DIFFERENCE BETWEEN GRANULAR ACTIVE CARBON COLUMS AND REVERSE OSMOSIS SYSTEMS

GRANULAR ACTIVE CARBON COLUMN	REVERSE OSMOSIS (RO)
Consists of a single, large column of activated (active) carbon granules that purifies the water in one step as it flows through the column. A whole range of impurities are adsorbed by the carbon (note: adsorb spelled with a *d*). Strictly speaking, adsorption is not *filtering*, but rather an effect whereby impurities are attracted by the carbon molecules and caught up within the porous carbon structure	Consists of five or six consecutive stages, purifying the water in a step-wise fashion a it flows through the system. The heart of the system is the *reverse osmosis membrane* (an ultra-fine screen made from a special material). This membrane constitutes the second-last stage in the system. The stage just before the membrane is an active carbon column (which is quite small in comparison with the single carbon column option). This column protects the membrane against rapid clogging. After the membrane comes another carbon column that finally removes bad tastes and odour from the water. The reverse osmosis system also includes a reservoir that receives and stores the purified water for use when required. A booster pump may be necessary to force the water through the membrane if municipal water pressure is too low.
All unwanted impurities (chloride, toxins, bad taste & odours, etc., commonly found in municipal water are removed. Healthy minerals, on the other hand, such as salts, potassium, calcium, etc. are not removed	Reverse osmosis is designed to remove virtually everything from water, letting through just the H_2O as it were. Some argue that this is a disadvantage, since pure H_2O has a leaching effect on the body, reducing the important minerals.
A relatively massive amount of carbon is used – from 500 g in small kitchen units to hundreds of kilograms in large-scale commercial units	The amount of carbon used in the carbon stages is relatively small, from a few spoonsful, up to a few kilograms in large systems.
Carbon is used in granular, bulk form, which is relatively cheap and long-lasting. Replacement is necessary only every 2-5 years	Carbon comes in cartridge-format, which are pre-moulded carbon blocks. These generally consist of small amounts of carbon, must be replaced more frequently, and are more expensive. All the other filter stages in the system also need frequent replacement, adding to the maintenance cost
The flow rate of water through carbon columns is fast and continuous, which is very convenient	Water production is slow. When the reservoir runs empty, it takes time to be replenished
The initial cost as well as the running cost of a carbon column is relatively low	Initial and running costs of reverse osmosis systems are relatively high, and they take up more space
No water is wasted during the purification process	Reverse osmosis systems waste about 4-5 times more water than they produce. The water that is wasted is necessary to flush the membrane to prevent it from clogging up.