

PTW-1900 Buying Guide

10-section decision framework for procurement

Document version 1.0

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Audience: procurement directors, plant engineers, CFOs

Product: V-TAI PTW-1900 Roll-in Rack Trolley Washer

How to use this guide

Choosing an industrial roll-in rack washer is a 12–15 year capital decision. This guide is the framework V-TAI engineers use with prospective customers — it's vendor-neutral in approach, even though we ship V-TAI machines.

Work through the ten sections in order. By the end you will know:

- The right machine specification for your operation
 - Total cost of ownership math
 - Vendor due diligence checklist
 - Lead time and project plan
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Section 1. Start with peak return rate

The single most important specification is **peak return rate** — trays arriving at the wash bay during your busiest hour. Daily total volume can usually be smoothed across shifts; peak return rate cannot. If your wash bay can't keep up at peak, your prep cooks stand around waiting for clean GN pans, and downstream production stalls.

Calculate peak as: (daily tray volume) × (peak fraction of day).

For most operations the peak is concentrated in 2–4 hours:

- Cafeterias: 12:30–14:00 (post-lunch returns)
- Bakeries: end of production shift
- Airline catering: post-flight returns clustered to flight schedule
- Hospital kitchens: post-meal-service returns

A PTW-1900 handles up to 450 trays/hour peak (45 trays × 10 cycles/hour Standard cycle). If your peak exceeds 450 trays/hour, plan parallel machines (two or three PTW-1900s in adjacent lanes).

Section 2. Document your sanitization compliance

Three questions before you specify the machine:

1. **Which regulator audits you?** FDA, USDA, BRC, SQF, FSSC 22000, IFS — they all have slightly different documentation requirements
 2. **Which CCP is the rack-washer cleaning step in your HACCP plan?** (Sanitization is almost always a CCP; review your plan to confirm wording)
 3. **Do you require automated cycle logging (CSV export), or is manual logbook sufficient?**
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Most modern audit environments demand automated cycle logging. Confirm before specifying — machines without PLC + CSV export will cost you 80+ QA hours per quarter in audit prep.

The PTW-1900 ships with PLC + CSV cycle logging as standard.

Section 3. Identify your trolley fleet before sizing the chamber

Standard rack washer chambers are sized for "the standard trolley" — but the standard varies by region and operation:

- Swedish industrial bakeries: 800 mm wide trolleys
- North American institutional kitchens: 18x26 inch (457x660 mm) sheet pan trolleys
- European GN1/1 commissaries: 600 mm wide trolleys
- Airline catering: 400 mm or 800 mm ATLAS / KSSU trolleys

Before specifying, **measure your trolleys**: width, depth, height (including handles), wheel base, loaded weight.

If your trolleys don't fit a standard chamber, you have two options:

- Replace your trolley fleet to fit the washer (often more expensive than the washer itself)
- Customize the chamber to fit your trolleys

V-TAI customizes chamber dimensions in the range 700–900 mm wide × 900–1200 mm deep × 1700–2100 mm tall — at **no premium pricing**, with **+4 weeks lead time**.

Section 4. Electric vs steam heating — match your infrastructure

The decision is binary:

- **No existing steam loop**: choose electric. Installing steam infrastructure just for the rack washer is over-investing. New commissaries, schools, hotels, supermarkets, airlines almost always pick electric.
- **Existing steam loop**: choose steam. Cuts electrical load by 90% (from 70 kW to 7 kW). Drops operating cost ~60% in plants where steam is already being produced. Food processors, dairies, breweries, large bakeries with proofer steam, hospitals — almost always pick steam.

Many plants make the wrong choice by reflex. A school district installing steam just for the washer is overpaying capex. A meat processor running an existing steam loop and choosing electric is overpaying opex. **Match the heating to your existing infrastructure.**

Section 5. Specify stainless grade by industry

SUS304 is the default and is appropriate for:

- Bakery (bread, cookie, cracker, pastry — non-acidic)
 - Central kitchen / restaurant commissary
 - School and university cafeteria
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- Airline catering
- Hotel banquet kitchen

Upgrade to SUS316 if you operate any of these:

- Dairy processing (lactic acid corrodes SUS304)
- Meat processing (myoglobin + salt content corrodes SUS304)
- Tomato sauce / citrus / acidic-sauce production
- Brine-based frozen food (chloride aerosol)
- Coastal installations (within 5 km of coast — salt aerosol)
- Rotisserie operations (chicken fat acidity + heat = SUS304 pitting)

Upgrade cost: approximately \$2,800–\$4,500 on a \$52,000 unit (5–8% of machine price). Service-life impact: SUS316 lasts 15+ years pit-free in aggressive environments where SUS304 would pit within 3–5 years.

The **standard PTW-1900 is SUS304**. **SUS316 must be specified at order time** — chamber and door materials are not field-upgradeable.

Section 6. Confirm allergen-control capability

If your operation produces multiple allergen-class products, confirm the washer supports a stored **Allergen Reset PLC profile** (sanitization-only, no detergent).

This profile is the documented allergen-reset evidence your BRC / SQF / FSSC 22000 audit demands. Auditors will spot-check that you can run this profile and that the cycle log captures it.

All PTW-1900 units support stored Allergen Reset profiles. Not all competing machines do — verify against any vendor's specification.

Section 7. Don't underestimate civil work

Pit installation requires floor saw-cut, concrete excavation, drain re-routing, structural reinforcement, sealed finish. **Cost: \$3,000–\$8,000** depending on building type.

Ramp installation requires no civil work but adds ergonomic load (1.5 m single-sided ramp on the loading side). **Cost: \$0** civil; ramp is included with the machine.

Civil work is the largest variable cost in a rack washer install. Scope it with your architect / contractor **before** signing the equipment PO so you can do civil and equipment lead-time in parallel.

Section 8. Total cost of ownership math

Capital cost (FOB ~\$49K–\$56K depending on configuration) is only **~30% of 15-year TCO**. The rest is:

- **Labour** (dominates TCO): a wash bay with 9–11 FTE costs \$400K–\$550K/year. PTW-1900 reduces to 0.75 FTE = \$20K–\$40K/year. **15-year labour saving: \$5.7M–\$7.7M**.
- **Energy** (electric version): ~\$0.45 per cycle. At 300 cycles/day × 300 days/year = \$40,500/year. 15-year energy: \$607K.

- **Detergent + acid rinse:** ~\$0.20 per cycle. 15-year: \$270K.
- **Water:** ~\$0.10 per cycle. 15-year: \$135K.
- **Maintenance + wear items:** \$1,200/year average. 15-year: \$18K.
- **Annual service contract** (optional but recommended): \$2,500/year. 15-year: \$37,500.

Labour savings alone dominate payback math. A bread factory cleaning 3,600 trays/day across three shifts typically sees payback in **3–6 months** based on labour reduction.

Don't fixate on capex — a 30% higher capex machine that produces 50% labour savings pays back faster than the cheaper alternative.

Section 9. Vendor due diligence checklist

For any rack washer vendor, request:

- **ISO 9001 certificate** (current, not expired)
- **CE marking declaration** (for EU markets) — Low Voltage + Machinery Directives
- **NSF/ANSI 3 listing** (for U.S. markets)
- **FDA-compliant materials documentation** (Title 21 CFR 177)
- **Recent third-party factory audit** (Bureau Veritas, SGS, or equivalent)
- **Reference customer list in your industry** — with contact permission for due diligence
- **Spare parts lead time guarantee** — 4 weeks worldwide minimum acceptable
- **Warranty terms** — minimum 2 years on major components (chamber, pump, heater), 1 year on wear items

V-TAI provides all eight in the standard supplier-qualification package on request. We recommend you request the equivalent from every vendor you evaluate; vendors that can't produce these in 5 business days are a red flag.

Section 10. Lead time and project plan

Plan the full chain from PO to production: production lead time + ocean freight + customs + inland transport + civil work + commissioning.

Standard PTW-1900 from V-TAI Shenzhen:

Stage	Duration
Order confirmation + engineering review	1 week
Production (standard configuration)	4–6 weeks
Production (custom chamber dimensions)	8–10 weeks
Ocean freight Shenzhen → most ports	4–6 weeks
Customs clearance + inland transport	1–2 weeks

Stage	Duration
Civil work (pit)	2–3 weeks (parallel to production)
Commissioning (V-TAI engineer)	2–3 days
Total order-to-production-ready	9–14 weeks (standard chamber)
	13–18 weeks (custom chamber)

Pro tip: schedule civil work to complete by machine arrival. Doing civil work in parallel with production saves 4–6 weeks total project time vs sequential.

Final decision framework

The right rack washer matches your throughput, sanitization, customization, infrastructure, industry, and budget. There is no universally "best" machine — only the right configuration for your operation.

Decision sequence:

1. Peak return rate → machine count and parallel layout
2. Sanitization compliance → PLC + CSV logging requirement
3. Trolley fit → standard vs custom chamber
4. Heating choice → electric vs steam
5. Stainless grade → SUS304 vs SUS316
6. Allergen capability → Allergen Reset profile
7. Civil work → pit vs ramp
8. Total cost of ownership → 15-year model with labour included
9. Vendor due diligence → 8-item checklist
10. Project plan → lead time + civil + commissioning

Ready for a quote?

Submit your inquiry at <https://rollinrackwasher.com/request-quote/> — engineering team responds with configuration-specific quote within 12 business hours. Or contact:

- **WhatsApp:** +86 135 0962 3269
- **Email:** info@v-tai.com

We provide configuration-specific quotes, CAD chamber drawings for custom dimensions, estimated freight to your nearest port, and a 5-business-day engineering review at no charge.

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