore, courses and seminars are set up to enrich your staff's knowledge of our equipment, to ensure that full use is made of our systems and that the very best performance is achieved.



**YOUR PARTNERS FOR
THE PRODUCTION OF TOP QUALITY
WOOD-BASED PRODUCTS**

**Innovations to provide the wood
industry with the best plant
& process technology
for quality panels
at the lowest production cost**

Panel quality starts from the preparation area. This is why the Group has invested heavily in this area to design integrated high-tech wood preparation solutions that have become references in panel processing plants worldwide.

With an extensive production range from log yard to forming line, we are always able to furnish the most suitable solution on the basis of the raw material available and the final product expected.

The Group is well known all around the world for chipping, crushing and refining, chip cleaning, silo extractors, roller and oscillating screens, sifting, metering, gluing and glue dosing with over 15000 machines in operation worldwide.



PB



MDF



OSB/LSB



INSULATION BOARD



PELLETS



PALLET BLOCKS



PRESSED PALLETS



LIME



BIOMASS ENERGY



WASTE TREATMENT

**COMPLETE CHIPPING
& FLAKING LINE**
Solutions for size reduction



Wood preparation is a key step in the production of wood-based panels to achieve top quality boards with the best mechanical properties. We have designed the most modern and versatile solutions for wood chipping and refining requirements utilizing various sized raw materials such as logs, shavings, urban waste and so on. Drum chippers of varying capacity may be supplied, from 5 to 150 t/h bd, complete with various feeding solutions equipment such as chain conveyor, vibrating channel and table, plate conveyors and belt conveyors, complete with high performance debarking system.

A full range of geometrical size reducing equipment completes the scope of supply of the wood preparation area. Knife ring mills produce top quality flakes thanks to the GLOBUS patented wobble spreader disc, a unique system for a perfect distribution of the chips inside the machine. It is possible to increase mill capacity with this special patent and consequently decrease electrical power requirements per ton and above all, prolong knife duration hence minimizing routine maintenance and further cut production costs. Other equipment completing the range of products includes hammer mills for both dry and wet wood materials and centrifugal mills for dry flakes suitable for surface and core layers in particleboard production.



SCREENING
*Leading supplier of screens
for the wood industry*

At PAL, we specialize in mechanical screening and offer oscillating, vibrating, rotating and roll screening technology. Each screening type is adjustable according to the process material in order to ensure a perfect selection of each fraction in line with customer targets.



STORAGE AND EXTRACTION SOLUTIONS

Many processes need to store loose material. We design and provide storage and extraction technologies best suited to the type of process material and plant. We offer solutions of circular and/or rectangular silos equipped with screw or moving floor also suitable for use in ATEX environments.



WOOD RECYCLING

Produce high quality panels from recycled wood

Up until the mid 1980s, panel manufacturers had an abundance of wood at their disposal for their process requirements. At present, in North and Central Europe, North America, Brazil and elsewhere, despite reforestation policies and an increase in the number of trees, the cost for obtaining these resources in addition to related environmental issues, have forced many companies to seek alternative options. And the only real and proven option is urban waste wood. In fact, most urban forests are attractively priced and in some areas can be collected free of charge.

As a result of the great expertise acquired in chip cleaning, PAL became the first company in 1982 to produce integrated recycling systems for urban wood waste. With over 270 plants that recycle any variety of urban forest worldwide, the Group is widely acknowledged as the world leader in this field. With the application of this special technology, it is not only possible to recycle wood for wood-based panels but for other products in the industry as well such as pallet blocks.



DRYING & THERMAL ENERGY PLANTS
Maximum drying performance
utilizing less energy and
impacting less on the environment



Top performance from a thermal power plant is achieved by recovering as much heat as possible from the furnace exhaust gases. This philosophy is well supported by the necessity to dry the wood in the production of MDF, PB, OSB, pellets and pallet blocks.

The Group offers the latest drying techniques and a wide range of products for processing particleboard, MDF, OSB, pellets and pallet blocks, along with the most sophisticated technology for the production of thermal energy.



GLUING AND RESINATION SYSTEMS
Good dosing precision saves resin and money

The Group is undoubtedly the world's leading supplier of gluing and blending systems for the production of particleboard, MDF and OSB panels. In addition to its high grade common rail blow line dosing system, the Group also supplies an innovative patented post dryer fibre resination system for the MDF industry which has been successfully installed and put into operation in several MDF plants so far. The system is able to guarantee resin savings of up to 20%.

For the OSB industry on the other hand, an innovative resination system has been designed and patented to achieve better resin distribution, reduce resin addition rates, and to solve cleaning issues and other related inconveniences with the large drum blenders. An innovative and patented gluing system has been designed for the particleboard industry too, which again guarantees resin savings of as much as 20%.



FORMING & PRESSING

Forming is a key step to top quality panels



Forming is a key step in panel production to achieve a top quality product and good mechanical properties.

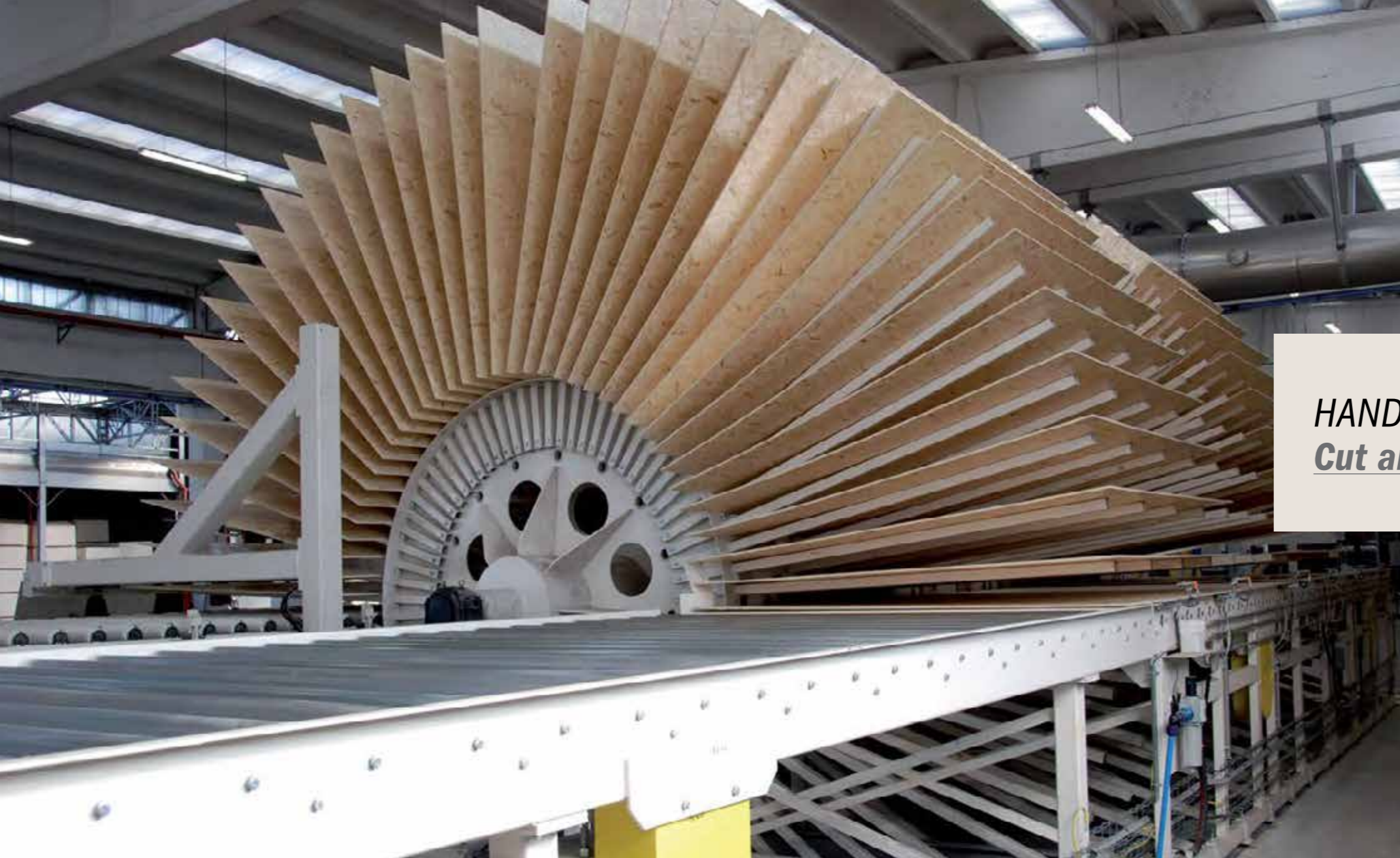
The latest IMAL-PAL Group forming stations cover all the wood-panel industry needs, from PB, to MDF, to OSB. The range includes mechanical, wind and roll formers, and all the solutions are designed to achieve the best result in mat distribution, production speed and management costs.

In addition to the standard machines ad-hoc forming solutions can also be engineered to process special materials.

Complete all round solutions for PB, OSB, and MDF plants

The Group offers and supplies innovative pressing technology for the production of PB, MDF and OSB as well as pallet blocks. Various types of presses are supplied: single-opening, multi-opening, continuous calendar presses, extrusion presses and its own, recently designed and highly technological steel belt continuous DYNASTEAMPRESS, for the production of PB, MDF and OSB panels.

The DYNASTEAM increases production capacity and accelerates press cure times.



HANDLING & CUT TO SIZE
Cut and store in any space

In conjunction with experts and well-known companies in the field as well, we offer and supply our customers with the most modern and versatile handling systems, automatic storage systems and cut to size equipment. The Group also manufactures trimming and diagonal saws for PB, MDF and OSB boards and packaging systems for boards, pallet blocks and pellets.





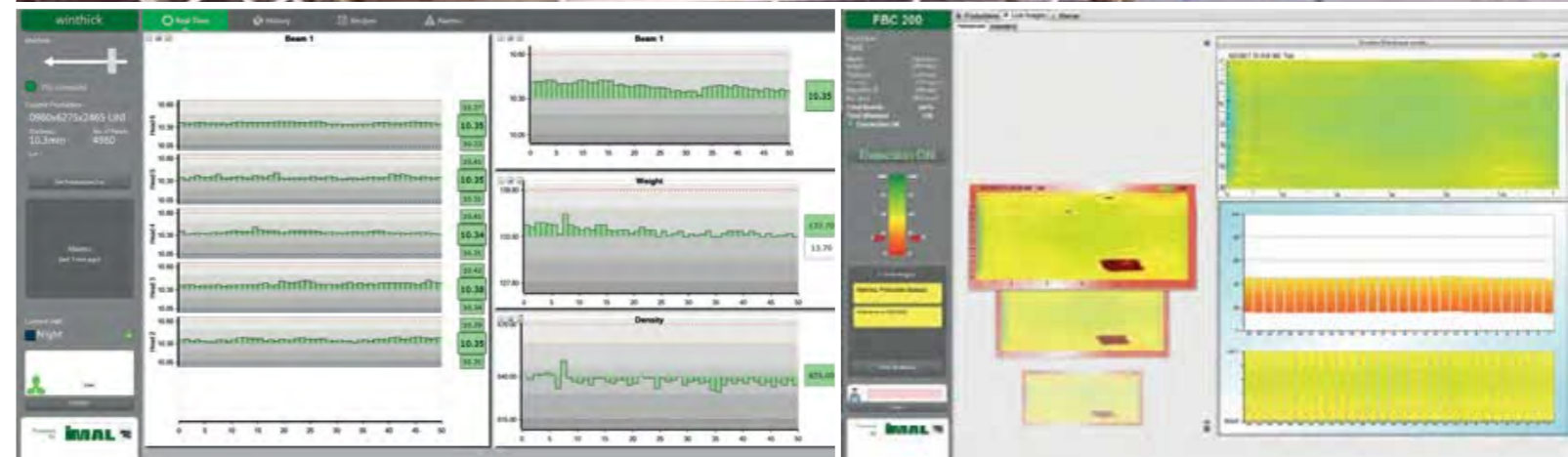
**ON-LINE QUALITY CONTROL
LABORATORY QUALITY CONTROL
FIRE EXTINGUISHING SYSTEMS**

**Board quality controlled
second by second
around the world**

Our unquestioned leadership in the manufacture of on-line quality control equipment and laboratory testing machines is the key to the development of new and innovative technologies in the field of on-line and laboratory quality control for the production of wood-based panels in general.

The full range of on line and laboratory equipment includes thickness gauges and blister detectors, impurity detection systems, surface density analysers, 5 different kinds of moisture meter systems, optical technology for detecting the particle size of chips and fibre, density profilers and mat spraying units.

The laboratory quality control systems are able to conduct all kinds of mechanical, chemical and quality tests to all international standards, to ensure that maximum performance is achieved from the boards produced. Plant safety is also a priority for the IMAL-PAL Group. A modular system has been designed to detect and extinguish sparks or other hot particles which can generate inside conveying systems.





PROCESS CONTROL

High-tech monitoring of production and quality

With over 45 years experience in electric process control, the Group enjoys an excellent reputation all over the world as a leader in this particular field. The engineering and execution of:

- *switching systems*
- *control systems*
- *SCADA software*
- *PLC software*

is carried out entirely by IMAL in its own electrical and electronic departments to ensure full flexibility and top quality execution to guarantee rapid start-up times and high professional standards.



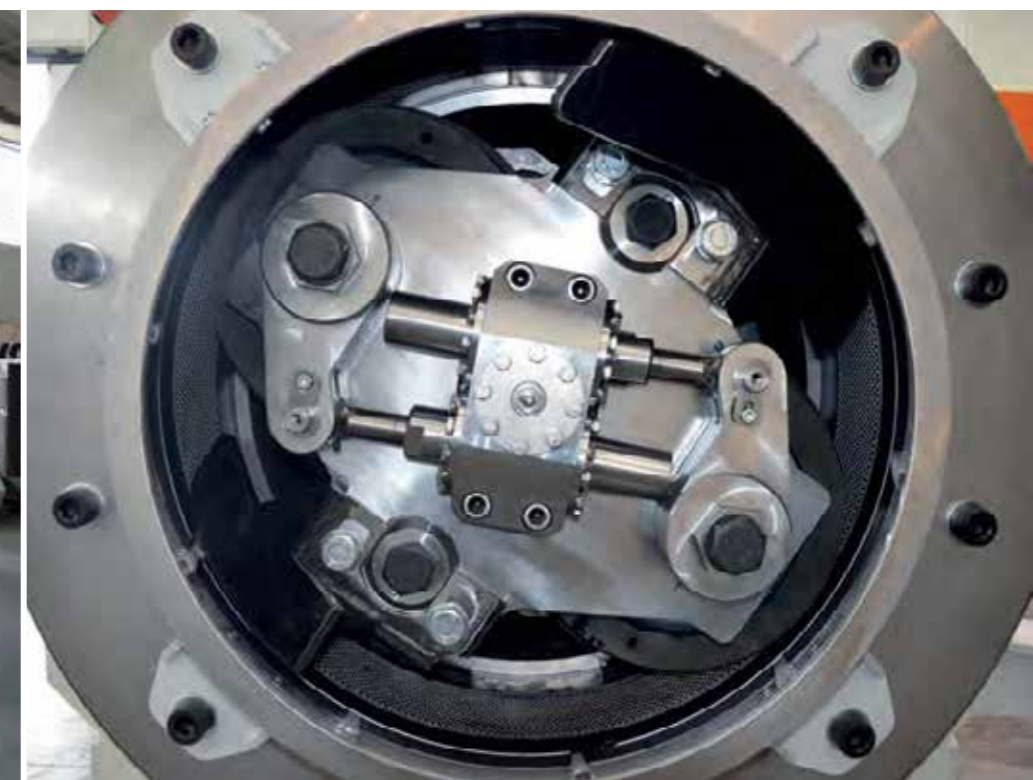
PELLETS

New wood based products made from all kinds of wood

The pellet industry has experienced a rapid growth over the last couple of years both for industrial and domestic use and is now facing several problems, from the availability of raw material which is no longer dry sawdust and shavings to new and increasingly stringent regulations to control the quality of the pellets.

With its experience and technology in the wood-based panel industry, the Group has entered the market supplying complete pellet plants and key preparation equipment for refining, screening and sifting to supply good particles with low mineral content to the pellet press.

The innovative processes proposed, in addition to the reliability and efficiency of the equipment, have been met with a lot of appreciation.



PALLET BLOCKS & PRESSED PALLETS
*New wood based products
 made from all kinds of wood*



We supply complete lines for the production of particleboard pallet blocks and pressed pallets. These lines may be installed separately or parallel to existing particleboard lines as most of the equipment in the wood preparation area is the same as that utilized for the production of standard particleboard.

These new generation blocks and pallets, when compared to traditional solid wood ones, have excellent physical and mechanical properties: constant density, waterproof, thickness and dimensions remain the same, they do not split when nailed, but above all these blocks may be made from wood trimmings and recycled wood as well.

The many designs that have been patented over the years distinguish the Group from others in the field, making us the ideal partners for exploiting this rapidly expanding market.

INSULATION BOARD

Technology which looks to the future

Another newly launched and innovative product of the Group's range is the Insulation board production line, a new insulating product destined to replace rock wool and polystyrene for thermal and acoustic insulation purposes in domestic and industrial applications as well as in the production of furniture and doors. These modern production lines are supplied starting from the equipment in the wood preparation area, through to the refiner, dryer, the essential glue dosing and blending process, the forming station, press and packaging process until the end product is ready for shipping.



ENERGY FROM BIOMASS

Energy from renewables

Based on its solid and long experience in the supply of equipment for the production of wood based panels and products in general, the IMAL-PAL Group has designed technology that is able to produce electrical and thermal power from all kinds of waste material, from plain wood through to straw, agricultural waste, recycled wood, urban waste and so on. With this innovative technology, it is possible to produce energy in an efficient manner and, at the same time, to maintain a constant and guaranteed production continuity.

With its long experience in wood handling and preparation, the Group has also begun over the last decade to supply equipment to the biomass energy industry:

- *wood chips handling and energy plants*
- *waste wood cleaning, handling and energy plants*
- *wood refining and screening for co-firing systems*
- *seasonal biomass handling and energy plants*
- *electrical energy generated from biomass, by means of an ORC turbine*



**INDUSTRIAL AND MUNICIPAL
WASTE TREATMENT**
Waste is a resource, not a problem

After realizing how important waste is as a resource of materials and energy, waste-to-energy has become the Group's core business and an area where we are now concentrating most of our investments in research and human resources. We design, fabricate and handle plants for waste treatment and recovery by providing specific answers to the most problematic fractions, those from non-specialized sectors, from sorted waste and on an "as is" basis.





*WE ARE ABLE TO IMPROVE
PRODUCT QUALITY AT LOWER COSTS*



IMAL, PAL and GLOBUS place a lot of emphasis on research into new products and technology for application in the wood based panels industry. The Group's policy in fact to invest annually in research and development, a division where several full-time engineers collaborate in close conjunction with many Italian University Research laboratories, enables the company to retain its reputation as an avant-garde manufacturer in this particular industrial sector.

IMAL PAL GROUP



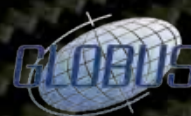
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