PACK ARROW

End-of-line Packaging Automation

Theodorou
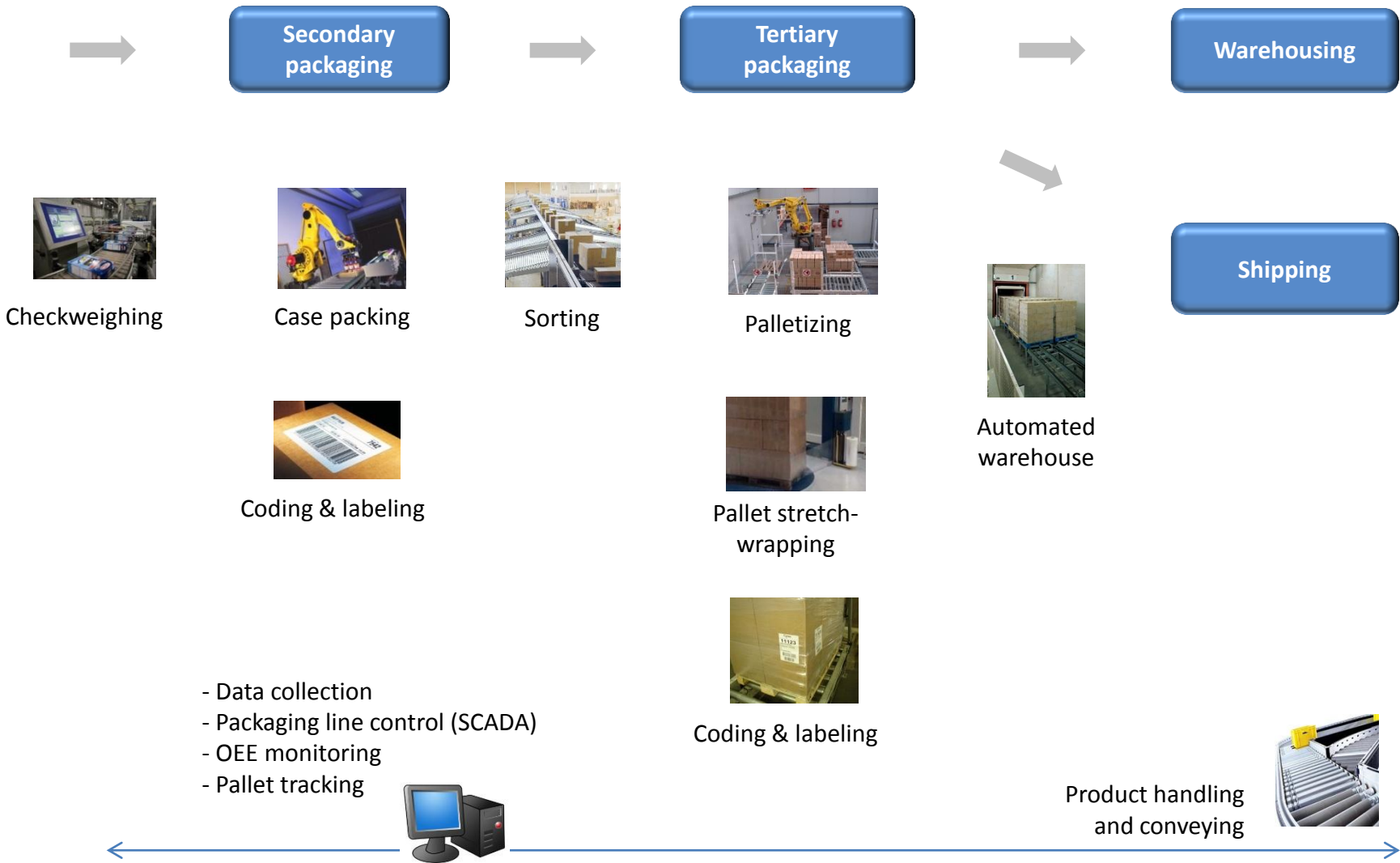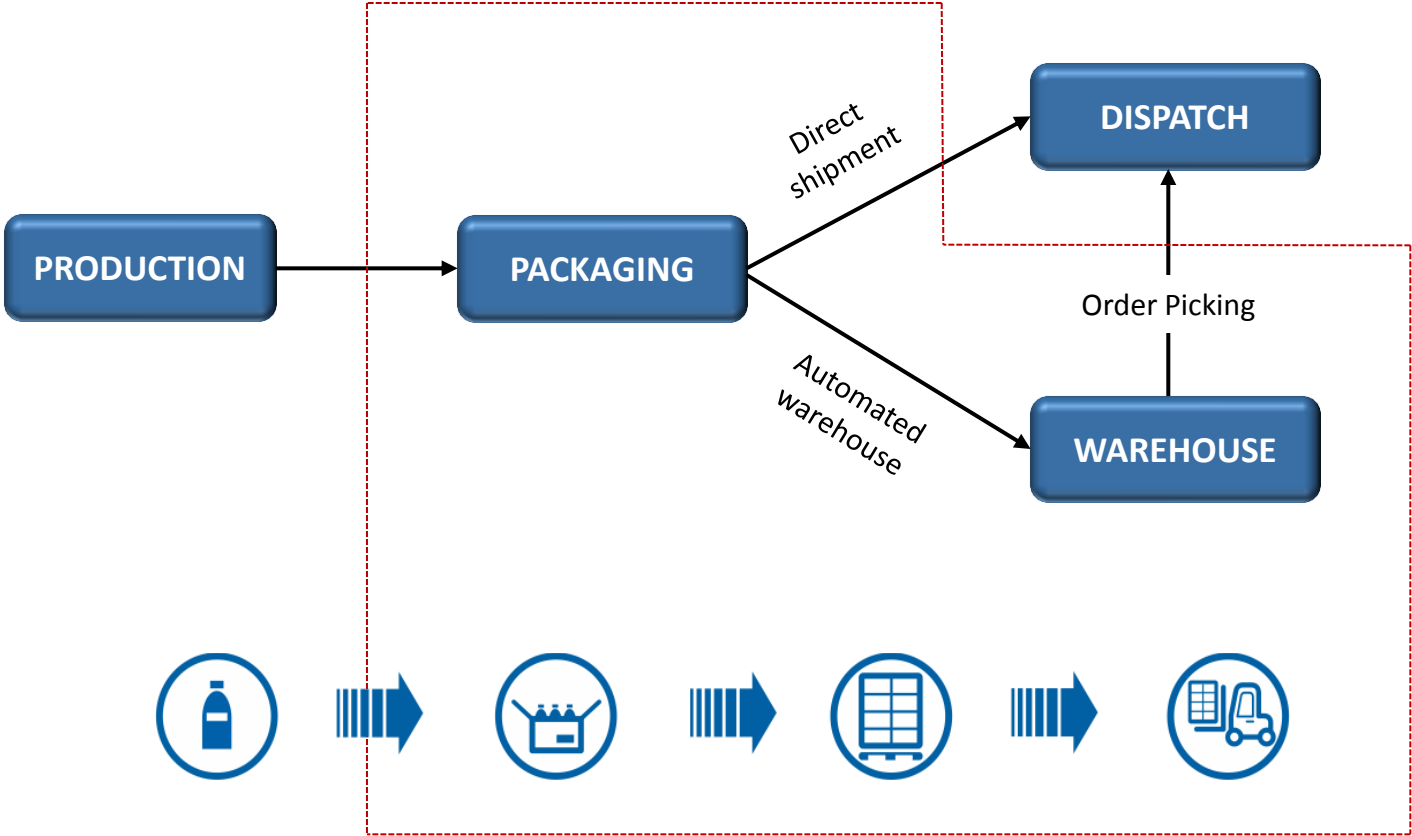GROUP OF COMPANIES

Pack Arrow: Definition

- Pack Arrow is a complete end-of-line packaging automation system

- Provides automated product and information flow, from secondary packaging to warehousing or direct shipping

- Hardware and software harmonically combined in a single package:
  - **Hardware:** Product handling and conveying, coding & labeling, checkweighing, case erection/packing/sealing, sorting, palletizing, pallet stretch-wrapping, automated warehouse
  - **Software:** Data collection, packaging line control, OEE monitoring, pallet tracking

- Target markets:
  - Manufacturing
  - Logistics & transportation
  - Retail warehousing

Pack Arrow: Functions

→   **Secondary packaging** →   **Tertiary packaging** →   **Warehousing**

Shipping

Checkweighing

Case packing

Sorting

Palletizing

Automated warehouse

Coding & labeling

Pallet stretch-wrapping

Coding & labeling

- Data collection
- Packaging line control (SCADA)
- OEE monitoring
- Pallet tracking

Product handling and conveying

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Pack Arrow: Concept

PRODUCTION → PACKAGING

Direct shipment → DISPATCH

Automated warehouse → WAREHOUSE

Order Picking

Pack Arrow: Architecture

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                    │   ERP/WMS    │
                    └──────────────┘
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   ┊         │  MASTER PLC  │─────▶│    SCADA     │        ┊
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   ┊   │PLC 1 ││PLC 2 ││PLC 3 ││PLC 4 │                    ┊
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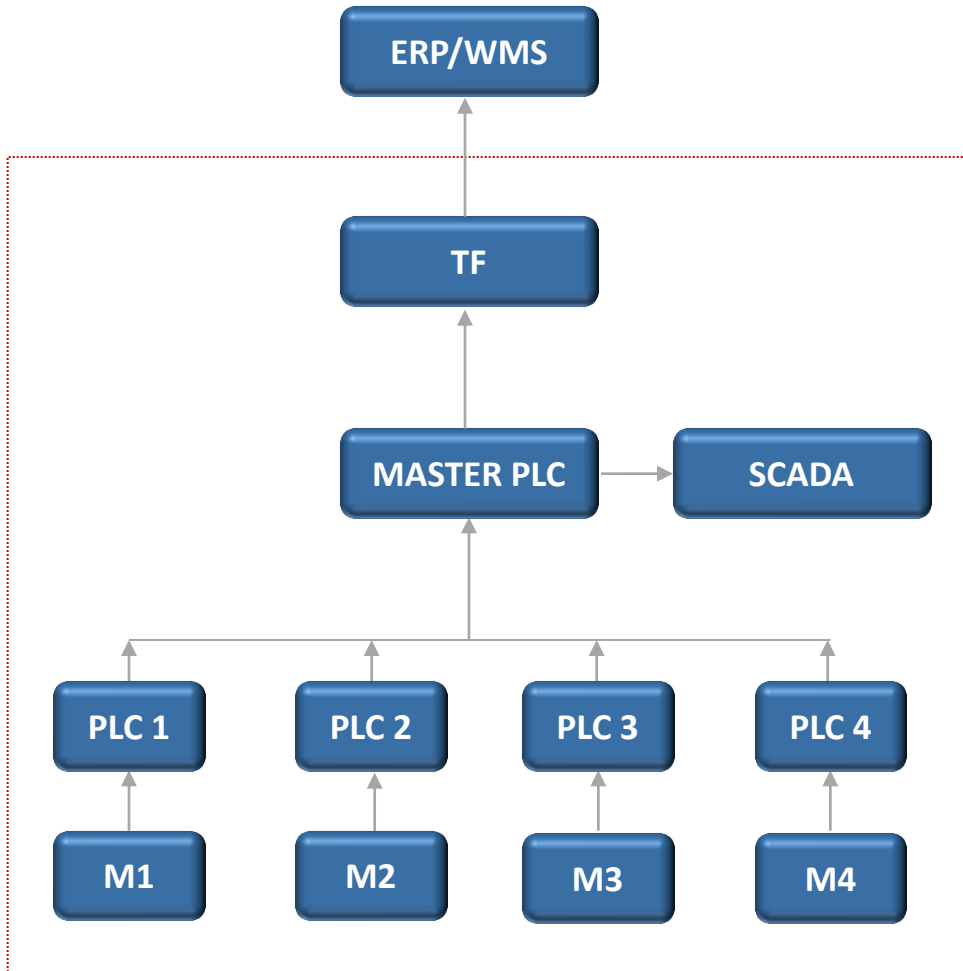
Data Handling Layer: Data management (coding, traceability, auto-warehouse) and production metrics (e.g. no. of finished products, equipment availability , etc)

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Line Control Layer: Data collection and integration through a MASTER-PLC. Packaging like control (start, stop, errors, error types) through a SCADA system.

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**Product Flow Layer:** Equipment control through PLCs

Pack Arrow: Benefits

- Helps companies reduce production costs

- Provides smooth and automated flow of products and their information

- Offers minimum to zero operator interference

- Provides remote monitoring and control of the packaging lines

- Delivers shipping-ready units

- Synchronizes supply with demand by facilitating quick order fulfillment

- Eliminates the need for warehousing by facilitating direct shipment

- Integrates seamlessly with ERP, production and supply chains systems

- Integrates with existing factory equipment

- Incorporates shipping data for subsequent stages of the supply chain

- Helps companies monitor their OEE performance

Pack Arrow: Installations

SYNGENTA SA

- 2 pick & place systems for bottle caps

- 3 cartesian bottle casers

- Robotic palletizer for cases

- Pallet transfer
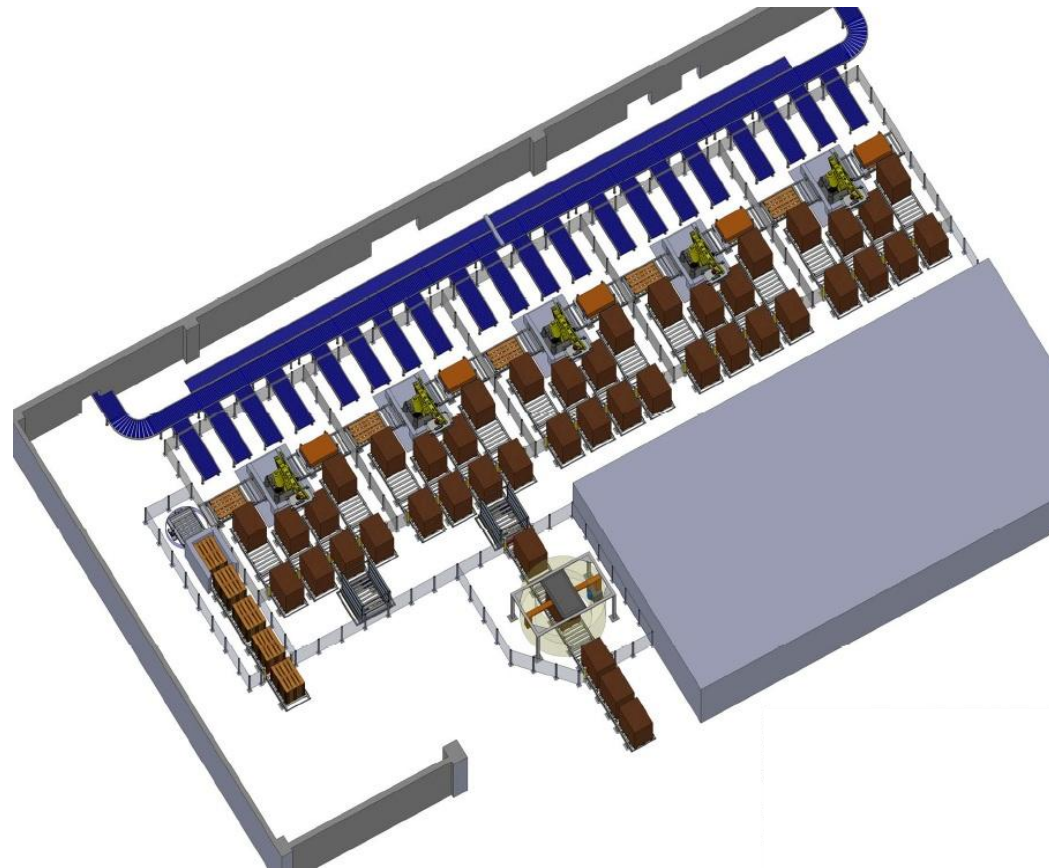
- Stretch wrapping

- Lines & tanks SCADA system
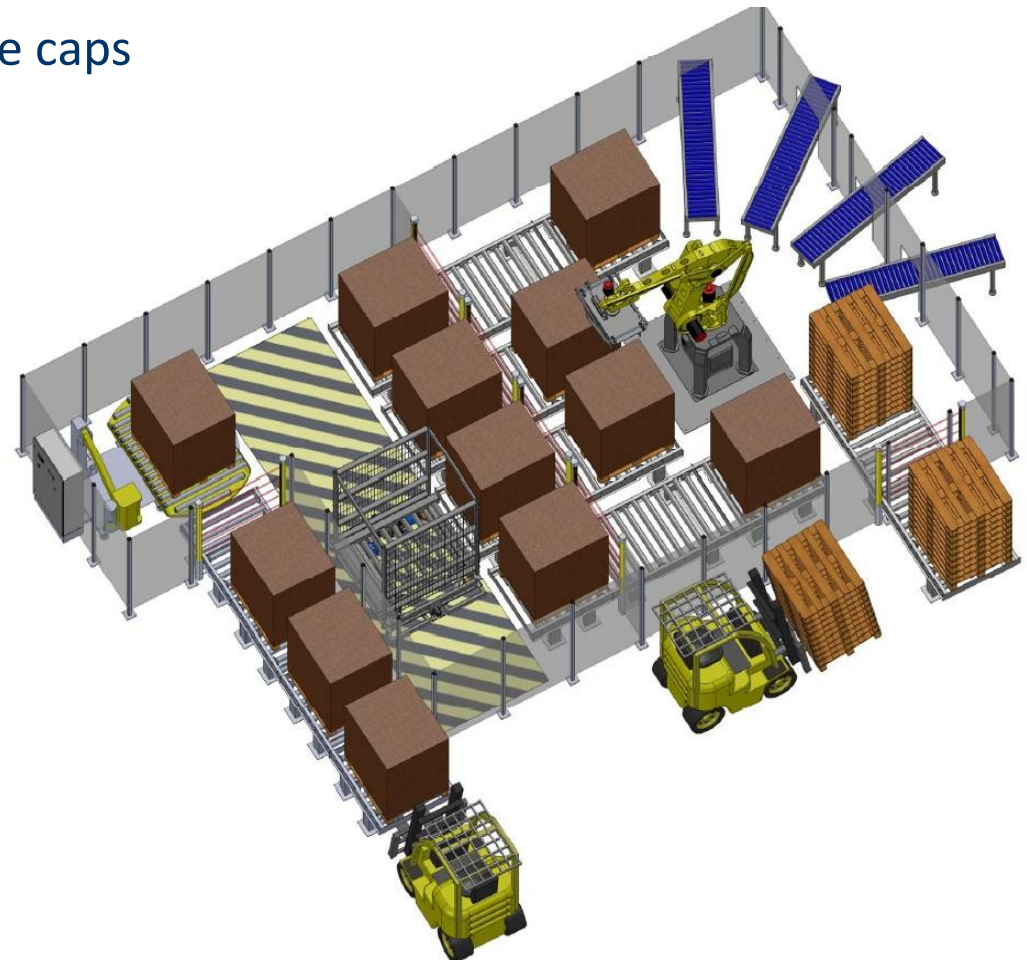
Pack Arrow: Installations

TASTY FOODS SA

- Fully automated conveyance and sorting for cases (20 SKUs)

- 5 robotic palletizers for cases

- Pallet transfer

- Stretch wrapping

Pack Arrow: Installations

ASTIR VITOGIANNIS SA

- Automatic case conveyance & handling

- Labeling & sorting for cases

- Robotic palletizer for cases

- Pallet transfer

- Stretch wrapping