Bonfanti • automatic warehouse for plastic film

- Parent roll area
- Slit roll area
- Metallising and secondary cut area
- Packaging area
- Software
in the area of parent roll production, BONFANTI has developed a series of solutions and systems dedicated to the optimised management of the production logistic process.

With BONFANTI solutions, it is possible to manage the:

- Interlocking (loading/unloading) of the winch of the film unwinder line
- Weighing of produced rolls
- Stacking of produced rolls and of empty cores
- Management of the interlocking with the waste film grinder
- Interlocking (loading/unloading) of the primary slitter of the parent rolls

The solutions, completely engineered, allow for operation according to functional modes so as to guarantee:

- Operational safety, achieved thanks to deliberately-studied manipulation systems for the assurance of a secure seizing of the rolls and a constantly-guided movement able to completely eliminate local oscillation problems. The main advantages are:
  1. Completely secure material movement, guaranteeing the safety of the operators
  2. Complete reduction of machine stops due to collisions between the moving material and the production systems and/or incorrect movement operations (stops which provoke production and losses extra maintenance costs)
- Minimisation and certification of cycle times, thanks to the realisation of:
  1. Completely automated movements
  2. Speed of elevated movements
  3. Complete reduction of roll and core coupling/uncoupling times
- Reduction of necessary personnel for logistics management, in that all BONFANTI systems can function without any operator presence (system in Automatic mode) or with a maximum of one operator (with the system in Semi-Automatic or manual mode)
- Quality of final product:
  1. Complete reduction of collisions of the rolls with other materials or systems
  2. "Contact free" roll stacking, that is, film free of contact with support or storage systems
  3. Automatic and certified reading of the true weight of the FILM on each roll, achieved thanks to a weighing system dedicated to the punctual management of the true weight of every single core
- Complete tracking of production by the automation systems installed on the BONFANTI systems, dedicated to the management of the moving and stacking of the rolls and cores.
Core and rail moving machine dedicated to the production automatic handling. Specifications:
- executes the receiving of the core at the receiving station of the waste-fuel grapple
- quality control of the core and control of the assembly of the primary shell and of any ground transport elements

Features:
- "Telescopic" gripping system
- Continuous, smooth vertical movements
- D.160" rotation which allows for intervention with independently adjustable end position
- The change of direction of the unit
- Automatic movements
Main characteristics:
- Stack management in automatic mode of the warehouse modules.
- Completely guided material movements.
- Maximum use of available 3-dimensional spaces (both width and height).
Elements to ensure safe and efficient operation of the system to achieve the maximum number of cycles per day and the production of the highest quality of the finished product. This change is also evident in the new concept of the warehouse, in which the automatic drive with several storage carriages is located on the back. The central point between one and the warehouse is made by a modern design and the use of high-quality material that is suitable for the construction industry. At the same time, the two-level warehouse is equipped with a precise control system which allows the automated weaving of the upper tier and support arms in order to improve productivity. This feature is simple and necessary for the warehouse as it is used in combination with the AGV (Automatic Guided Vehicle) machines while the multi-level warehouse within the plant.
Elementi per molli ed anime concepiti per la massimizzazione dello sfruttamento degli spazi e la salvaguardia della qualità del materiale stoccato. Lo stivaggio è sempre realizzato in modalità "free contact". I supporti di stoccaggio sono realizzati direttamente sull’anima. I punti di contatto tra anima e magazzino sono realizzati in materiale plastico avente specifiche caratteristiche meccaniche e costruttive atte a mantenere l’integrità costruttiva delle anime nel tempo. Il magazzino non necessita di alcun sistema di alimentazione elettrica e/o pneumatica. Questa soluzione, pur mantenendo le caratteristiche qualitative sopra descritte, ha, come altra caratteristica principale, l’estrema minimizzazione del costo.
The system is dedicated to the recovery of the second interferometer. The unwinding of the tape is automated.

The unwinder has two functions: to unwind the tape, and to unwind the unwinding. The unwinder is located in the same area as the interferometer, and it is equipped with a special unwinding device. Automatic unwinding is performed by the unwinder, which is located in the coaling part of the chamber.
The weighing station is a certified scale, designed and tested for the certified weighing of the space transportation vehicles and their components. It operates in a constant and secure environment with comprehensive safety and operating instructions to guarantee a secure and constant weighing. The resolution pattern in the weighing area of 0.01 kg/m is the standard for high accuracy. The weights are checked on the scale and are transferable to all automation systems present. Including the latest manufacturing and maintenance systems.

The waiting stalls are used for the storage and maintenance of the vehicles and their components. The waiting stalls are designed to reduce the waiting time and to maximize the efficiency of the waiting process. The waiting stalls are also equipped with the latest maintenance and repair tools to ensure the highest quality of maintenance and repair.
The bay-crossing shuttle is normally utilized for the ground transportation of the IT components of the assembly line. The shuttle can travel smoothly along tracks installed on the floor and is able to move in a straight line. The control and safety system allow for efficient and parallel operation of different welding stations.

The material placement can be a "standard" or "specific" variation.

Standard applications:
- Exchange of material and tools between vertical production lines.
- Exchange of modules and tools between production lines and vertical welding stations.
The winder supply trolley allows for the stable operation of the full production line under varying conditions. The trolley is equipped with a support arm which is simply a cable that connects to the head. This allows for the positioning of the winder supply trolley along the ground on the gantry unit. The trolley, when not in use, is simply lowered into a storage unit for the next unit. This allows for the easy and safe handling of the winder supply trolley, effectively reducing the winder load-out time.
The Handler is used for the management of the cold and warm equipment throughout the entire production area. The main characteristics that it has are:

- 100% electrical system
- 80% reduction of electricity consumption
- 80% reduction of production time

In addition, the Handler is equipped with:

- Automatic positioning system
- Machine positioning system
- Easier and safer handling of production equipment
Industrial overhead travelling crane used for the maintenance of the robotic production area. It is normally used for the execution of the installation of the film production line of the site and of other systems in the area.

The crane performs maintenance and production tasks present in the service area.

As an operational backup during system repairs, it is engaged to perform routine movement of the items and cases.

The crane is controlled and monitored through a control room. It is possible to synchronize the carriage's horizontal and vertical movements by using the proper command.
PLASTIC FILM SLIT ROLLS

The rolls produced from the cutting of the primary slitter are transferred to other areas dedicated to the execution of subsequent production processes. Roll transfer organisation is an integral part of BONFANTI solutions.

In this realm, BONFANTI systems - completely modular - resolve even the most complex roll-conveying problems (direction changes, long distances, etc.). eliminating in a definitive manner the workforce otherwise necessary for the production transfer logistics management. The basic concept of BONFANTI solutions is the use of cradles purposefully designed to support the rolls in the transfer phase, while avoiding deterioration of material quality (collisions, excessive cradle-roll pressure, etc.). The roll support cradles are automatically managed by BONFANTI conveyor systems, both during the roll transport phase and that of the return (automatic) from the end of the line to the its beginning.

With BONFANTI solutions, it is possible to automate and manage:
- Unloading the rolls from the primary slitter
- Conveying the rolls from the slitter to other production and packaging areas
- Weighing and labelling of the rolls
- Execution of the roll lateral flange
- Mechanised toroidal support
- Roll tipping (from horizontal axis to vertical axis)
- Complete tracking of production
- Maximisation of the cut uncoupling/other operations buffer

Further, the functional and operational characteristics have been designed to guarantee:
- Operational safety - achieved thanks to the complete alleviation of the use of workforce to the execution of the roll transfers
- Secure operational transfer cycles - thanks to the automatic execution of the movements
- Maintenance of the product’s original quality
- Aleviation of rolls colliding with other materials and/or systems.
- Use of “soft” support cradles to avoid quality deterioration caused by the material being cut while on the supports
- Complete tracking of production
- Aleviation of workforce needed to carry out roll flange and support operations.
Automatic multi-level management of finished non-woven scientists buffer (BNC) materials used for the punching of the finished goods of the finished goods warehouse. The warehouse is equipped with a high-speed conveyor system that includes automated cutting machines and automatic handling systems. The BNC is used for the automatic management of all operations within the warehouse, ensuring smooth operation and efficient management. The warehouse is designed to provide high-capacity, high-speed operations, ensuring optimal use of the BNC. The entire system is designed to be user-friendly and efficient, allowing for smooth operation without any chance of accidental harm or damage.
METALLISING AND SECONDARY CUTS

The metallising process and the execution of secondary cuts take place after the primary cut. Process times are different compared to those of creating the secondary rolls. BONFANTI has developed system solutions which resolve the following logistic and production problems:

- Warehouse buffer (WIP) of first cut uncoupling – metallisation – second cut. From manual, single-level warehouses to automatic, multi-level ones.

- Machines for the automatic insertion/extraction of the post into/out of the finished rolls for the execution of the metallisation process.

- From manual solutions to those completely automatic and integrated into the metallisation logistics process.

- Interlocking systems for the unloading/loading of the metallisation machines.

- From monoral systems to automatic systems dedicated exclusively to the optimisation of the roll change cycle on the metallisers.

- Interlocking systems for the loading of the secondary slitters.

- Transport system of the cut rolls to other production areas (tobacco, packaging, etc.).

- Shuttles and conveyors realised on the basis of that which is already arranged for the “finished rolls” area, but optimised for the management and manipulation of smaller-sized rolls.

- Roll weighing and labelling systems.

- From normal manual weighing, writing, and label-printing stations to automatic weighing and labelling stations.

- Moving systems for the totally automated management of the entire metallisation and secondary cut area.

- Systems able to automatically manage the storing upon entrance, pole insertion/extraction, roll change on the metallisers, temporary storage of the rolls awaiting being cut, and the loading/unloading of the cutting lines.

Also in this area, the BONFANTI constructive and system philosophy is based on the ability to create solutions which guarantee operational safety, maintenance of product quality, and logistics order with a maximum use of space.

BONFANTI machines and systems allow for the realisation of innumerable solutions – from the most simple (single system) to the most complex (combination of systems) – able to satisfy even the most particular and difficult requirements.

All BONFANTI systems, in all FILM production areas are conceived with the goal of guaranteeing the compatibility of the production process with the AIB (American Institute of Baking) standard.
Machine used for pole insertion, done as preparation for the installation cycle of the PHCN, from start to finish. The VTL inserted pole in either a manual or company-automated mode, including the dynamic insertion of the pole into the hole one at a time.

The main components of the machine are:
- Pole removing system
- Side step/centering guide with automatic horizontal movement
- Longitudinal pole movement system (front-to-back)
PACKAGING

The area dedicated to packaging is one of the nerve centres of the entire FILM production cycle. The logistics organisation of the movements of the rolls, their placement onto pallets, and their packaging and final labelling is fundamental for compressing realisation times, avoiding packaging errors and maintaining unchanged the quality of the final product.

In this area, BONFANTI offers solutions and systems which allow for the reaching of the above-mentioned goals.

Specifically, available are:

- Semi-automated and guided aerial movement systems of the rolls to be packaged
- Palletised-roll preparation stations
- Automated pallet conveyor systems - from preparation stations to packaging
- Automated packaging lines and pallet support
- Pallet weighing and final labelling
- SW applications for managing production/packaging/shipping tracking

The key words of BONFANTI solutions are:

SAFETY
Even in this area, BONFANTI solutions guarantee an elevated level of operational safety optimising use, as well as making the most of spaces, thereby drastically reducing the manpower necessary.

QUALITY
Maintaining product quality is the other pivotal point on which BONFANTI solutions are designed: everything is conceived with the aim of avoiding any type of collision, damage or degradation caused by movement operations. Even the packaging of the pallet is carried out with the goal being to guarantee the maximum protection of the material (against contact and inclement weather), and the maximum transport safety (stable and secure support).

ORDER
The order of the movement and packaging management is fundamental to avoiding time losses, damages, and pointless movements; therefore Order = Savings (of manpower, space, crossing time, NOT of quality)

SIMPLICITY and RESILIENCE
BONFANTI systems are conceived according to the logic of operative continuity. The fundamental element is the guarantee of correct functioning throughout time; this is achieved with mechanically and structurally-solid solutions, and with simple and tested command and control systems.
Machine used to tip the drum roller from horizontal to vertical axis. Normally used in packaging area. The machine is equipped with safety systems which avoid dropping the oil during the tipping operation phase. The containers are isolated and managed directly by the operator responsible for packaging.

Standard tipping capacity 150 kg. Several adaptations are available designed for tipping oils up to 3000 kg.
The machine is designed to facilitate the packaging and labeling of the finished rolls.

Main characteristics:

- Robust and durable design
- Versatile and efficient operation
- Customizable configuration
- Easy maintenance and repair
- Enhanced safety features
- Increased productivity
- User-friendly control panel
- High-quality packaging and labeling
- Continuous operation with minimal downtime
Machine designed for the horizontal movement of diamantoids, used in the diamond-grinding process in the production of diamond-grinding tools.

Main characteristics:
- High-quality guide
- Including draft control system
- Interchangeable grinding head
- Sliding mechanism guaranteeing the stability of the grinding tools during grinding
- High grinding production and adaptability to the equipment
- Static execution of grinding head, avoiding vibrations.
A line designed for the total management of the palletising, packaging and loading of boxes. Handling devices made up of modular modules.

Modular palletising lines for the conveying of the pallets are designed for precise handling.

Support and packaging lines remotely controlled by 5 machines, support with an average speed of 35 m/min.

Modular palletising lines for the automatic transfer of pallets. The line also incorporates a weighing system used in the final weight verification.

(More text continues on the right page.)
Logistics does not merely mean the physical execution of moving and stocking activities, but also their control and management, and the integration of the same into the company’s global productive organisation. For this purpose, BONFANTI has realised a SW application dedicated to the operational management of the firm production. The main characteristics of the application are:

- Collection of production data
- Collection of product quality
- Management and automatic start-up of all moving and stacking activities (activities realised with BONFANTI systems)
- Production programming
- Management of cutting programs
- Management of packaging programs
- Connection to production systems (extrusion lines, slitters, metalisers, etc.)
- Connection to ERP systems

BONFANTI supplies, in a completely integrated mode, other SW applications which allow for the management of the following activities:

- Optimisation of primary and secondary cuts
- Finite-capacity production scheduling
- Sea transport optimisation
- Land transport optimisation

The main results achieved with BONFANTI applications are:

- Reduction of client order crossover times
- Punctual tracking of live production
- Historical and punctual traceability of materials (from the parent roll to shipping pallet)
- Reduction of production waste caused by the cut optimisation on the slitter
- Totally automatic management of all logistic activities of moving and stocking
BONFANTI around the world

Argentina
Brazil
Chile
Colombia
Mexico
Peru
United States
Austria
Belgium
Cypess
France
Germany
Greece
Poland
Portugal
Romania
Russia
Czech Republic
Slovakia
Spain
Switzerland
Turkey
Hungary
Libya
Nigeria
Saudi Arabia
China
United Arab Emirates
India
The BONFANTI company

It is an Italian company, active for more than 40 years in the field of industrial elevation and logistics. Our mission is to provide experience and products which increase the value and efficiency of our clients’ activities, realising cutting-edge industrial systems in the logistics, process and service sectors. BONFANTI holds a solid presence in all developing industrialised areas throughout the world. Our “world” expands across a total area of 130,000 m².

Our main product lines are:
- Industrial elevation systems (2-500 t)
- Bridge cranes
- Shear leg cranes
- Jib cranes
- Hoists, Pulleys
- Kits for bridge cranes
- etc.

Automatic movement and material storage systems (capacity 0.5-1000 t)
- Automatic warehouses for heavy or cumbersome material
- Automatic systems interlocking with production lines and/or department’s
- Automatic process systems:
  1. RSU Automatic Movement
  2. Storras Automatic Movement
  3. Prime Materials Automatic Movement (cement, sandy soil, alumina powder, etc. industries)
  4. Automatic material movement on the picking line

“Service” - Technical Assistance
- Multi-brand service for elevation system
  1. Schedulea, periodic maintenance
  2. Extraordinary maintenance
  3. Multi-brand spare parts
  4. Reference weight testing
- Revamping/Retrofitting
- Residual life calculations
- Safety consulting
- Operator training