



# Introduction into OTEC PULSFINISH

Improvement of the manufacturing of  
camshafts components



# AGENDA

1. Possible task
2. Machine in use
3. Status Quo
4. Possible improvement
  4. 1. Alternative 1
  4. 2. Alternative 2
  4. 3. Alternative 3
  4. 4. Alternative 4
  4. 5. Alternative 5
5. Possible potentials (saving in process)



# 1. Possible task

- Smoothing of the contact area (radius of the cam)
- Smoothing of the cam
- Smoothing of the spiral groove
- Deburring/ edge honing of the spiral groove
- Deburring/ edge honing of the toothed camshaft



## 2. Machine in use

- Streamfinishmaschine with pulse drive which is prepared for a fully automatic operation to integrate into the line production

[Video SF 3/105 with pulse drive](#)

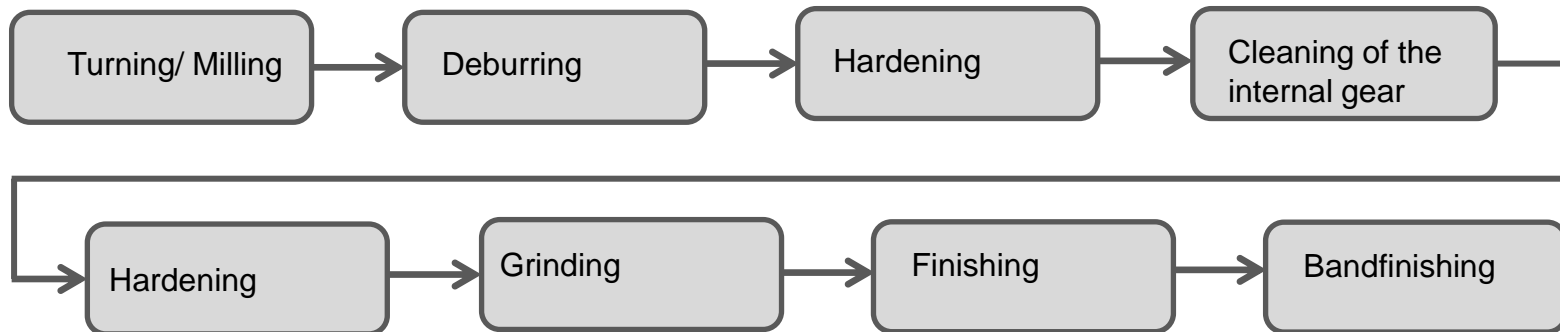
- Possibility of deburring, edge honing, grinding, smoothing, polishing





## 3. Status Quo

### Overview of the current production process

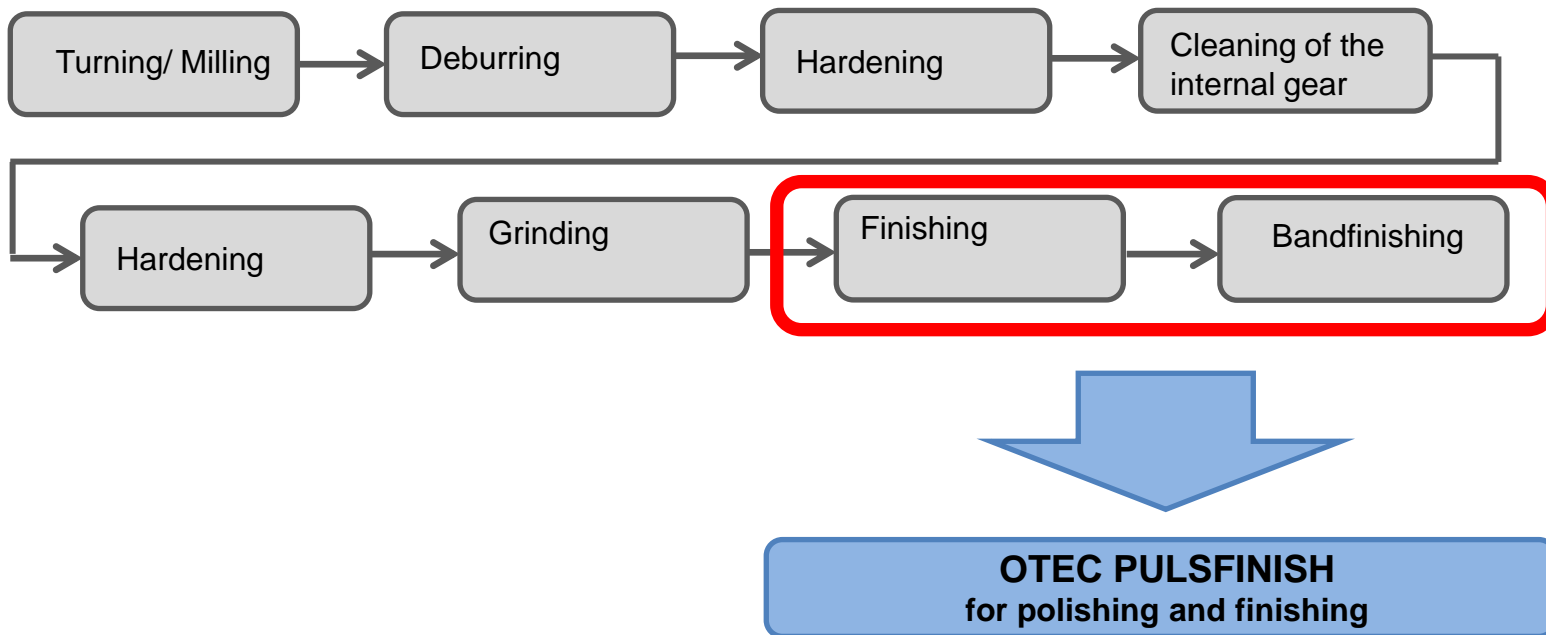




## 4. Possible improvement

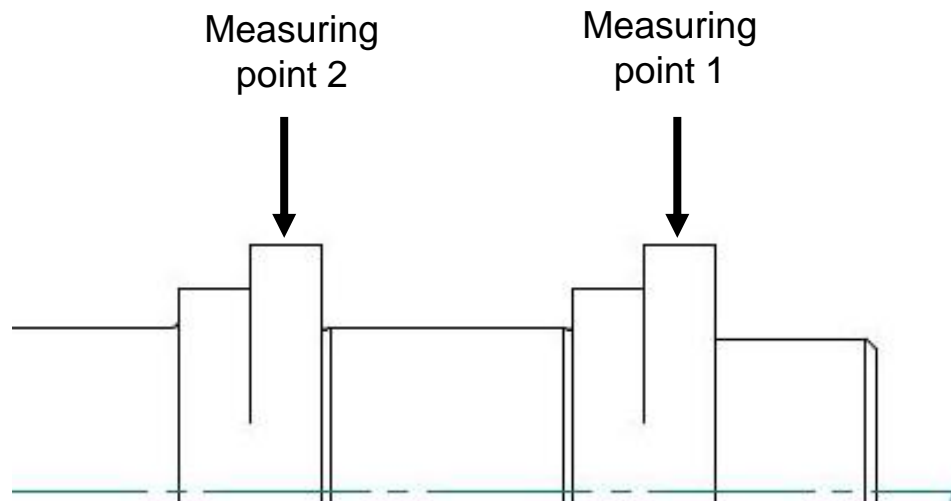
### 4.1. Alternative 1

The **two working station** finishing and bandfinishing can be replaced with **one OTEC PULSFINISH working station**.





## Definition of measuring points

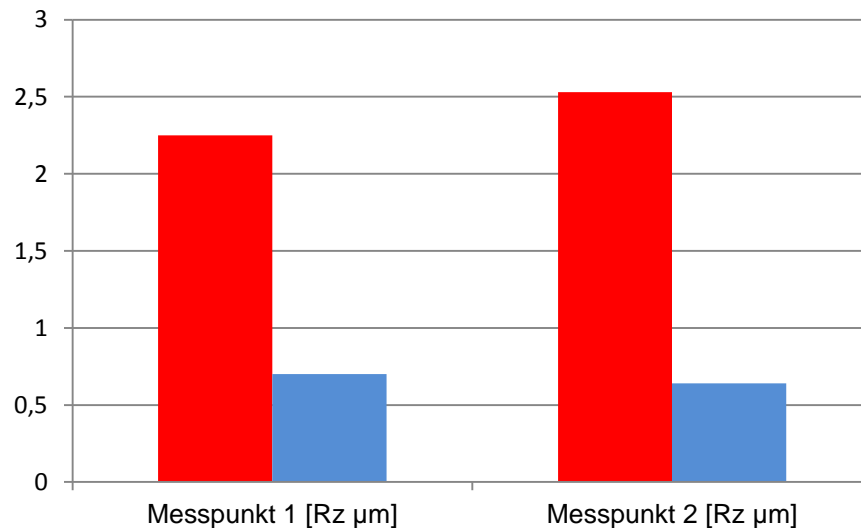




## Analysis of Alternative 1

Required task:

The surface on measuring point 1 and measuring point 2 need to have Rz-Wert  $< 1,0 \mu\text{m}$



	before	after
measuring point 1 [Rz $\mu\text{m}$ ]	2,25	0,7
measuring point 2 [Rz $\mu\text{m}$ ]	2,53	0,64

■ unbearbeitet  
■ bearbeitet

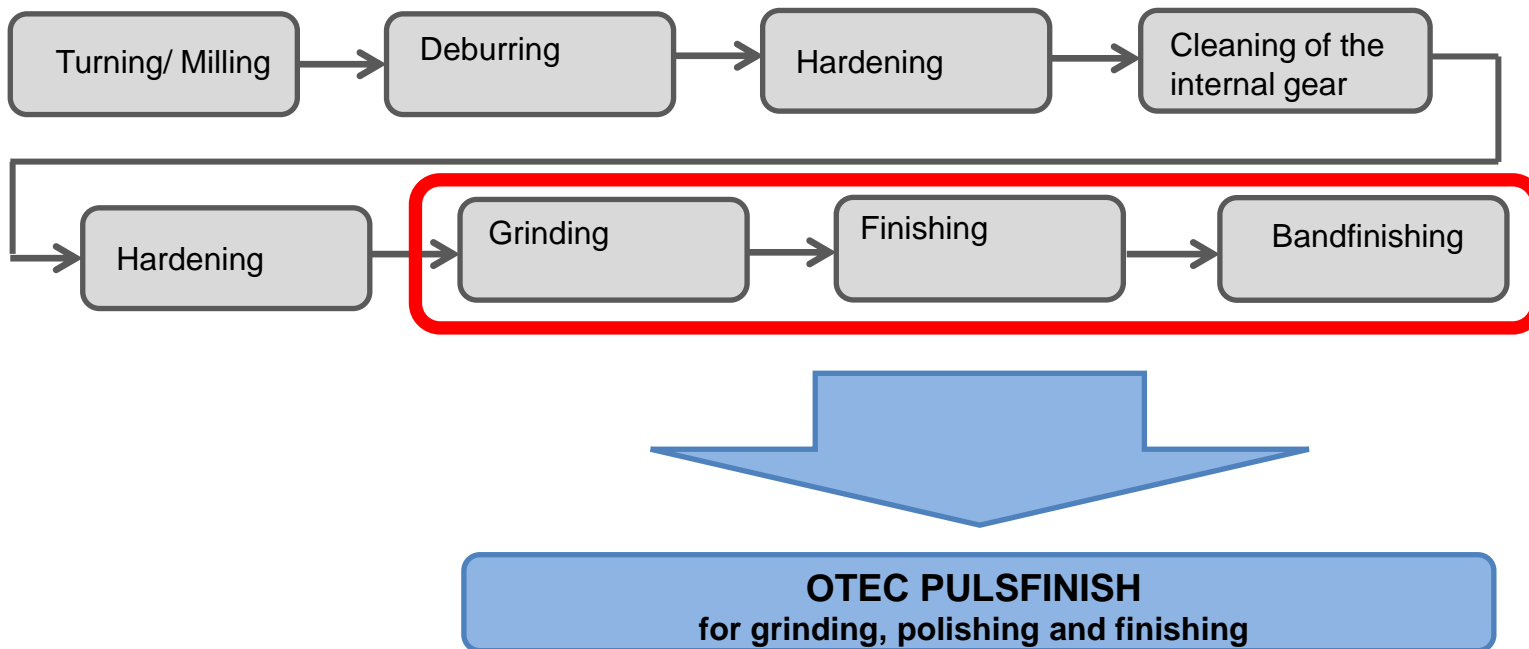




## 4. Possible improvement

### 4.2. Alternative 2

The **three working station** grinding, finishing and bandfinishing can be replaced with **one OTEC PULSFINISH working station**.

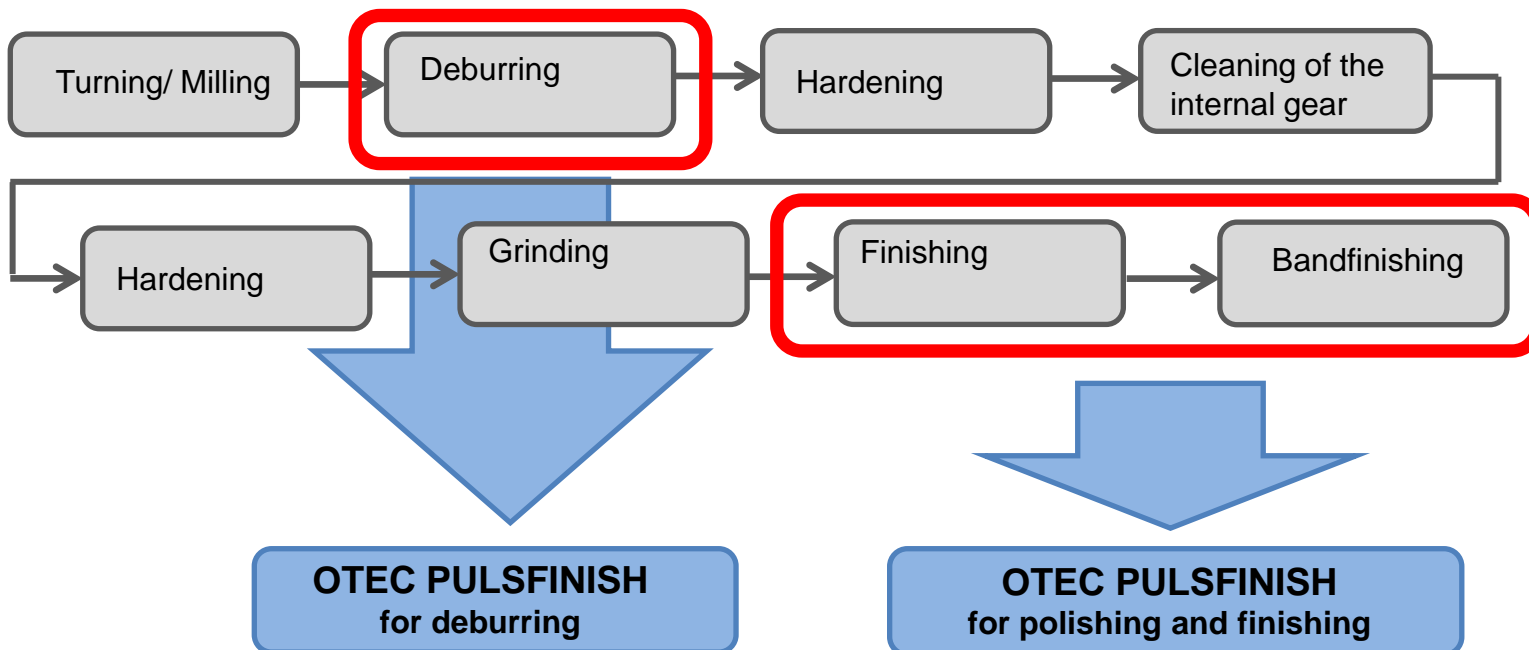




## 4. Possible improvement

### 4.3. Alternative 3

The **three working station** deburring, finishing und bandfinishing can be replaced with **two OTEC PULSFINISH working station** .

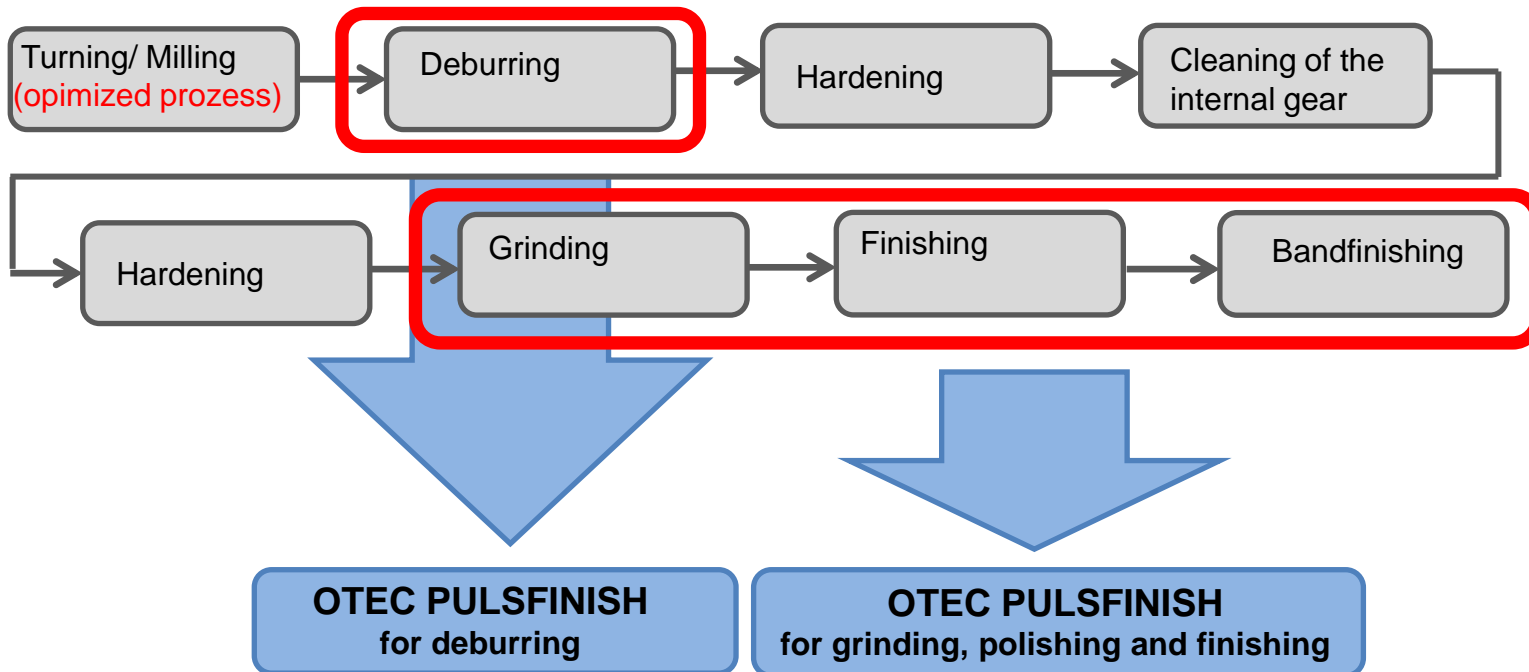




## 4. Possible improvement

### 4.4. Alternative 4

The **four working station** deburring, grinding, finishing and bandfinishing can be replace with **two OTEC PULSFINISH working station**.

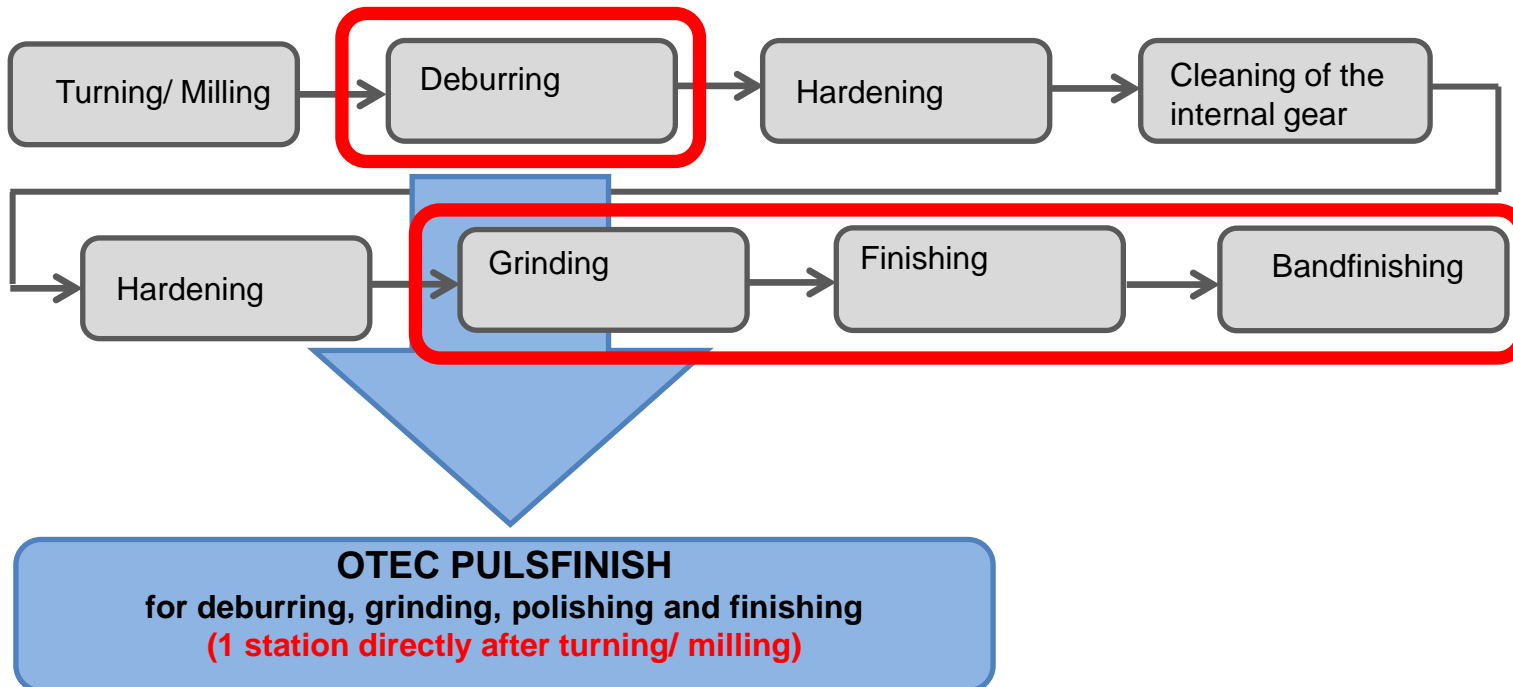




## 4. Possible improvement

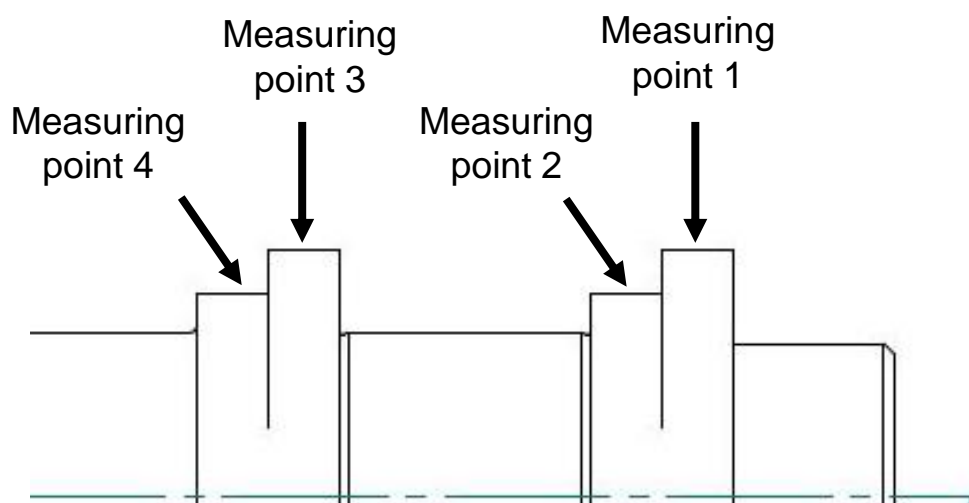
### 4.5. Alternative 5

The **four working station** deburring, grinding, finishing and bandfinishing can be replace with **one OTEC PULSFINISH working station**.



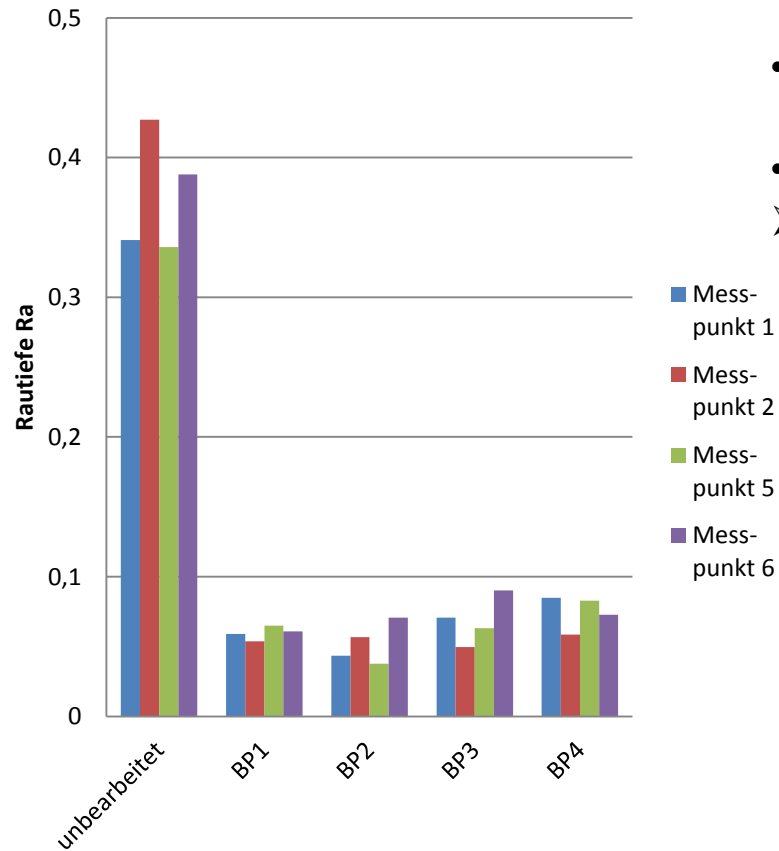


## Definition of measuring points





## Analysis of Alternative 5



- Work piece were deburred, grinded, and a rounding was created
- Smoothing of the work piece below Ra 0,1  $\mu\text{m}$
- Optimizing of the Turning/ Milling process can result to achive the requirements in a single-step process

roughness Ra	measuring point 1	measuring point 2	measuring point 3	measuring point 4
<b>before</b>	0,341	0,427	0,336	0,388
<b>BP1</b>	0,0591	0,0538	0,0649	0,0608
<b>BP2</b>	0,0434	0,0568	0,0377	0,0708
<b>BP3</b>	0,0708	0,0497	0,0632	0,0902
<b>BP4</b>	0,085	0,0585	0,0828	0,0728



## 5. Possible potentials (saving in process):

	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>	<b>Alternative 5</b>
<b>Potential</b>	Replacement of finishing and bandfinishing	Replacement of grinding, finishing and bandfinishing	Replacement of deburring, finishing and bandfinishing	Replacement of deburring, grinding, finishing and bandfinishing	Replacement of deburring, grinding, finishing and bandfinishing
<b>Quantity of working station</b>	1	1	2	2	1
<b>Achievable</b>	yes	yes	yes	yes	yes



# Thank you for your attention!