A New Standard for Thawing Organ Meats in Pet Food

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OVERVIEW

Thawing ground frozen animal organs from plate freezer in the pet food industry is a demanding process. Traditionally, processors ground frozen blocks of pork liver or lungs, chicken hearts and livers, and other organ meats from 14°F (-10°C) upward to 40°F (4°C). This is typically achieved with steam injection or steam screw cooker. While direct steam injection (DSI) can be effective, many other steam-based approaches are inefficient and present significant operational and safety challenges.

CHALLENGES WITH TRADITIONAL SYSTEMS



Steam-Based Batch Systems

- **Energy waste:** Up to 40-50% of steam is lost to the atmosphere during purging.
- **Poor temperature control:** Heavy-duty mixers are used to help manage thawing, but final product temperatures can still be inconsistent.
- **Plant environment impact:** Escaping steam raises ambient temperature, creating uncomfortable working conditions.
- **Vibration damage:** Steam bubbles bursting in vessels or screw cookers cause vibrations that can crack welds and loosen equipment supports, leading to extra maintenance.

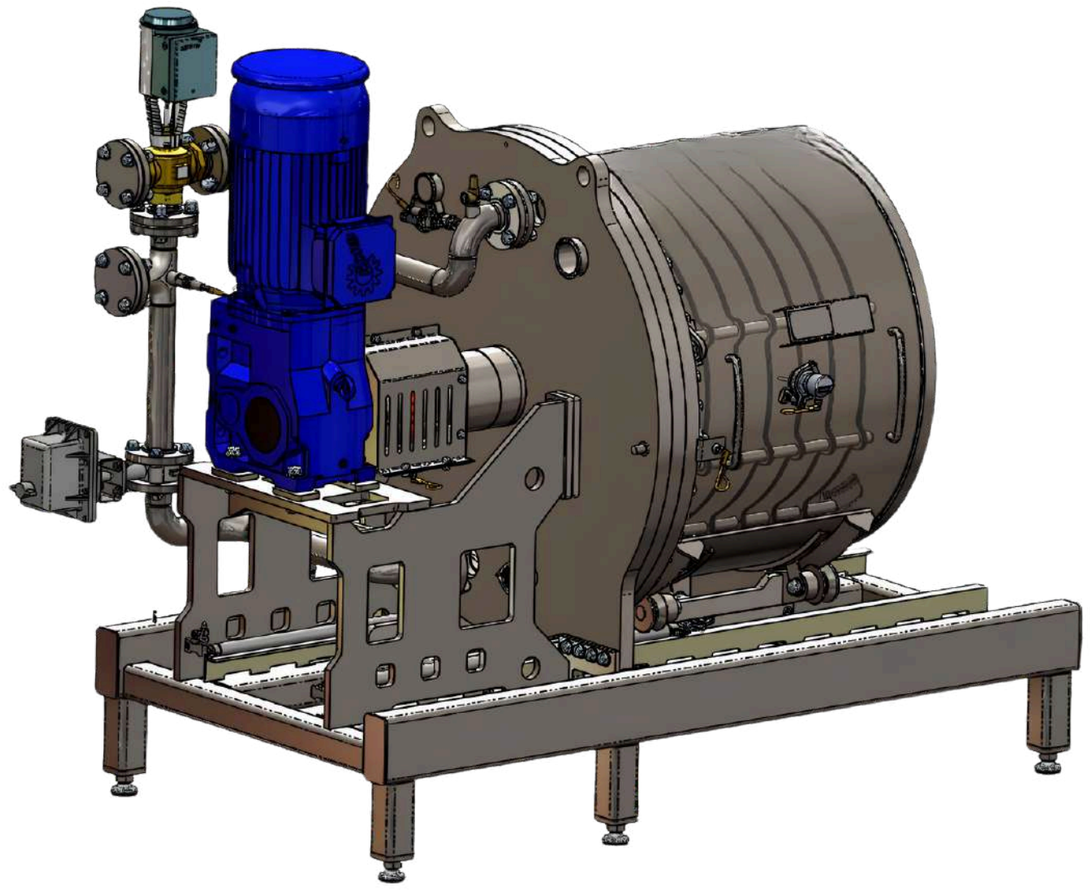


In-Line Direct Steam Injection (DSI) Systems

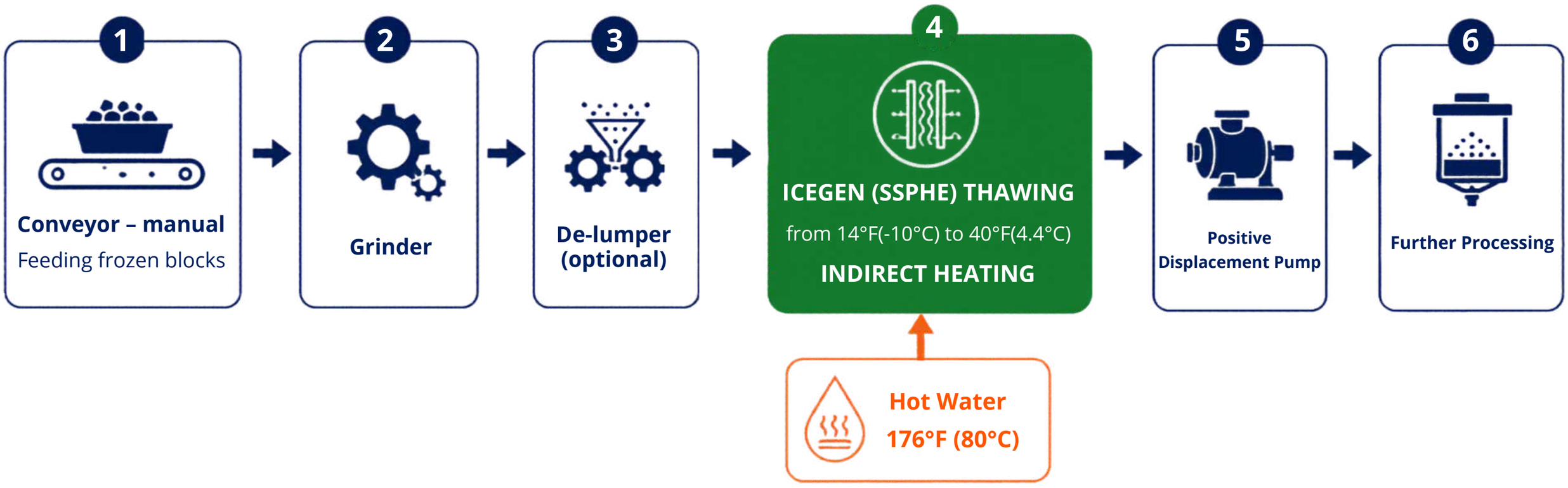
- **Unwanted water addition:** Large amounts of water are incorporated due to steam condensation during thawing. This phase change alters the moisture content of the protein.
- **Burn-on risk:** High-temperature steam directly contacts the product, sometimes denaturing proteins and causing localized “burn-on.”
- **Product reformulation issues:** Added water can change the original recipe, affecting ingredient percentages and the texture of extruded products.
- **Abrasive product on pumps:** DSI systems require pumping partially frozen, ground organs through pipes. This creates high back pressure, demands large motors, and accelerates wear on pumps due to the abrasive nature of the product.

ICEGEN ENHANCED SOLUTION

ICEGEN’s advanced Scraped Surface Plate Heat Exchanger (SSPHE) addresses these issues with a compact, single-unit design. By combining the thermal efficiency of a Plate Heat Exchanger (PHE) with the mechanical power of a Scraped Surface Heat Exchanger (SSHE), ICEGEN delivers safer, more efficient thawing of ground animal organs.



PROCESS FLOW



KEY ADVANTAGES OF ICEGEN TECHNOLOGY

Single-Unit Efficiency

Replaces multiple DSI valves or screw cookers with one compact unit. Reduces footprint and simplifies system layout.

Low or No Back Pressure

Can be top fed to minimize pressure on the feed pump or fed by conveyor belt to eliminate the pump altogether.

Zero Water Addition

Indirect heating means no water is introduced. Maintaining original moisture levels simplifies label compliance and ensures consistent protein density in the final pet food formulation.

Improved Product Recovery

Compact design and low internal volume minimize product loss.

Energy Savings

Operates with just 20-50 HP, significantly reducing electricity consumption.

Versatile Heating Performance

Thaws product upward to 40°F (4°C) or heats further to up to 140°F (60°C) if required. Ensures easy product discharge after phase change.

Simplified Cleaning

Only one unit to clean, reducing downtime and labor.

Safer Operation

Designed for hot water heating at 170–180°F (80°C), reducing live steam hazards and easing regulatory compliance.

SUMMARY

For processors of ground frozen animal organs, ICEGEN offers a transformational thawing solution with indirect heating. It eliminates the need for a feed pump, prevents unwanted water addition, removes live steam from the production area, reduces electrical usage, and shortens cleaning time—all in a single, compact system. Most importantly, ICEGEN achieves these results using pressurized hot water, making it a safer, more sustainable choice than traditional live steam systems. This technology is ideal for plants seeking higher efficiency, lower operating costs, and improved safety in thawing applications.

Contact ICEGEN or your local agent to learn how we can help optimize your thawing processing line.

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