

PRESS BRAKE PUNCH

STEEL FORMING — Centerline Engineered Solutions prints forming dies for sheet metal fabrication.

PRESS BRAKING — The printed die and punch mount on a press brake, which forms 14 gauge steel.

INSERTS ADDED — Markforged software allows them to pause the die mid-print to add metal inserts.

MASSIVE SAVINGS — Centerline prints dies and punches **7x cheaper** and **8x faster** with Markforged.

The 3D Printed Part



INSERTS FOR STRENGTH

In order to ensure success over many stamping cycles, Centerline pauses the tool print (paused print shown here) and adds bent steel inserts for strength.

BENT FEATURES

After preliminary cuts are made, operators place a 14 gauge sheet steel blank in the press brake, where the printed die forms it into the final part shape.

Printed Steel Forming Tools

Centerline Engineered Solutions fabricates formed steel parts with an industrial press brake. In order to fabricate each part, Centerline has to make a unique punch and die. For many applications, the cost of this specialized tooling does not justify the expense of the part. By printing the tooling out of Onyx and reinforcing critical points with steel inserts, Centerline creates forming tooling at a vastly lower cost.

	MACHINED	MARKFORGED	SAVINGS
Fabrication Time	10 days	1.25 days	88%
Fabrication Cost	\$1,400	\$200	86%

