



Additive manufacturing experience in a mechanical production plant

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BOSCH

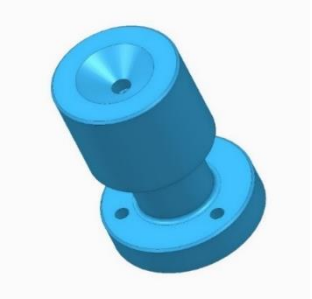
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3D Printing @ BarP: Case Study

Plunger Stand

Initial State



Production Technology: Machining


Material: Nylon

Infill: 100%

Supplier: External Supplier



1° Improvement Step



Production Technology: FDM 3D Printing

Material: PLA

Infill: 100%

Supplier: Internal Production

Test Results


- Good performance in production
- lifetime comparable with the original part

- **Cost Reduction:** -50%
- **Shorter delivery times** 7h/pc for internal production
- **Warehouse stock reduction** From 16 to 4 pcs

3D Printing @ BarP: Case Study

Plunger Stand

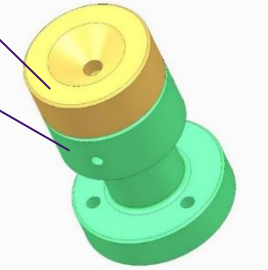
1° Improvement Step



Production Technology: FDM 3D Printing
Material: PLA
Infill: 100%
Supplier: Internal Production



2° Improvement Step



Production Technology: FDM 3D Printing
Material 1: PLA
Material 2: PLA
Infill 1: 100%
Infill 2: 100%
Supplier: Internal Production

Test Results

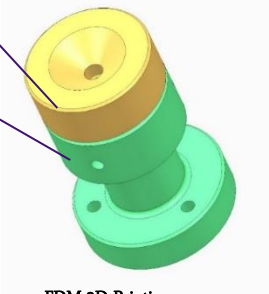
- Good performance in production
- lifetime comparable with the original part

- **Cost Reduction:** - 70%
- **Shorter delivery times** from 7 h/pcs to 2,30h/pc for internal production
- **Warehouse stock reduction** From 4 pcs (complete parts) to 4 pcs (only part nr.1)
- **Replacement time reduction**

3D Printing @ BarP: Case Study

Plunger Stand

2° Improvement Step



Production Technology: FDM 3D Printing

Material 1: PLA

Material 2: PLA

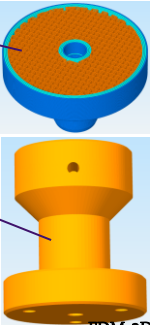
Infill 1: 100%

Infill 2: 100%

Supplier: Internal Production



3° Improvement Step



Production Technology: FDM 3D Printing

Material 1: PLA

Material 2: PLA

Infill 1: 25% thickness 2mm

Infill 2: 100% with different geometry

Supplier: Internal Production

Test Results

- Good performance in production
- lifetime comparable with the original part

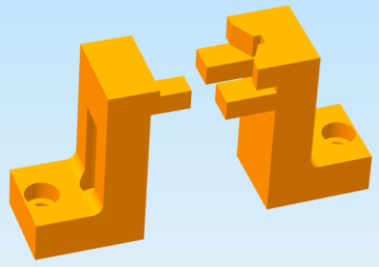
- Cost Reduction on Part 1: - 55%
- Shorter delivery times on Part 1 from 2,3h/pc to 1,3h/pz for internal production
- Reduction of post processing time to produce part 2

- NEXT STEP: Print Part 1 using different material (eg. Nylon) to further increase lifetime and reduce costs

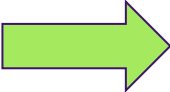
3D Printing @ BarP: Case Study

Piece gripping fingers

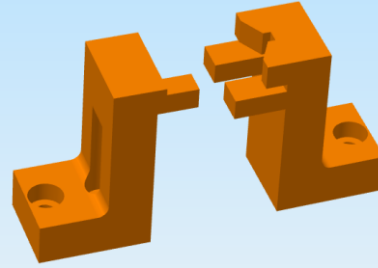
Initial State



Production Technology: Machining
Material: Metal
Infill: 100%
Supplier: External Supplier



1° Improvement Step



Production Technology: FDM 3D Printing
Material: CARBON
Infill: 100%
Supplier: Internal Production

Test Results

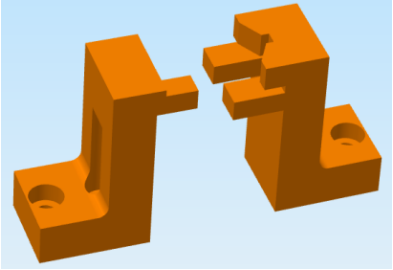
- Lifetime not in line with expectation (breakdown after assembly)

- **Cost Reduction:** -70%
- **Shorter delivery times** 1,4h/one pair for internal production

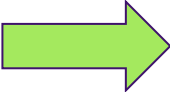
3D Printing @ BarP: Case Study

Piece gripping fingers

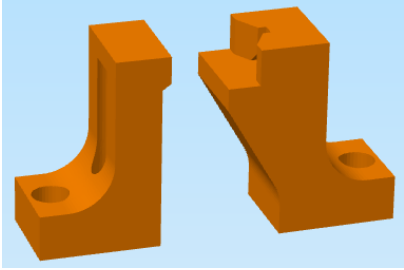
1° Improvement Step



Production Technology: FDM 3D Printing
Material: CARBON
Infill: 100%
Supplier: Internal Production



2° Improvement Step



Production Technology: FDM 3D Printing
Material: CARBON
Infill: 100% with different geometry
Supplier: Internal Production

Test Results

- Good performance in production
- Lifetime not yet comparable with the original part

- Shorter delivery times 1,2h/one pair for internal production
- Reduction of post processing time

- NEXT STEP: Print Part using different material (eg. Peek) to further increase the parts lifetime in production.