Traditional washing machines are not designed to work in microgravity environments or accommodate for the scarcity of resources on a spaceship. Because of this, there is currently no way of washing clothing in space. Having a supply of clean clothing for astronauts requires exhaustive and infeasible alternatives to washing clothing such as receiving clothing resupplies from earth in the case of the ISS. As the distance from earth and need for self sufficiency for astronauts increases, so does the need for astronauts to be able to clean their own clothing.

The typical wash process involves multiple phases of treating clothing items including hydration, agitation, removal of dirty water, and disinfection. Though each phase is important, finding an automatable mechanical process that can either carry out, or support the addition of these phases is paramount. Carrying out the wash process using a sealed piston head and wash chamber is one process that may be able to do this.

Compressing a clothing water mixture generates a flow through the clothing that can agitate the clothing. The displacement caused by the piston compressing the clothing creates a flow which can be directed to perform phases of the wash process such as hydrating and drying the clothing as well as other auxiliary or additional processes such as filtering wash water. In this way, the press for the washing machine both acts as the mode that the clothing is washed by, but also as a circulating pump that enables all functions surrounding the wash process. Using a piston design has inherent advantages such as being able to keep fluids such as air and water separate and bypass key issues of other designs such as surface tension and being able to work independent of gravity. Due to the simplicity of this design and flexibility of this design, the microgravity press washing machine can be a promising solution to this problem.