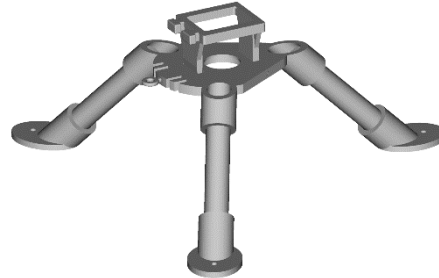


PodPad:

3D printed Water Rocket Launcher

PodPad is a launcher for Water Rockets which consists mainly of 3D printed components. The advantages of PodPad are high reliability and safety. This makes PodPad the perfect launcher for teachers and students who want to make experiments or workshops with water rockets. You don't even need an own 3D printer for building your launcher: There are many 3D printing shops where you can print your components for a fair price.



Materials and components

Important: Besides the 3D printed components you need some other materials to complete the construction.



- **3D printed:** Base plate
- **3D printed:** 3x Launcher foot
- **3D printed:** Release mechanism
- **3D printed:** Splint
- **3D printed:** Hose bender
- PVC pipe (20 mm diameter)
- Garden hose connector for 1/2" hoses
- At least 5 m garden hose 1/2"
- Suitable hose clamp
- 5 m nylon cord
- Strong rubber band
- Car tire valve
- 3 tent pegs
- Nail (max. 3 mm thick, as long as possible)
- Thread sealing tape

[▶ Download the 3D printing files here](#)

Printing the components

The components are offered as printable STL files but also as editable and customizable CAD files. You can use the free software FreeCAD to optimize the components for your own needs.

[▶ Download FreeCAD for free](#)

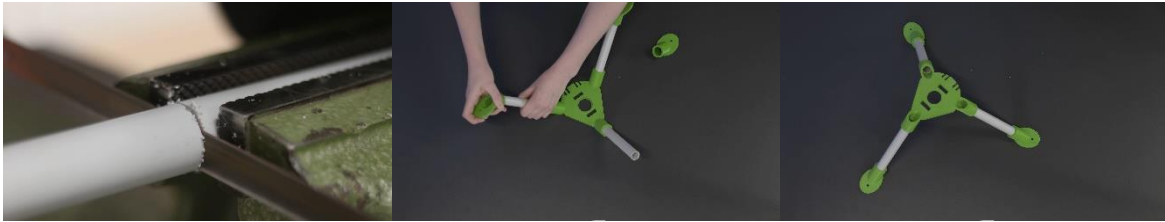


You have to convert the STL files with software (depends on your 3D printer or 3D printing shop) to a printer specific format. It is maybe necessary to rotate and to move the components before printing. You also have to optimize the printing settings so that an optimum print quality is ensured.

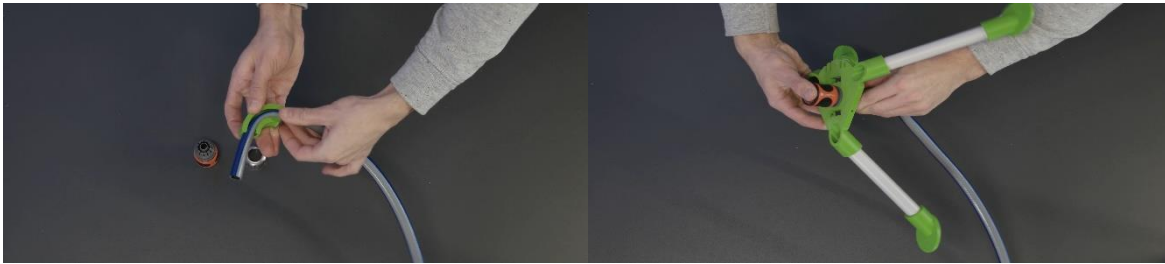
The correct operation of a 3D printer requires experience and knowledge of the materials and print settings used. Incorrect print settings can cause damage to the printer and inoperable components. The print process should therefore only be controlled by persons with enough experience. DLR_next and DLR_School_Lab Lampoldshausen/Stuttgart cannot guarantee the functionality of the components, as the 3D printing of the parts cannot be influenced more controlled. Before using the launcher, detailed tests should always be done in a safe environment.

Assembly

Screw of three 15 cm long parts of the PVC pipe and connect the launchers feet with the base plate.



Connect the garden hose on the base plate using the garden hose connector. Use the 3D printed hose bender to make sure the garden hose is bended in a way so that it allows the launcher to stand safely.



Attach the release mechanism with the nail. Hook in the rubber band so that the release mechanism is activated and pulls the collar of the garden hose connector down. Connect the splint with the nylon cord and put it into the launcher so that it prevents the activation of the release mechanism.



Fasten the car valve to the other end of the garden hose with a hose clamp. It is maybe necessary to cut off a part of the valve so that it fits into the hose. PodPad is now complete and ready for operation.

Launch

Before operation PodPad has to be anchored to ground using tent pegs. Put in the splint before you fill the water rocket with 1/3 of water. You can then put the rocket onto the launch pad. If you want to know how to build a suitable water rocket for your launcher, check out the tutorials from DLR_next. We wish you much success with building and launching your water rockets!

▶ [Tutorial: Building a simple water rocket \(German\)](#)



Important note

All 3D components offered on this site were designed and tested in DLR_School_Lab Lampoldshausen/Stuttgart with the help of Raketfued Rockets. The German Aerospace Center (DLR) is one of Europe's largest and most modern research institutions and offers children and young people an opportunity to discover for themselves the fascinating world of research. After filling in the application form, students and classes can visit the School_Labs, which are located at many DLR sites in Germany, for free. To succeed with the construction of a water rocket, you will have to work very precisely and carefully. Especially some of the adhesives are pretty dangerous. Thus, please wear gloves when working with adhesive or epoxy and don't breathe in the gases. It is recommended to work outside whenever toxic gases could develop. The launch of a water rocket may need permission from the competent authority, depending on your location. You need the permission of the landowner if you launch on foreign territory. Please wear safety goggles when pressure testing or launching your rocket. Keep a safe distance to the pressurized rocket. We can not guarantee the accuracy, completeness or feasibility of any of our tutorials. We are not responsible for any damage or harm on objects, animals or humans. We do not guarantee that the information provided on this web site is complete, accurate and always current. This applies also to all links cited on this website points, either directly or indirectly. We are not responsible for any damage or harm to objects or individuals.