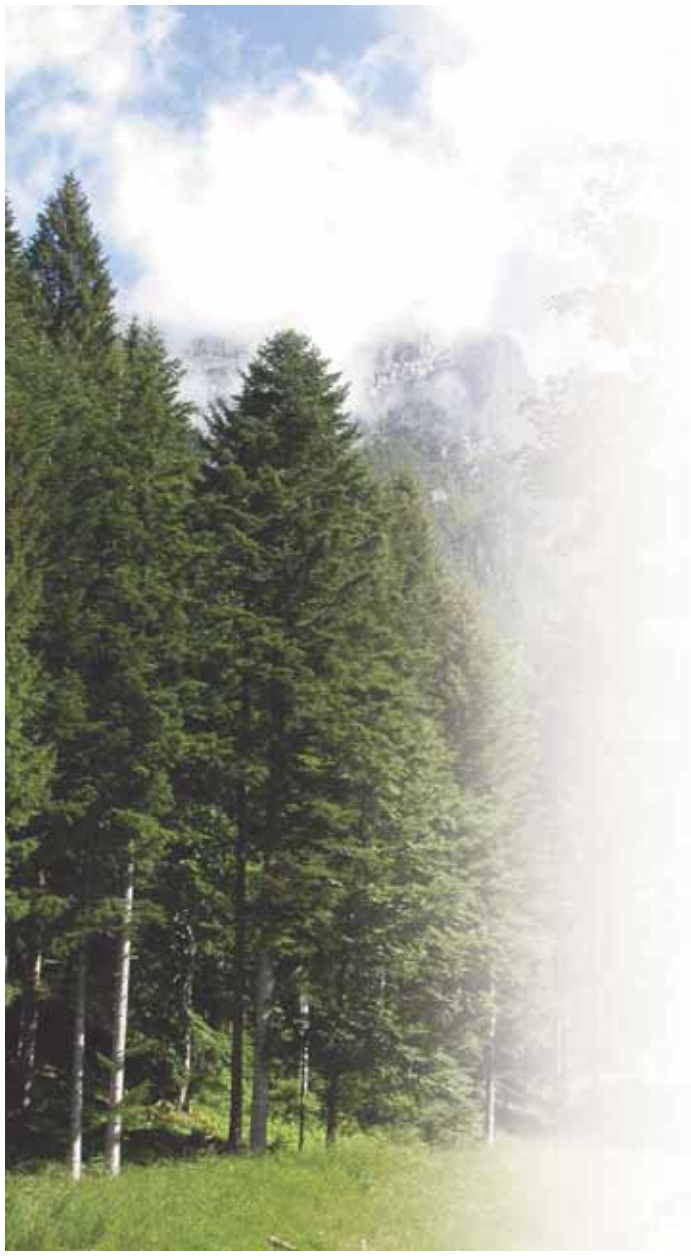
THE EC PROGRAM "LIFE", AN OPPORTUNITY FOR BUSINESSES

The definition of new processes is supported by a partnership between companies and the European Union, with financial resources for the development of real innovation. The experience of projects "Hprs" by Imal and "Plastic Killer" by Pal.



The European Community provides companies based in its territory with **funds to support research and development, innovation and introduction of innovative products to the market**.
These funds are contributed by all member countries. As we know, Italy is not among the best users of such funds, with the result that we actually give financial resources to foreign competitors.

Some virtuous companies are trying to change things, also in our industry, leveraging the opportunities offered by Europe. One of these is the **Imal-Pal** group, an Italian leader in the construction of complete wood-based panel plants, and a member of Acimall. These two companies are mid-sized, well-organized and growing, against the current trend of crisis and stagnation.

In this article we present two projects supported by the **"Life" program**, a funding instrument for technological innovation with an eye to environment and sustainability, aiming at reducing environmental impact through an optimized use of resources. Acimall is involved as partner in these projects for information and promotion.

HIGH PRESSURE RESINATION SYSTEM

Imal's project "**Hprs-High Pressure Resination System**" (*www.hprsproject.eu*) is designed to minimize the quantity of resin (glue) in wood-based panels.
The starting point is conventional manufacturing processes, where wood chips or fibers are conveyed at high speed through drums where the glue mixture is injected through nozzles at fixed pres-

A rendering of the "Hprs" injector.

sure and spread without any accurate control of the proportions between resin and wood.
This results into panels with a resin content equal to 30 percent of their weight (Mdf).

The most popular resins, in view of the structural properties they lend to the panel, are based on urea and formaldehyde, whereby the latter is partially released into the environment and is harmful to health.

The "**Hprs**" solutions adopts special nozzles (injectors) provided with a variable diameter orifice to adjust and control resin pressure while preserving its high speed, in order to achieve a quick and even distribution of glue onto the chip or strand layer. "Hprs" also introduces a surface-related instead of weight-related process, i.e. the quantity of resin is proportional to the surface to be glued rather than to the weight of wood particles, which is more sensible and logical.
This approach helps reduce excessive resin consumption and consequently achieve an optimal mixing process.
Simply stated, if resin is dosed and spread more efficiently, you can reduce the exceeding quantity, which was necessary in the conventional process to compensate for inaccurate distribution monitoring.

Significant results are expected: "Hprs" cuts resin consumption by 10 to 20 percent, according to the panel type and the previous process.
As glue represents approximately 80 percent of panel costs, the benefit is significant. In addition, you save 15 percent energy in the mixing process, plus another 5 percent in Mdf drying.

If you should apply "Hprs" to the entire production of wood-based panels in Italy and worldwide, you would get a massive reduction of carbon footprint. So, the benefits are not only for business, but also for environment and health.
After twelve months of design and inspections in different factories for the definition of operating parameters, Imal has built a prototype line in collaboration with their Spanish partner **Colomer**, installing it at the end of August at another patner, Xilopan in Cicognola (Pavia).

Installation and startup were fully successful, thanks to optimal scheduling of equipment downtime for maintenance and other activities required to restore the full operations of Xilopan's process line from September 1.
In October they started to check consumption rates, the variation of process parameters and the subsequent mechanical checks in order to improve

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measured performance.
Early data collections indicate a 15 percent reduction of glue consumption; the results will have to be confirmed by different tests to achieve validation by the end of January, in line with the schedule.

The industrialization of new components has already translated into a reduction of nozzle costs below one half of the expected cost.
Meanwhile, three batches of 500 cubic meters of prototype panels will be produced, one batch for each type of panel, namely particleboard, Mdf and Osb. Prototypes will be tested according to technical standards on the quality and performance of wood-based panels.

PLASTIC KILLER

The "**Plastic Killer**" project (*www.plastickiller.eu*) by Pal is an innovative system to remove all plastic residues from recycled wood, so that it can be used instead of virgin wood to make high-quality panels or clean fuel.
Currently, panels, especially Mdf, are made from virgin wood and only a small portion of recycled wood (up to 10 percent, according to Pal's own market surveys). The reason is that the process to clean recycled wood from impurities and other materials requires several stages but cannot eliminate all foreign parts completely. So, Mdf panels are low quality, not suitable to meet the technical standards for panel quality. At present, no system exists to achieve an adequate separation of impurities, but demand is growing for clean recycled wood to replace virgin wood.

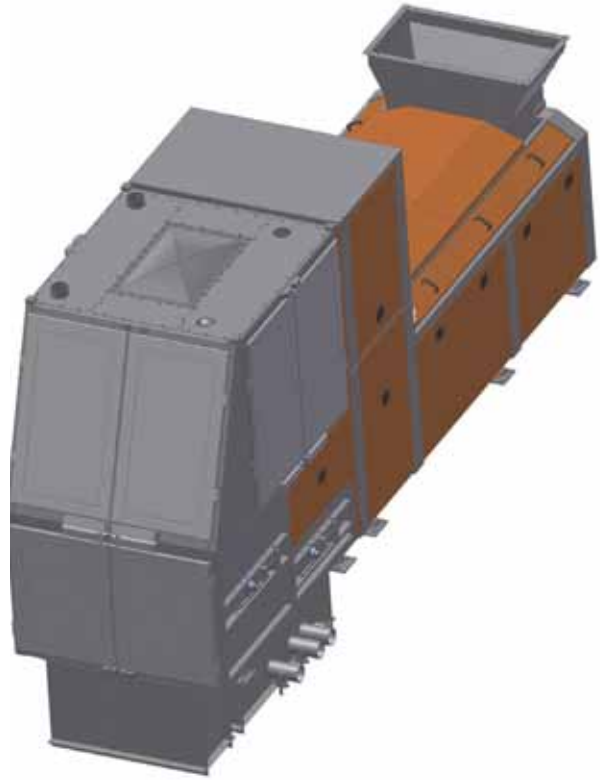
"Plastic Killer" fills this gap, providing totally purified recycled wood that can be used to make high-quality, compliant Mdf panels, more sustainably and cost-effectively: it has been estimated that up to 60 percent of production might come from recycled wood.
The wood processed by "Plastic Killer" is so pure that it can also be used as biomass for clean energy generation, without the risk of pollutants released from plastic materials, as the latter are completely eliminated.
This will help reduce the use of a limited resource such as virgin wood, sparing it for applications that cannot do without, and extending the lifecycle of already used material.

The project will encourage wood recycling in the European Union, paving the way to new business and job opportunities, and contributing to relieving the pressure on dumping sites in the medium term. Benefits from an economic and environmental standpoint are significant.

With only 58 kilowatt installed power, the plant can process about 30 cubic meters per hour of wood wastes, equal to some 78 tons daily. Removed plastics can also be recycled, and Pal estimates that there will be 750 kilos each day based on their experience. If waste wood must be used as fuel, removing plastic residues heavily cuts polluting emissions.

Going back to wood, if it is used to make Mdf panels, it **avoids cutting 40 trees every day**, which means 9,600 trees annually (considering working days only). Considering carbon dioxide (CO2) trapped in trees (approx. 0.9 equivalent tons per cubic meter) and no longer released during transport (based on an average forest-to-factory distance of 300 km and the emissions from trucks by km and ton), you get a total reduction of CO2 emissions y approximately 88 equivalent tons each day.
From an economic standpoint, assuming average virgin wood costs of 70 Euro/ton, versus 40 Euro for recycled wood, savings are huge and estimated at 2,340 Euro daily, which means more than 500 thousand Euro annually.

"Plastic Killer" machine.



Finally, "Plastic Killer", unlike other conventional plants, uses no water. Considering the volume of processed wasted indicated above, **water saving** amounts to more than nine thousand cubic meters annually, equal to the average consumption of 46 European families.
Machine parameters were defined and its design completed in line with the planned schedule; prototype construction is starting soon and installation is planned in January 2015.

We will keep you updated from these pages about the developments of these projects and the achieved results, as well as other similar projects.

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