FUZZY LOGIC WASHING MACHINES

The higher the spin speed, the dryer the clothes at the end of the washing cycle and hence the shorter the drying time in the tumble dryer. Opt for a model that spins at more than 1000 revolutions per minute

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From the first washing tool, a broom with four fingers at the bottom to move the clothes around the bucket, to the modern fully automated ones, washing machines have come a long way. Washing machines are gradually emerging as an omnipresent *dhobi* in Indian homes.

The market is flooded with many models, each boasting of a large number of features and specialties. So you are likely to get confused as to which washing machine to buy. A big disadvantage in shopping for washing machines is that you can't try them out in showrooms. However, you can still choose the right machine for your needs if you're able to understand the specifications included in the product brochure. Here we detail what you need to take into account while selecting a fuzzy logic washing machine.

The basics

Washing machines incorporate a tub with heating element and something to rotate or scrub the clothes in the drum. Once the water and detergent are added, mechanical action begin to soak and agitate the clothes. Fuzzy logic electronics intelligently improves the wash performance in washing machines.

Washing machines are mainly of three types, namely, semi-automatic, automatic, and washer. In semi-automatic machines the controls are not fully automatic and manual intervention is required. In fully automatic machines, no manual intervention is required during the washing process. Washers are single-tub machines that only wash. Since washers don't have the facility for drying the clothes, these cost less than semi-automatic and fully automatic washing machines.

For automatic machines, programs have to be selected and set by the user prior to the start of wash cycle. Sensors sense the wash load and decide the program ideal for washing the clothes, water level, time required to wash, number of rinses and spins, type of fabric, etc. Fuzzy logic washing machines with special sensors are the most easy to use.

Fuzzy logic. Fuzzy logic washing machines are gaining popularity. These machines offer the advantages of performance, productivity, simplicity, productivity, and less cost. Sensors continually monitor varying conditions inside the machine and accordingly adjust operations for the best wash results. As there is no standard for fuzzy logic, different machines perform in different manners.

Samsung SWF-P10

Typically, fuzzy logic controls the washing process, water intake, water temperature, wash time, rinse performance, and spin speed. This optimises the life span of the washing machine. More sophisticated machines weigh the load (so you can't overload the washing machine), advise on the required amount of detergent, assess cloth material type and water hardness, and check whether the detergent is in powder or liquid form. Some machines even learn from past experience, memorising programs and adjusting them to minimise running costs.

The diagnostic fault-finding system displays a fault code if any problem arises. You can then convey this code to the service centre, thus ensuring that the repair technician reaches with the right parts to fix it without delay.

Machines with fuzzy logic microprocessors can be updated as and when a new technology or program comes up. Several models of Internet-enabled washing machines have been launched. When the networked home becomes a reality, these machines will allow downloading of new programs and remote fault diagnosis over the direct Internet connection.

Most fuzzy logic machines feature 'one-touch control.' Equipped with energy saving features, these consume less power and are worth paying extra for if you wash full loads more then three times a week. Inbuilt sensors monitor the washing process and make corrections to produce the best washing results. In some machines a tangle sensor senses whether the clothes are tangled and takes corrective action by adjusting the water current, so the clothes don't tangle further and are cleaned better.

High-end machines have a 'suds free' system including a pressure sensor to detect extra suds in washing if you've used a large amount of detergent. The washing machine drains water together with the detergent and then refills with minimum water to restart. These machines cost more than regular models. The foam suppression feature detects whether too much foam is present during wash and accordingly it either reduces the agitation or adds an extra rinse.

The fuzzy logic checks for the extent of dirt and grease, the amount of soap and water to add, direction of spin, and so on. The machine rebalances washing load to ensure correct spinning. Else, it reduces spinning speed if an imbalance is detected. Even distribution of washing load reduces spinning noise.

Neuro fuzzy logic incorporates optical sensors to sense the dirt in water and a fabric sensor to detect the type of fabric and accordingly adjust wash cycle.

Capacity

Consider your family size and the average number of clothes you wash daily. For a family of three, a capacity of 4 kg suffices. A 6kg capacity is okay for a family of five to six members. A higher-capacity machine offers the convenience of washing more clothes at one go but consumes more power.

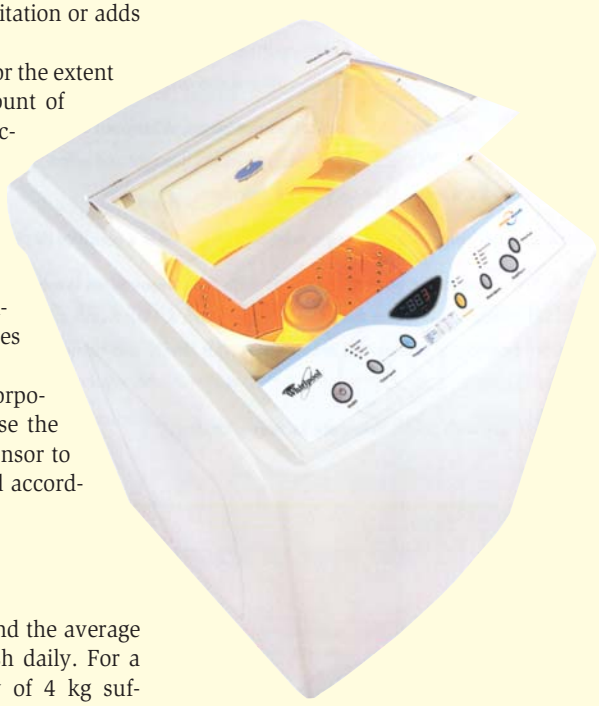
Choice of size also depends on the area of the place where you intend to place your washing machine. Smaller-capacity machines wash fewer clothes, but these can easily fit in a limited space. Take the installation space measurements to the showroom before buying to crosscheck with the machine size.

Standalone or washer-dryer?

Although washer-dryer machines don't operate with the efficiency of standalone washing machines, they offer enormous space saving. However, you have to drain all the soap water before drying. Also, you can't wash and dry at the same time and the drying performance is inferior to that of standalone machines. But then, washer-dryers cost less and allow you to wash and dry your clothes without having to reset the machine.

Wash programs

If you wash bedsheets, jeans, and other heavier clothes frequently, go for a washing machine that offers cleaning programs



Whirlpool Whitemagic

Fuzzy Logic Washing Machines

Company	Model	Price (Rs)	Features
Chiban	Intelligent Fuzzy Logic WM 60SK		Capacity 6 kg, fully auto, fuzzy logic circuits, coarse soak fuzzy, heavy speedy suit, function wash (rinse, spin), 3 water levels, delay start, power auto off, stainless steel tub
Whirlpool	Whitemagic H65 Stain Wash/Whitemagic H65		Stain wash, hot wash, 1-2/1-2 handwash system, sixth sense, customised wash program, optimal detergent dosage, unique aqua shower, woolmark certification, water storage
Godrej	5.5 Fuzzy Logic/GF60	16,100	5.5 kg, fully automatic, microprocessor control, top loading, pulsator wash, heavy wash, normal wash, delicate wash, 3 rinses, custom clean program, half load program, no. of wash/spin buckets 1, detergent dispenser, wash load sensory, automatic water control, one touch wash, automatic drainage, timers, digital display, auto restart, warranty 2 years
Electrolux Kelvinator	760 FXZ Washy Talky	16,990	Wash load 6 kg, fully automatic, micro processor control, top loading, pulsator wash, pre-wash soak, hot water wash, heavy wash, normal wash, delicate wash, spin shower facility, no. of wash/spin bucket 1, detergent dispenser, wash load sensor, automatic water control
LG Electronics	Fuzzy Nova WF-56610TD	14,700	Wash load, 6 kg, micro processor control, topo loading, turbo drum wash, prewash, stainless steel interior basket, wash load sensor, correction for unbalanced spinning, automatic drainage timers, autostart, link filter
Onida	Hydro Fuzzy 7.0	14,990	6 wash programs, auto weight balancing, auto power off, end-of-cycle buzzer, digital display, one-touch operation, self-diagnostic system, fuzzy option, dry tap protection, night option, speedy option, mega hydrologic pulsator, unlimited wash combinations, silent base and cover, rinse plus, 3 rinse options, 4 spin options, 2 year warranty
Samsung India	SWF-P10		Capacity 6 kg wash, tumble wash, tangle free wash, fuzzy logic control, jog dial for easy selection, smart digital display, slanted control panel, minimum noise and vibration, memory backup, 5-step water temperature control, water temperature 0-95°C, error indicator, 24 wash programs, delay start (up to 24 hours), 5 mode spin control (including no spin and 400/600/800/1000 rpm), anti foam control, spin cancellation, dimensions (W×D×H) (598×550×844)
	WA-11K2		Capacity 9 kg hydrojet pulsator, bio-magic filter, auto spin balancing, transparent window, 4 water levels (extra low, low, medium and high), wash program (saree, fuzzy, speedy, wool, blanket) delay start, stainless steel tub, memory back up, hot and cold water inlet
	WA-75K5		Capacity 5.5 kg (wash capacity), boomerang pulsator, auto spin balancing, 4 water levels (ultra low, low, medium and high), wash program (saree, fuzzy, speedy, wool and heavy), delay start, plastic tub, memory back up, bio magic filter
	WA-75N6		Wash capacity 6.5 kg, boomerang pulsator, 4 water levels (ultra low, low, medium and high), wash program (fuzzy, soak, speedy), plastic tub, transparent window, bio magic filter
	WA-75K4		Wash capacity 5.5 kg, hydrojet pulsator, auto spin balancing, 4 water levels (extra low, low, medium and high), wash program (saree, fuzzy, speedy, wool, blanket), delay start, plastic tub, memory back up, transparent window, bio magic filter
	WA-85K2		Wash capacity 6.5 kg, hydrojet pulsator, water inlet hot and cold, 4 water levels (extra low, low, medium and high), wash program (saree, fuzzy, speedy, wool, heavy), delay start, stainless steel tub, memory back up, transparent window, bio magic filter

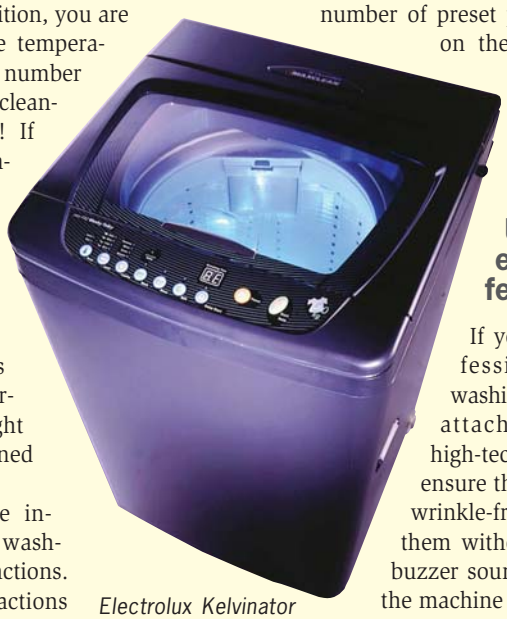
While every precaution has been taken to ensure accuracy and adequate information in this table, EFY assumes no responsibility and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

for hard-textured material.

High-end machines feature different wash programs to suit different types of clothes. The programs include 'regular' for normal wash, 'gentle' for delicate clothes, 'tough/hard' for rugged clothes, and so on. In addition, you are able to select the temperature of wash and number of runs for better cleaning. But beware! If these washing machines don't have fuzzy logic technology to automatically control the temperature when the clothes start to get overheated, you might be stuck with ruined clothes.

It pays to be informed about the washing and rinsing actions. If the washing actions are severe, your clothes could get ripped and tattered. If the shower for rinsing is not proper, you might get either over-rinsed clothes, which will wear out fast, or faded clothes with a clinging residue of detergent.

The 'number of cycles' specifies the number of preset programs available on the machine. This is important for clothes that require different temperatures.



Electrolux Kelvinator 760 FXZ Washy Talky

Utility and ease of use features

If you are a busy professional, opt for a washing machine with an attached dryer. Some high-technology machines ensure that your clothes are wrinkle-free, so you can iron them without much effort. A buzzer sounds to indicate that the machine is done with cleaning and drying processes.

Look for a machine that meets all your washing needs while saving your time, energy, and money. You won't want to spend hours deciphering complicated instructions. If the showroom dealer can't demonstrate the functioning in a minute or two, the machine is unlikely to offer the ease of operation.

Controls should be clearly labelled with minimal number of knobs and buttons. While considering features, make sure that the model has basic ones, such as half load, economy settings, and fast spin. Latest machines have handy time and energy saving features (one-touch, 'how dirty', and 'hand wash' options) and functions like 'time to end.' Fuzzy logic and electronic sensors are currently available only in expensive, high-end models. If you need to wash a large number of clothes, choose a machine with a larger porthole, extra long wash duration, and options for 'heavily soiled' laundry.

Price

Don't get swayed by the price of the machine. While an expensive model

from a reputed manufacturer may cost you more initially, the saving comes in the form of less power, time, and water consumption. Running cost is an important consideration and should be taken into account while considering the cost of a washing machine. Low-priced machines often consume a large amount of power and water, thereby proving costly in the long run.

Spin speed

The higher the spin speed, the dryer the clothes at the end of the washing cycle and hence the shorter the drying time in the tumble dryer. Thus a high spin speed results in less washing time. Opt for a model that spins at more than 1000 revolutions per minute. Some machines spin as fast as 7000 rpm during drying cycle.

Washing technique

In some machines a pulsator disk at the bottom circulates water upwards in large circles while rotating, providing better yet gentle cleaning of clothes.

In the agitator wash technique, a rod with fin is used at the centre of the washing machine. A rubbing action squeezes the dirt out of clothes. But it restricts the space and the clothes tend to get entangled.

The tumble wash technique is used in front loaders. A steel drum rotates along a horizontal axis and the clothes rub against its metal surface due to centrifugal action. The cleaning is superior but there is a risk of ruining gentle fabrics.

Loading the washing machine

How do you want to load clothes into the washing machine—from front or from top? Also consider the door size and its angle when opened. Large and angled front doors allow easier access.

Top loaders allow you to easily remove clothes, without having to bend, even during power failure. These are compact and require normal detergents. You can add clothes even if the wash cycle has begun.

The larger the porthole, the more convenient the loading and the unloading. Most top loading machines have an agitator—a device in the centre of the tub that generates washing action by stirring the wash load. All front-loading machines use the tumble wash action for washing clothes and are gentler on the clothes than a top-loading machine with an agitator.

Front-loaders are usually more expensive than top-loaders, as these incorporate heftier motors and suspensions. However, these consume less water and dry clothes much faster, thereby reducing your energy bill. The hot wash option allows better cleaning.

You cannot open a front-loader midway through a wash cycle. You need to use detergents producing less lather and, if the power fails, you can't open the door due to water in the drum. Also, you need to leave room for door opening/closing on the front side.

Automation

On fully automated washing machines, you don't need to wet your hands—just put in your clothes, turn the machine on, and wait for it to finish washing and drying. On semiautomatic machines, you have to manually transfer the clothes from the washer to the dryer.

Automatic machines require a dedicated running water supply from a tap. A single tub carries out all the actions. Put the clothes in, add water and detergent, program the wash cycle, and sit back. The washing machine does washing, rising, and drying and beeps when it it is through with all the tasks.

Semi-automatic machines featuring microprocessor-based controls with feather-touch buttons consume less power and are preferable where running water is not available.

Power consumption

Energy efficiency, measured in kWh/cycle, indicates energy savings. The more efficient machines consume less energy for doing the same job. The most efficient machines are rated 'A,' while the least efficient washing machines are rated 'G.' An 'A' rating implies the best performance and a 'G' rating implies the worst performance.

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