



TECHNICKÁ UNIVERZITA V LIBERCI  
Fakulta strojní

 KATEDRA  
VÝROBNÍCH SYSTÉMŮ  
A AUTOMATIZACE

# Technology MultiJetFusion

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# Index

- **Principle of HP process**
- **3D printer HP 4200**
- **Color printing with HP process and future**
- **Metal 3D printing process**

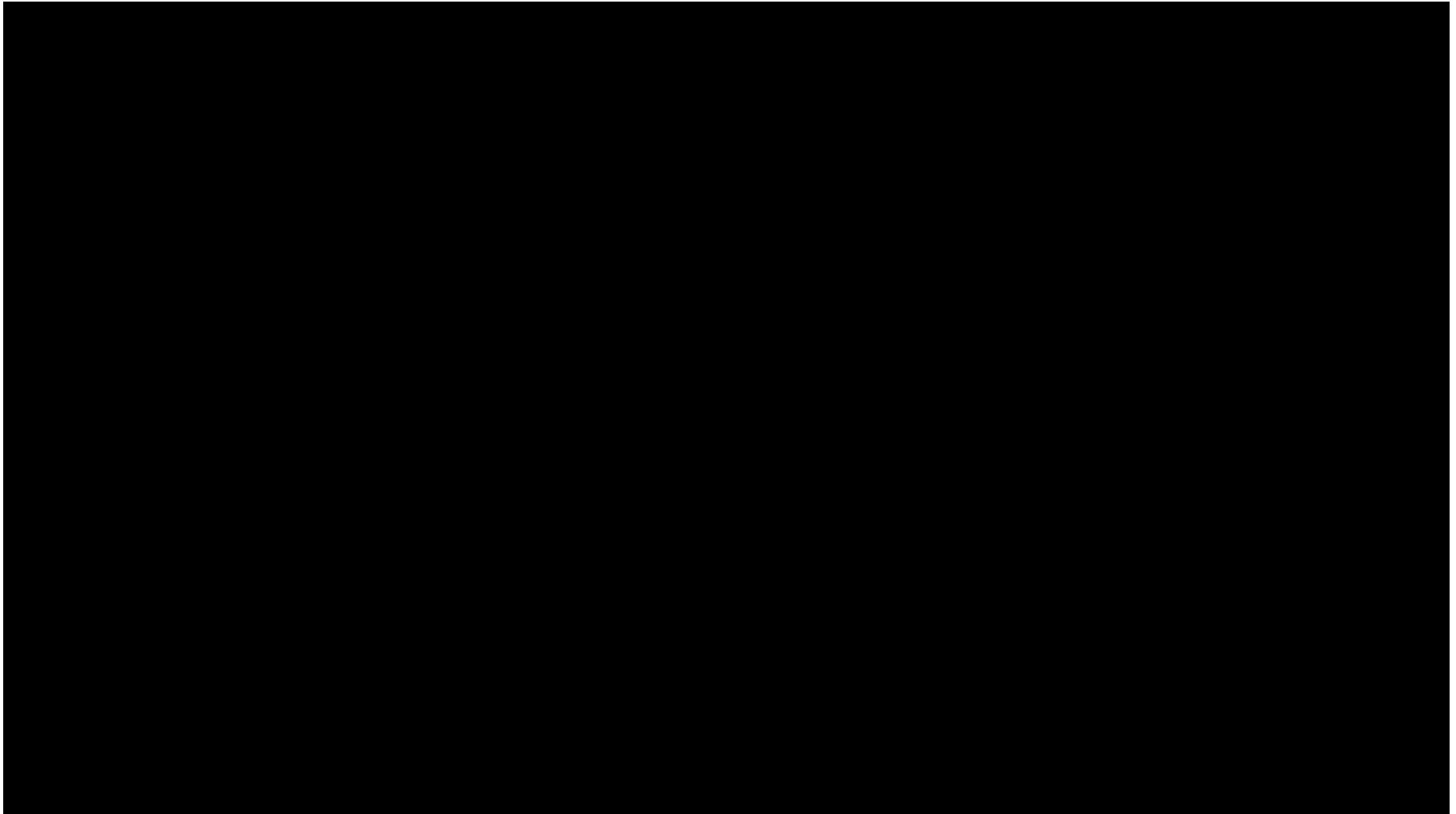




# 3D printer HP 4200







# Materials for HP 4200

- PA11
- PA12
- TPU
- Others semicristalic materials PP, PE, etc



# Materials for HP machines



Zdroj: <https://www8.hp.com/us/en/printers/3d-printers/materials.html>



# Materials for HP machines

PP



PA11



TPU



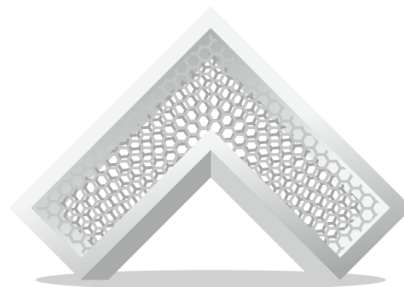
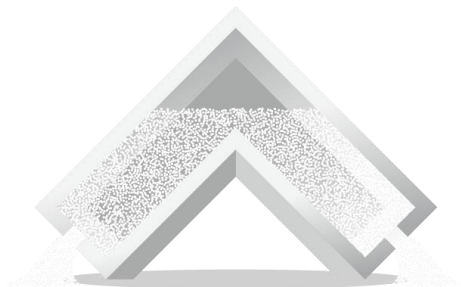
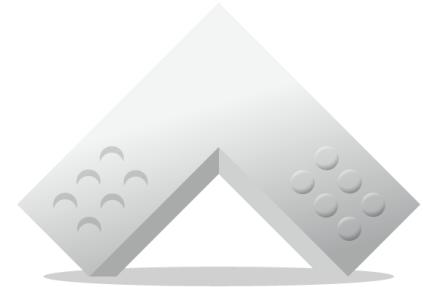
PA12GB



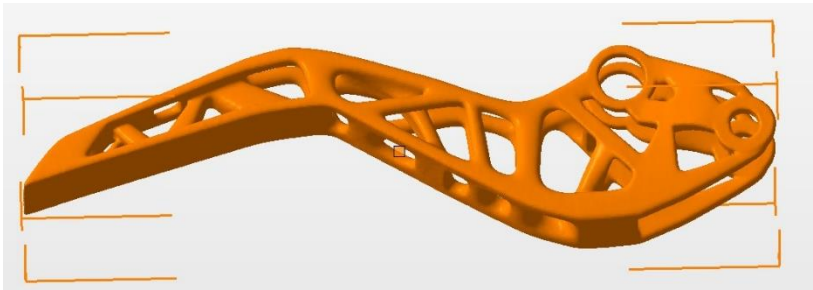
PA12

Zdroj: <https://www8.hp.com/us/en/printers/3d-printers/materials.html>

# Design recommendations

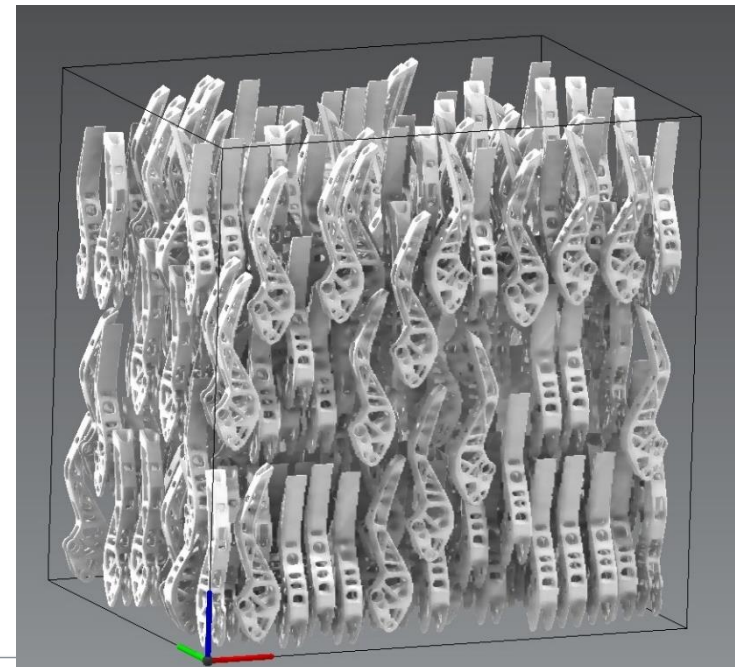


# OPTIMIZATION OF BREAK LEVER

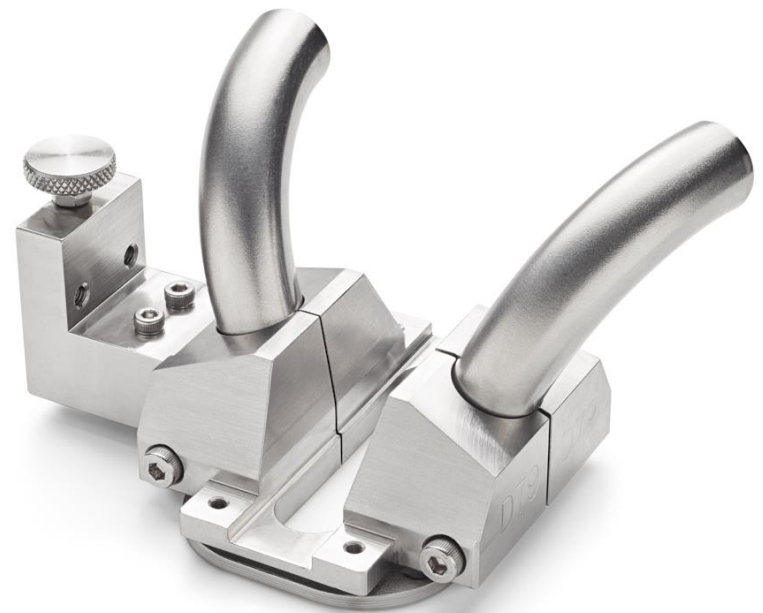


- Weight reduction
- Original design
- Strong and resistant material
- Cannot be produced by conventional technologies

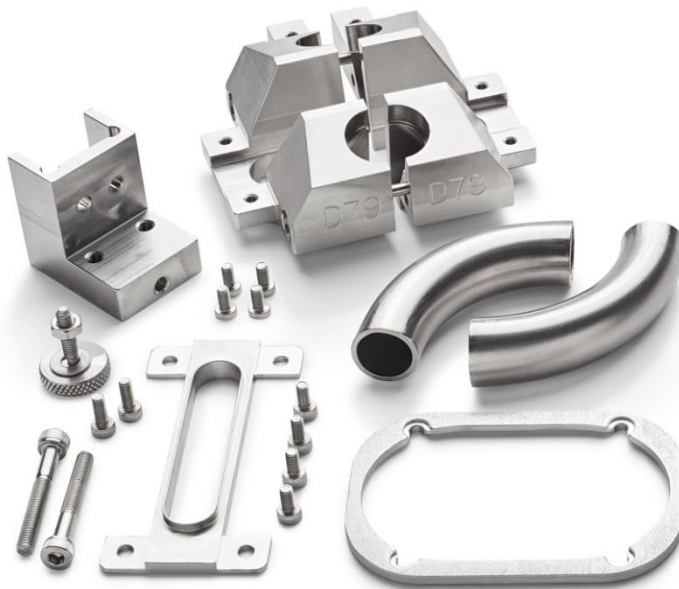
Working procedures	
Printer's preparation for production	1 hour
No of pieces in one print job	270
Production time	10 hours
Cooling time	10 hours
Unpacking and postprocessing	1 hours
270 pieces in a day (price per piece: <b>73,7 Kč*</b> )	



# OPTIMIZATION AND PRODUCTION



# OPTIMIZATION AND PRODUCTION



Weight: **575 g**  
CNC machined cost per part: **9180 Kč**



Weight: **42,4 g**  
HP printed cost per part: **459 Kč**

# OPTIMIZATION AND PRODUCTION



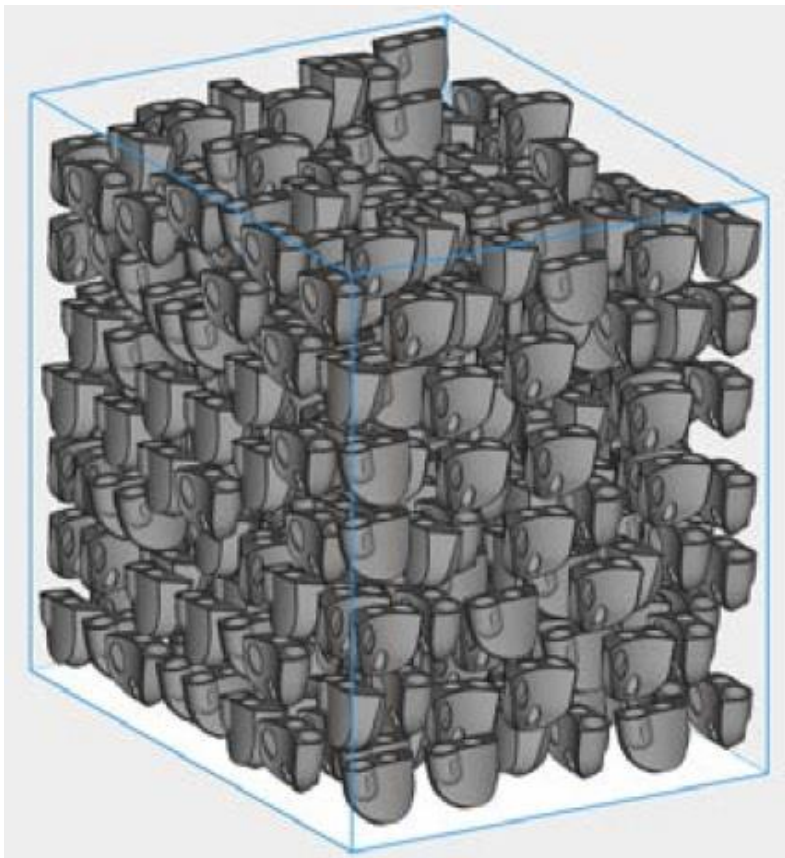
- CNC production and the following assembly is substituted by **1 3D printed piece**
- Low weight (by 93%) a lower cost of production (by 95%)



# SERIES PRODUCTION FOR MOTORIZED SURFBOARD



# SERIES PRODUCTION FOR MOTORIZED SURFBOARD


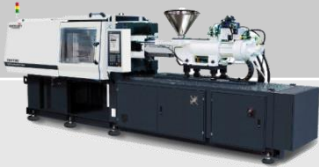



## **WATER AND PRESSURE RESISTANT 3D PRINTED PIECES**

- HP Jet Fusion – 400 parts produced  
in 10 hours



# SERIES PRODUCTION FOR MOTORIZED SURFBOARD

Number of parts	Technology	Price per piece	Production time
1		661	3,5 h
400		505	715 h
1		-	-
400		30*	-
1		69	30 min
400		59	10 h

\*Price for the mould is not included (350 000 Kč.)

# SERIES PRODUCTION FOR MOTORIZED SURFBOARD



# ADDITIVE TECHNOLOGIES AND SERIES PRODUCTION

## PROTOTYPING



<10



## SMALL-SCALE SERIES



<500



## LARGE-SCALE PRODUCTION



<10 000

# 3D printer HP 5200



# 3D printer HP 5200



# Materials for HP 5200

- PA11
- PA12
- **TPU**

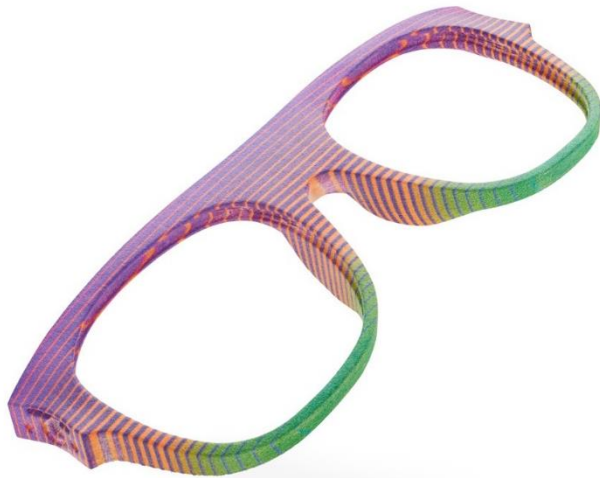


# HP color printing





# HP color printing





# Voxel - future



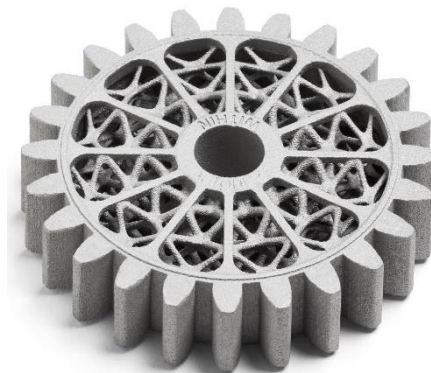
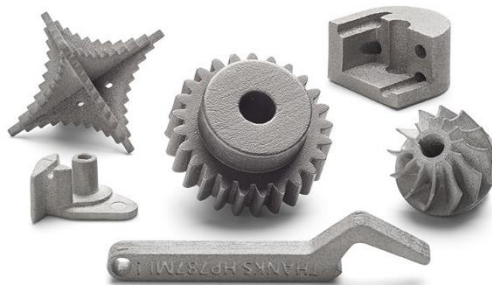


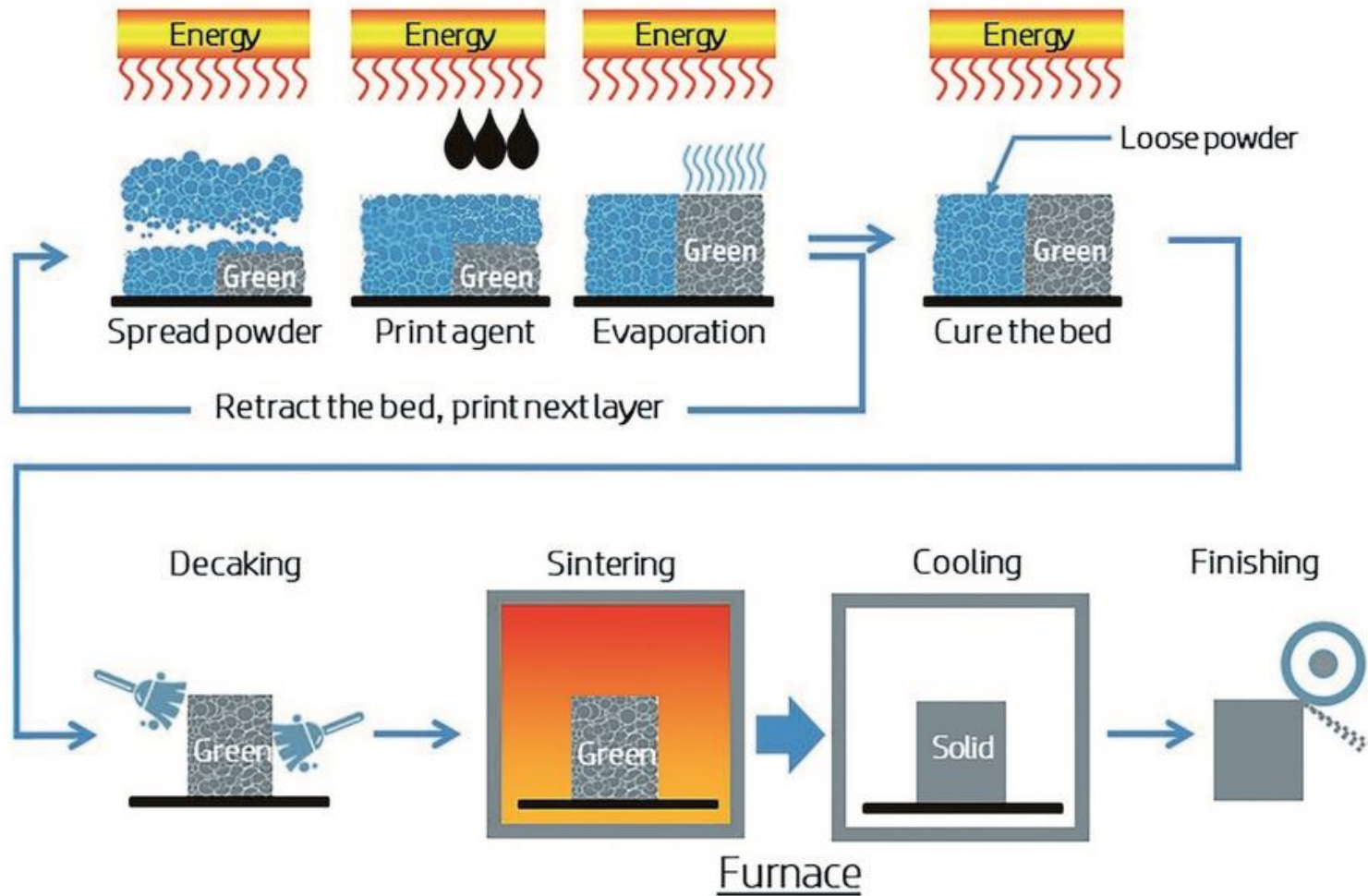
04h:51min **HP Metal Jet**

# HP Metal Jet



- Build size: **430 x 320 x 200 mm**
- Layer thickness: **50 – 100 microns**
- Printing accuracy: **1200 x 1200 dpi**







Volkswagen









