

# Students launch desktop recycler that turns pop bottles into 3D printer plastic

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ProtoCycler, an environmentally friendly, inexpensive 3D-plastic recycler, is the brainchild of three UBC engineering physics students.

Three engineering physics students at the University of British Columbia have developed a desktop plastic recycler and extruder that turns plastic waste into the material needed for 3D printing.

Called ProtoCycler, the machine can grind [plastic](#), such as pop bottles and Lego, and melt it into a filament that can be fed into 3D printers.

ProtoCycler began as a fourth-year engineering project for inventors Dennon Oosterman, Alex Kay and David Joyce.

"We were concerned about the amount of [plastic waste](#) generated in our engineering projects, so we looked for a way to recycle that plastic back into usable filament," Oosterman said.

While there are other desktop filament extruders and plastic grinders on the market, ProtoCycler combines the two and is faster and easier to use. It can produce 10 feet of filament per minute – the fastest extruder on the market, says Oosterman.



A kilogram spool of [filament](#) created by ProtoCycler costs \$5 if produced with plastic pellets available for purchase, or is free if produced from used plastic. The cheapest store-bought spool starts at \$30.

Last year, Oosterman, Kay and Joyce formed ReDeTec (short for Renewable Design Technology) to bring their design to market.

ProtoCycler is available for pre-orders at \$699 at [www.redetec.com](http://www.redetec.com).

"Schools are including 3D printing as part of their science and technology curriculum, but the cost of having each student try a project can quickly become unaffordable," Oosterman said.

"With ProtoCycler, the students can try over and over until it's perfect, nearly for free, without harming the environment."

						
	ProtoCycler	Filastruder	Filabot	ExtrusionBot 2	Strooder	Noztek Pro
Price	\$799	\$300	\$650-\$950	\$725	\$400**	\$1250**
Recycles	Included	Not Available	\$440 Extra	\$475 Extra	Not Available	Not Available
Safety Certified	Yes!	No	No	No	No	No
Easy to Use	Yes!	No	No	Yes	Yes	No
Tolerance	+/- 0.02 mm	Not Reported	Not Reported	Not Reported	+/- 0.10 mm	+/- 0.04
Energy Efficiency*	10x	1x	1x	3x	2x	1.5x
Extrusion Speed	10 ft/min	2 ft/min	2 ft/min	6 ft/min	4.9 ft/min	3 ft/min
Assembled	Yes!	No	No-Yes	Yes	Yes	Yes
Spooling	Included	\$160 Extra	Not Available	\$195 Extra	\$110 extra	\$930 Extra (!)

\*Energy efficiency computed per foot of filament extruded, therefore speed and power usage both factor in!  
\*\*Converted from British pounds into USD on December 7th 2014 for comparison purposes.

Provided by University of British Columbia

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