Snapshot Report

AMPC
AUSTRALIAN MEAT PROCESSOR CORPORATION

“Grow with Demand”

Develop New Fully Automated “Grow with Demand” Vacuum Packaging System

Project code
2024-1076

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Project description

This project aimed to design and build a vacuum packaging machine for the red meat industry that can double its output without requiring extra floor space, additional staff, or major building changes. The “Grow with Demand” system lets processors start with one vacuum chamber and later add a second chamber to the same machine frame, instantly doubling throughput while keeping the same footprint, staffing, and energy use.

The work was delivered in four phases, moving from design and engineering to prototype manufacturing, industry trials, and market readiness. The team used advanced modelling and real-world testing to optimize chamber strength and switched to industry-preferred automation components for better market acceptance.

The first prototype was completed and tested, achieving a compact footprint of around 5 m², high-speed operation of up to 50 packs/min (lamb), and up to 50% lower energy use compared to existing systems. With strong market interest already secured, the technology is on track for a 2025 commercial launch

Project content

The project was delivered in four phases:

Phase 1–2: Design and Engineering

- Finalized machine specifications and concept.
- Completed mechanical, electrical, and automation design.
- Conducted FEM (Finite Element Modelling) to optimize vacuum chamber strength.

Phase 3: Prototype Build and Testing

- Built the first full prototype in Germany.
- Modified design after real-world vacuum tests revealed chamber deformation not shown in FEM results.
- Switched to Allen Bradley controls and SEW motors for better industry acceptance.
- Streamlined manufacturing and purchasing processes for future builds.

Phase 4: Industry Trials and Market Readiness

- Installed the first-sold machine at Nolans Meats and validated performance in full operation
- Long-term testing to confirm vacuum chamber durability.
- Marketing and sales preparation for 2025 launch.

Project outcomes

The project successfully delivered the first working prototype of the “Grow with Demand” vacuum packaging machine, meeting its key performance targets. The system achieved a compact footprint of ~5 m² (4–5 times smaller than comparable rotary systems), high throughput of up to 50 packs/min (lamb), and energy use up to 50% lower than existing technology.

Key insights from the development included the need for design changes to strengthen the vacuum chamber after real-world testing, and the value of using industry-preferred automation components to improve market acceptance. Market feedback confirmed strong demand for the system’s scalability and small footprint.

Figure 1: Prototype Manufacturing

Figure 2: Machine at Nolan

Figure 3: Vacuum Packed Trim

Tangible outputs available to stakeholders include:

- A fully functional prototype machine built and tested in StarVac's manufacturing facility
- Validated performance data from long-term vacuum tests.
- Refined FEM design models for vacuum chamber stability.
- Standardized manufacturing and purchasing processes for future builds.
- Marketing materials and specifications for commercial launch.

Benefit for industry

The "Grow with Demand" system offers Australian red meat processors a flexible, cost-effective way to expand packaging capacity without major capital investment or disruption. Key benefits include:

- **Scalable growth** – double output without extra floor space, staff, or layout changes.
- **Lower operating costs** – reduced energy use (up to 50% less) and minimal maintenance requirements.
- **Reduced carbon footprint** – up to 60% lower emissions compared to existing systems.
- **Higher productivity** – faster throughput than comparable technologies.
- **Rapid upgrade path** – a second chamber can be installed and operational in as little as four weeks.