



TECHNICAL BUYER'S GUIDE · PRATISHNA ENGINEERS

WHITE GOODS & APPLIANCES COMPONENTS INJECTION MOULDING MACHINE GUIDE

A practical guide for appliance OEMs and their moulding suppliers: components, materials, mould requirements, production planning, automation, quality, worked examples and what to send for a machine recommendation.

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WHO THIS GUIDE IS FOR

Owners, plant and production managers, process engineers and purchase teams moulding parts for refrigerators, washing machines, air conditioners, coolers, fans and small kitchen appliances.

HOW TO USE IT

Sections 01 to 04 define the part, material and mould. Section 05 plans output. Sections 06 to 09 cover automation, quality, examples and your enquiry. Clamp force and shot sizing are covered in our Machine Selection Guide.

NEED A RECOMMENDATION?

Send your drawing, material, part weight, cavities and output target to sales@pratishnaengineers.com. The checklist in Section 09 lists what to include.

SECTION 01 · OVERVIEW

WHITE GOODS & APPLIANCES COMPONENTS & INJECTION MOULDING

Sheet metal and compressors make the frame and the cooling; nearly everything a user sees, touches or fills with water is injection moulded.

WHERE INJECTION MOULDING FITS IN AN APPLIANCE

A washing machine, a split AC or a mixer grinder carries dozens of moulded parts, from a tub weighing kilograms to a knob of a few grams. The same plant may run a 1-cavity tub mould next to a 16-cavity button mould, so appliance moulding covers the full range of machine sizes.

Component localisation is policy-driven. The PLI Scheme for White Goods has an outlay of ₹6,238 crore over FY 2021-22 to FY 2028-29, and 85 selected companies are expected to invest ₹11,198 crore^[1]. Appliance safety in India follows IS 302 (Part 1): 2024, aligned with IEC 60335-1:2020^[2].

MAIN COMPONENT CATEGORIES

LAUNDRY Outer tub, pulsator, lint filter, control panel	REFRIGERATION Liners, shelves, drawers, egg and ice trays, dispensers	AIR CONDITIONING Louvres, grilles, fan housings, scrolls	FANS & COOLERS Fan blades, regulators, cooler cabinet and tank
KITCHEN APPLIANCES Mixer grinder body, kettle, iron and toaster shells	USER INTERFACE Knobs, buttons, bezels, trims	EXTERIOR Door handles, hinge covers, panels	AIR HANDLING Blower scrolls, ducts, fan housings

WHY INJECTION MOULDING SUITS THESE PARTS

- Ribs, bosses, clips and pivots in one shot.
- Class A colour and gloss straight from the tool.
- One moulded tub or cabinet replaces a multi-part assembly.

TYPICAL MANUFACTURING CHALLENGES

- Warp on large thin shells such as tubs and panels.
- Weld lines on grilles and filter frames.
- Colour and gloss matching across resins.
- Flame and glow-wire rules on mains parts^[3].

WHERE MOULDING SITS IN THE APPLIANCE CHAIN

RESIN PP, ABS, HIPS, SAN, PA	DRYING & COLOUR masterbatch, drying	INJECTION MOULDING shells, trays, blades	DECORATION print, stamp, laser	SUB-ASSEMBLY inserts, balancing	FINAL ASSEMBLY appliance line	SAFETY TESTS heat, fire, function
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WHICH PARTS ARE NOT INJECTION MOULDED

Most mass-market refrigerator liners are thermoformed from extruded HIPS or ABS sheet^[5], and cooler tanks may be rotomoulded or blow moulded at low volume. Settle the process before tooling.

KEY REQUIREMENTS FOR APPLIANCE PARTS

HEAT & FIRE Parts near live connections face glow-wire limits ^[3] .	ELECTRICAL INSULATION Tracking resistance (CTI) for housings around live parts ^[4] .	COSMETIC SURFACE Visible panels, trims and knobs judged on gloss and colour.
HOT WATER & DETERGENT Tubs, pulsators and filters live wet and hot for years.	FOOD AND WATER CONTACT Fridge interiors, dispensers, jars and trays.	BALANCE & NOISE Fan blades and scrolls decide vibration and sound.

SECTION 02 · COMPONENTS

MAJOR WHITE GOODS & APPLIANCES COMPONENTS

The appliance parts covered by this guide, their materials and what each asks of the moulding process.

COMPONENT	APPLICATION	MATERIAL(S)	INJECTION MOULDING CONSIDERATIONS
Washing machine outer tub	Holds wash water, carries drum	PP-talc, PP-GF, PP copolymer	Very large shell; wall uniformity and ribs control roundness and vibration. Cooling layout controls warp.
Washing machine panel, door frame	Controls, top cover	ABS, PC/ABS, PP-talc, HIPS	Class A surface, printed or stamped; inserts; dimensions held across resin lots.
Pulsator, filter, lint trap frame	Wash action, filtration	PP copolymer, PP-talc, POM	Hot detergent and fatigue; vane profile; melt must knit round fine slots.
Refrigerator liner	Inner cabinet, door liner	HIPS, ABS, PP	Usually thermoformed ^[5] . If moulded: very large area, sink and warp, foam compatibility.
Fridge shelf, drawer, egg and ice tray	Food storage	PS, SAN, PP, ABS, food-grade	Clear SAN and PS show flow marks; low-temperature impact.
Water dispenser, ice maker, drip tray	Potable water handling	PP, ABS, SAN, POM, food-grade	No water traps; POM augers; resistance to cleaning agents.
AC louvre	Swinging air vane	ABS, PP, HIPS, PC/ABS	Long and thin; straightness is functional; multi-gating; precise pivots.
AC grille	Front, discharge, return grille	ABS, HIPS, PP, PC/ABS	Weld lines at every slot, venting, flatness, flame-rated grade.
Fan blade	Axial and appliance impellers	PP-GF, PA6-GF, PA66-GF, ABS, PP	Balance; fibre orientation; keep weld lines off blade roots.
Fan housing, duct, blower scroll	Air path	PP-talc, ABS, PP-GF, HIPS	Roundness at impeller clearance; two-part scrolls must shrink alike.
Fan regulator	Speed control knob and housing	ABS, PC, POM, urea formaldehyde	Shaft bore tolerance; sink under show face; glow wire and CTI for live parts.
Air cooler body	Cabinet and water tank	PP copolymer, HDPE, recycled PP blend	Large footprint; tank stays full for months; UV grade; ribs, not thick walls.
Mixer grinder body	Motor housing and base	ABS, PC/ABS, PP, PA6-GF	Heat, vibration, glow wire; stress cracking from oils and spices.
Small appliance housing	Kettle, iron, toaster, blender	PP, ABS, PC/ABS, PA6-GF, PBT	Heat-resistant grades near elements; food contact; sealing on steam paths.
Knob, button, bezel, trim	User controls and trim	ABS, PC, POM, PMMA, TPE	High-polish tools; plating or clarity grades; family tools for colour match.
Door handle, hinge cover, exterior trim	Opening and outer finish	ABS, PC/ABS, PA6-GF, PP	Fatigue at bosses; moulded inserts; gloss match to panels.

Compressors, heat exchangers, motors and sheet-metal cabinets are outside this guide. Seals, glass shelves and metal inserts are bought-in parts.

GROUPING BY MOULDING DEMAND

LARGE STRUCTURAL Tubs, cooler bodies, panels. Machine size, daylight, warp.	COSMETIC & PRECISE Grilles, louvres, knobs, trims. Surface, weld lines, straightness.	FUNCTIONAL & WETTED Blades, pulsators, dispensers, housings. Balance, heat, fire, chemicals.
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SECTION 03 · MATERIALS

MATERIALS USED FOR WHITE GOODS & APPLIANCE COMPONENTS

Appliance resins are chosen by position in the product: wet and hot, visible, near live parts, or touching food.

MATERIAL	TYPICAL COMPONENTS	RELEVANT PROPERTIES	PROCESSING CONSIDERATIONS	LIMITATIONS TO CHECK
PP, PP copolymer	Pulsators, filters, cooler bodies, trays, housings	Low cost, chemical and hot-water resistance.	High shrinkage; warp on flat parts.	Low stiffness unfilled; UV grade outdoors.
PP-talc, PP-GF	Outer tubs, scrolls, panels, fan blades	Stiffer, more stable than unfilled PP.	Fibre orientation drives warp and balance.	Weld-line strength with glass.
Recycled PP blend, HDPE	Air cooler bodies and tanks	Low cost, tough.	Lot-to-lot melt flow variation.	Stress cracking under constant water load.
ABS	Panels, grilles, louvres, knobs, housings, trims	Gloss, colour, paint and plating grades.	Dry before moulding.	Yellowing under UV and heat; oil cracking.
PC/ABS	Panels, grilles, mixer bodies, handles	Tougher and more heat resistant than ABS.	Drying; higher melt temperature.	Chemical attack from some cleaners.
HIPS	Liners, grilles, scrolls, panels	Low cost, easy flow.	Easy to mould.	Blowing agents can crack liners ^[5] .
PS, SAN	Clear drawers, shelf frames, trays	Clarity; SAN adds chemical resistance.	Show flow marks; polished tools.	Brittle when cold and loaded.
PC, PMMA	Regulator parts, backlit bezels, knobs	Clarity; PC is tough.	Dry well; stress-free moulding.	PMMA brittle; PC stress cracking.
POM	Augers, dispenser parts, knob drives	Stiff, low friction ^[10] .	Keep apart from PVC and other halogenated resins.	Outside pH 4 to 9 check suitability ^[10] .
PA6-GF, PA66-GF, PBT	Fan blades, mixer bodies, hot housings	Strength and heat resistance.	PA must be dried ^[9] ; fibre orientation.	PA absorbs moisture in service.
TPE	Soft-touch buttons, grips	Soft feel, grip.	Often overmoulded on a rigid base.	Bond to substrate.
Urea formaldehyde	Fan regulator parts	Thermoset; heat and tracking resistant.	Needs a thermoset moulding process.	Not a thermoplastic machine job.

General material behaviour only. Food-grade versions of PP, PS, SAN and ABS are specified where parts touch food or drinking water. Confirm grade data with the supplier.

WHITE PARTS & UV Choose grade and masterbatch together; ABS and HIPS can yellow with heat and light.	RECYCLED BLENDS Check melt flow per lot and keep them away from Class A faces.	THERMOSET PARTS Urea formaldehyde regulator parts need a separate thermoset process.
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WHAT STANDARDS ASK OF MATERIALS

For unattended appliances such as fridges and washing machines, plastics supporting connections above 0.2 A need a GWFI of at least 850 °C at the part thickness, and GWIT of 775 °C is the reference ignition limit^[3]. Housings around live parts are also judged on CTI, which grades tracking resistance under electrolyte drops^[4].

MATERIAL SELECTION QUESTIONS

- ☐ Does the part support or sit near live connections?
- ☐ Hot water, detergent, oil or food contact?
- ☐ Visible surface: colour, gloss, decoration?
- ☐ Load, heat or cold in service?
- ☐ UV exposure by a window or outdoors?

SECTION 04 · DESIGN & MOULD

COMPONENT DESIGN & MOULD REQUIREMENTS

Appliance moulds range from huge single-cavity tub tools to polished family tools for knobs, and each class fails in its own way.

DESIGN FEATURES THAT AFFECT MOULDING

FEATURE	WHY IT MATTERS IN APPLIANCES	MOULDING IMPLICATION
Large thin shells	Tubs, panels, cooler bodies and liners.	Warp; cooling layout and gate position decide flatness.
Ribs and bosses	Stiffness without thick walls; screw bosses on panels.	Sink on show faces; rib ratio and cored bosses.
Perforations	Grilles and lint filters have many slots.	Weld line at every slot; venting and melt temperature.
Long flow paths	Louvres and trims are long and thin.	Multi-gating; straightness after ejection.
Precision features	Pivots, gear teeth, D-shaft bores.	Stable shrinkage; tight tool tolerances.
Class A surfaces	Panels, knobs, handles, bezels.	Polish, gate hiding, gloss and colour control.
Balanced rotors	Fan blades and blower wheels.	Symmetric gating and cooling; core position.
Wet geometry	Trays, dispensers, tanks.	No water traps; draining features.

MOULD CONSIDERATIONS

ITEM	APPLIANCE POINTS	ITEM	APPLIANCE POINTS
Cavity layout	Tubs, panels, bodies: 1. Knobs, buttons: 8 to 32.	Steel	High-polish steel for Class A; wear steel for GF grades.
Runner	Hot runners with sequential gates on large shells.	Side actions	Clips, snap hooks and undercuts on housings.
Cooling	Conformal or dense circuits on tubs and panels ^[8] .	Ejection	Large area, even push to avoid distortion.
Venting	Critical on grilles and lint filters.	Mould size	Big tools need daylight, stroke and crane capacity.

PLANNING LARGE TOOLS

DAYLIGHT	HANDLING	TEMPERATURE	FAMILY TOOLS
Deep tubs and bodies need long opening strokes.	Crane capacity and quick mould change.	Several controller zones for flatness.	Knobs and trims in one tool hold colour.

SECONDARY OPERATIONS THAT SHAPE THE MOULD

OPERATION	TYPICAL PARTS	WHAT IT ASKS OF THE MOULDED PART
Decoration	Panels, knobs, bezels	Flat print areas; pad print, hot stamp or laser marking.
Insert moulding	Handles, panels	Insert seats, retention, loading each cycle.
Balancing	Fan blades, blower wheels	Symmetric mass; balance weights or trim zones.

SECTION 05 · PRODUCTION PLANNING

PRODUCTION CAPACITY & CYCLE-TIME PLANNING

Appliance output is set by the finished product: one tub per washer, several louvres per AC, so plan each part against the assembly line rate.

OUTPUT

Parts/hour = Cavities × 3600 ÷ Cycle time (s)

Effective/hour = Parts/hour × Utilisation

Day = Effective/hour × Hours run

Utilisation covers mould and colour changes, start-up, maintenance and rejects.

EXAMPLE 1 · 8-CAVITY ABS APPLIANCE KNOB

8 × 3600 ÷ 24 s = 1,200 /h

× 0.85 utilisation = 1,020 /h

× 22 h = 22,440 /day

× 26 days = 583,440 /month

EXAMPLE 2 · 1-CAVITY PP-TALC OUTER TUB

1 × 3600 ÷ 90 s = 40 /h

× 0.85 = 34 /h · × 22 h = 748 /day

× 26 days = 19,448 /month

Working backwards: for 30,000 tubs a month in 572 running hours, you need 52.4 per hour. A 1-cavity tool cannot add cavities, so the cycle must fall to $3600 \times 0.85 \div 52.4 \approx 58$ s, or a second mould and machine are needed.

Illustrative example. Cycle times of 24 s and 90 s, 85% utilisation, 22 h per day and 26 days per month are assumptions. Actual requirements depend on the component, material, mould and production conditions.

WHAT SETS THE CYCLE TIME

PHASE	APPLIANCE INFLUENCE
Filling	Long flow on louvres and large panels.
Cooling	Usually the largest share; rises roughly with wall thickness squared ^[8] .
Opening	Deep tubs need long strokes and time.
Take-out	Robot handling of large and cosmetic parts.

BALANCING CAVITIES, CLAMP FORCE AND OUTPUT

PP EGG TRAY MOULD	PROJECTED AREA	CALCULATED FORCE	RATED AT 85%	SHOT	EFFECTIVE OUTPUT
1 cavity	160 cm ²	64 t	76 t	60 g	153 /h
2 cavities	318 cm ²	128 t	151 t	118 g	306 /h
4 cavities	630 cm ²	254 t	298 t	234 g	612 /h

Illustrative example. Force = projected area × clamp factor K × safety factor S. PP, PE and PS are commonly given 2 to 3 US tons per square inch^[7], about 0.28 to 0.42 t/cm²; K = 0.35 t/cm² and S = 1.15 assumed. Also assumed: 150 cm² and 55 g per tray, runner area 10 / 18 / 30 cm² and weight 5 / 8 / 14 g, 20 s cycle, 85% utilisation.

PART CLASS	WHAT DRIVES THE PLAN
Large shells: tubs, bodies, panels	Usually 1 cavity, so cycle time and machine count set capacity.
Cosmetic small parts: knobs, trims	Cavities, colour changes and decoration capacity.
Rotating parts: blades, wheels	Balance rejects and balancing station throughput.

PARTS PER APPLIANCE

Required parts/hour = Appliances per hour × Parts per appliance ÷ Accepted yield

A split AC may use several louvres and a fan housing per indoor unit. Work out each moulded part against the assembly line rate, then add spares for service stock.

MACHINE UTILISATION AND PLANNED DOWNTIME

COLOUR CHANGES	LARGE MOULD CHANGES	SEASONAL DEMAND	MODEL CHANGES
White, grey and black runs; sequence light to dark.	Plan crane time and quick-change hardware.	AC and cooler parts peak before summer; build stock.	Facelifts change trims and panels each year.

SECTION 06 · AUTOMATION

AUTOMATION & PRODUCTION EFFICIENCY

In appliance plants automation protects the surface and the shape of large parts as much as it saves labour.

AUTOMATION	WHERE IT ADDS VALUE IN APPLIANCES	WHEN IT USUALLY MAKES SENSE
Robot take-out	Tubs, panels, cooler bodies, grilles.	Large or heavy parts and Class A surfaces.
Cooling fixtures	Hold louvres, panels and trims flat after ejection.	Long thin parts that bow while cooling.
Sprue picker	Cold-runner knob, button and tray moulds.	Multi-cavity small parts on long runs.
Insert loading	Threaded inserts and stiffeners in handles and panels.	Insert parts at volume.
Decoration cells	Pad printing, hot stamping, laser marking.	Panels, knobs and bezels printed in-line.
Balancing station	Checks and corrects fan blades and wheels.	Every rotating part.
Vision inspection	Flow marks, black specks, colour.	Visible and clear parts.
Drying & conveying	Dryers for ABS, PC/ABS, PC and PA ^[9] .	Several machines on hygroscopic grades.

Large-part cells often pay back on scrap alone: a scratched panel or a bowed tub is lost material and machine time. Small-part cells pay back on labour and counting.

AUTOMATION BY APPLIANCE FAMILY

FAMILY	MAIN AUTOMATION	WHY
Laundry: tubs, pulsators	Robot take-out, cooling fixture	Heavy parts that must stay round
Refrigeration: trays, drawers	Sprue picker, vision, careful stacking	Clear and food-contact parts show every mark
Air conditioning: louvres, grilles	Robot, flatness fixtures	Long thin parts bow after ejection
Kitchen appliances: bodies, knobs	Dryers, decoration, insert loading	Engineering grades and printed surfaces

DECIDING ON AUTOMATION

PART SIZE & WEIGHT Tubs and bodies are hard to remove by hand every cycle.	SURFACE & SHAPE Robots place parts on fixtures without marks or bending.	LINE PACING Robots hold a steady cycle to match the assembly line.
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INTERFACES TO SPECIFY ON THE MACHINE

ROBOT Signal interface, safety, space over the platen.	CORE & HOT RUNNER Sequential valve gates and core circuits.	TEMPERATURE Mould temperature controller zones.	DATA Shot records for OEM quality audits.
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WHERE THE COST OF A MOULDED PART COMES FROM

MATERIAL PP, ABS, PA	MACHINE per machine hour	LABOUR handling, decoration	POWER kWh per part	MOULD large tools	REJECTION surface, warp	PACKING protected surfaces
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On tubs and bodies, material weight and cooling time dominate. On knobs and trims, machine hours, decoration and cosmetic rejects dominate. Use your own rates to compare options.

SECTION 07 · QUALITY

QUALITY, TESTING & COMMON DEFECTS

An appliance part must pass the safety laboratory, the assembly line and years in a kitchen or on a balcony.

TESTS AND CHECKS

CHECK	WHAT IT INVOLVES	LINK TO MOULDING
Appliance safety	IS 302 (Part 1):2024, aligned with IEC 60335-1:2020, sets general safety requirements ^[2] .	Material grade, wall thickness, clearances
Glow wire	Parts supporting connections above 0.2 A in unattended appliances: GWFI 850 °C at part thickness ^[3] .	Grade, wall thickness, moulded-in stress
Tracking (CTI)	Resistance to conductive tracking on insulating surfaces ^[4] .	Grade, surface contamination
Balance	Fan blades and blower wheels checked for imbalance.	Fibre orientation, core shift
Low-temperature impact	Fridge shelves, drawers and trays at service temperature.	Moulded-in stress, weld lines
Dimensional & fit	Panel fit, louvre straightness, tub roundness.	Warp, shrinkage, cooling
Appearance	Colour, gloss and flow marks against masters.	Tool polish, melt and mould temperature

Clause requirements depend on the appliance and its Part 2 standard. Confirm the current edition and the certification status for each product.

IN-PROCESS CONTROLS

COLOUR CHECK Against master plaques under standard light.	FLATNESS GAUGE Panels, louvres and tub rims.	WEIGHT Flags short shots and packing drift.	MOISTURE Resin moisture before ABS, PC and PA runs.
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TROUBLESHOOTING COMMON DEFECTS

DEFECT	POSSIBLE CAUSES	EFFECT ON THE PART	AREAS TO INVESTIGATE
Warp	Uneven cooling, fibre orientation, early ejection	Poor panel fit, tub out of round	Cooling layout, gates, hold, mould temperature
Weld lines	Melt fronts meeting round slots and bosses	Weak grilles and filters, visible lines	Venting, melt temperature, gate position
Sink marks	Thick bosses and ribs under show faces	Cosmetic rejects on panels and knobs	Rib ratio, cored bosses, hold pressure
Flow marks	Low melt or mould temperature, slow fill	Visible on clear drawers and gloss parts	Injection speed, polish, temperatures
Splay, silver streaks	Moisture in ABS, PC or PA	Streaks, weaker parts	Drying time and temperature
Stress cracking	Moulded-in stress plus oils, cleaners or blowing agents ^[5]	Cracks in service	Hold, mould temperature, grade
Imbalance	Asymmetric fill or fibre orientation	Vibration and noise	Gating symmetry, core position
Colour variation	Masterbatch ratio, resin lot, residence time	Mismatch between parts	Dosing, lot control, purge

SECTION 08 · WORKED EXAMPLES

PRACTICAL MACHINE-SELECTION EXAMPLES

Three typical appliance parts show how the selection logic changes with the component. These are engineering illustrations with assumed inputs, not customer case studies.

A · PP REFRIGERATOR EGG TRAY		CAVITIES
APPLICATION · MATERIAL	Fridge door egg tray · food-grade PP	
CHARACTERISTICS	About 55 g, 150 cm ² projected area (assumed); shallow pockets	
CAVITIES · OUTPUT	2 · about 306 per hour at 20 s (Section 05)	
MOULD CONSIDERATIONS	Balanced runner, even cooling for flatness, polish	
SECONDARY	Stacking and packing without scratching	
EVALUATE The Section 05 table gives about 128 t calculated and a 118 g shot, so a clamp rated around 151 t or more. Platen size for the 2-cavity tool also matters. STILL NEEDED CAD projected area, grade, fridge model volumes.		

B · WASHING MACHINE OUTER TUB		SIZE + WARP
APPLICATION · MATERIAL	Top-load outer tub · PP-talc (to be confirmed)	
CHARACTERISTICS	Deep round shell with ribs and bosses; kilogram-class part	
CAVITIES · OUTPUT	1 · about 34 per hour at 90 s (Section 05)	
MOULD CONSIDERATIONS	Hot runner, dense cooling, even ejection, long core	
SECONDARY	Robot take-out and cooling fixture	
EVALUATE Projected area and depth set the machine: clamp, platen size, daylight and shot volume all together. Cooling decides roundness more than clamp force. STILL NEEDED tub drawing, part weight, grade data, monthly volume.		

C · MIXER GRINDER BODY		HEAT + FIRE
APPLICATION · MATERIAL	Motor housing and base · PC/ABS or PA6-GF (to be confirmed)	
CHARACTERISTICS	Motor mounting bosses, vents, clips, visible surface	
CAVITIES · OUTPUT	1 or 2 · set by assembly line rate	
MOULD CONSIDERATIONS	Side actions for vents and clips, cored bosses	
SECONDARY	Decoration, insert loading, assembly	
EVALUATE Grade choice for glow wire, heat and oil resistance comes first; then drying, temperature control and core-pull circuits. Tonnage needs projected area. STILL NEEDED drawings, grade and safety requirements, volume.		

In each case the part, the grade and the tool were fixed first. The machine followed from them.

WHAT DECIDED THE MACHINE IN EACH EXAMPLE

SELECTION FACTOR	A · EGG TRAY	B · OUTER TUB	C · MIXER BODY
Main limit	Cavities, flatness	Part size, cooling	Grade, safety tests
Clamp force	About 151 t rated	Needs projected area	Needs projected area
Auxiliaries	Conveyor, packing	Robot, cooling fixture	Dryer, core pulls

Illustrative example. Actual requirements depend on the component, material, mould and production conditions.

SECTION 09 • BUYER CHECKLIST

MACHINE BUYER'S CHECKLIST

What to prepare before asking an injection moulding machine manufacturer for a recommendation on an appliance part.

COMPONENT

- ☐ 2D drawing and 3D CAD model
- ☐ Part and runner weight, wall thickness
- ☐ Grade data and colour
- ☐ Surface class and decoration
- ☐ Inserts and overmoulded parts

PRODUCTION

- ☐ Appliance volume and parts per unit
- ☐ Colour and model variants
- ☐ Cavity count and target cycle
- ☐ Shifts and seasonal peaks
- ☐ Packing to protect surfaces

MOULD

- ☐ New or existing mould; size and weight
- ☐ Depth and opening stroke needed
- ☐ Hot runner and valve gate zones
- ☐ Core pulls and side actions
- ☐ Previous machine specification, if any

APPLIANCE APPLICATION

- ☐ Near live parts: glow wire, CTI
- ☐ Hot water, detergent, oil or food contact
- ☐ Indoor, window-side or outdoor
- ☐ Balance or noise limits
- ☐ OEM approval and audit needs

DOCUMENTS TO REQUEST FROM THE MACHINE SUPPLIER

PLATEN DRAWING

Tie-bar spacing, mounting holes, ejector pattern, nozzle details.

LAYOUT

Footprint, robot and conveyor space, access.

UTILITIES

Connected load, cooling water, air and oil needs.

TRIAL REPORT

Trial or acceptance data at your settings.

QUESTIONS TO ASK BEFORE YOU BUY A MACHINE

#	QUESTION	WHY IT MATTERS FOR APPLIANCES
1	Will my largest mould fit, with the daylight and stroke it needs?	Tubs, cooler bodies and panels.
2	How many hot-runner and valve-gate zones can the machine control?	Large shells and multi-gated louvres.
3	What shot repeatability does the machine hold at my shot size?	Colour, gloss and dimensions across lots.
4	How many core-pull circuits are available?	Housings with clips and vents.
5	What robot interface and space over the platen are provided?	Take-out of large and cosmetic parts.
6	Is a wear-resistant screw and barrel available for glass-filled grades?	PA-GF and PP-GF blades and bodies.
7	Can the control store settings for each model and colour?	Frequent colour and model changes.
8	What is the energy use per part at my cycle?	Long cooling on thick, large parts.
9	Can the machine log shot data for OEM audits?	Traceability for appliance brands.
10	What installation, training and spare-parts support is included?	Seasonal peaks need reliable uptime.

SECTION 10 · TECHNICAL CONSULTATION

PRATISHNA ENGINEERS & TECHNICAL CONSULTATION

Pratishna Engineers Ltd. is a Mumbai-based injection moulding machine manufacturer with in-house design, manufacturing, assembly, testing and service, supplying plastic component manufacturers in India and international markets.

35+

YEARS OF EXPERIENCE

9,000+

MACHINES SUPPLIED

1,000+

CUSTOMERS

In-house

DESIGN TO SERVICE

Machines are used for automotive, packaging, electrical and electronics, medical, consumer, agriculture and industrial applications.

OUR TECHNICAL APPROACH

COMPONENT	MATERIAL	MOULD	PRODUCTION REQUIREMENT	MACHINE CONFIGURATION
1 · CALCULATE Clamp force and shot weight from part, cavities and grade.	2 · CHECK THE MOULD Size, stroke, core pulls and inserts.	3 · CHECK OUTPUT Cycle and cavities against your volume.	4 · CONFIGURE Screw, barrel, controls and auxiliaries.	

SEND YOUR COMPONENT & PRODUCTION REQUIREMENTS

Component drawing · material · part weight · mould details · cavity count · production requirement · other requirements such as surface class, decoration, flammability rating or automation.

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A1-4, Vaibhav Ind. Premises, Opp. Oxford Chambers, Saki Vihar Road, Andheri (E), Mumbai 400 072, India

TECHNICAL REFERENCES

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