

*Türk Hızlandırıcı ve  
Işınım Laboratuvarı*



# Yüksek Güçlü Optik Rezonatör Tasarımı ve Üretimi

Bariş Yıldırım Demir

# İçerik

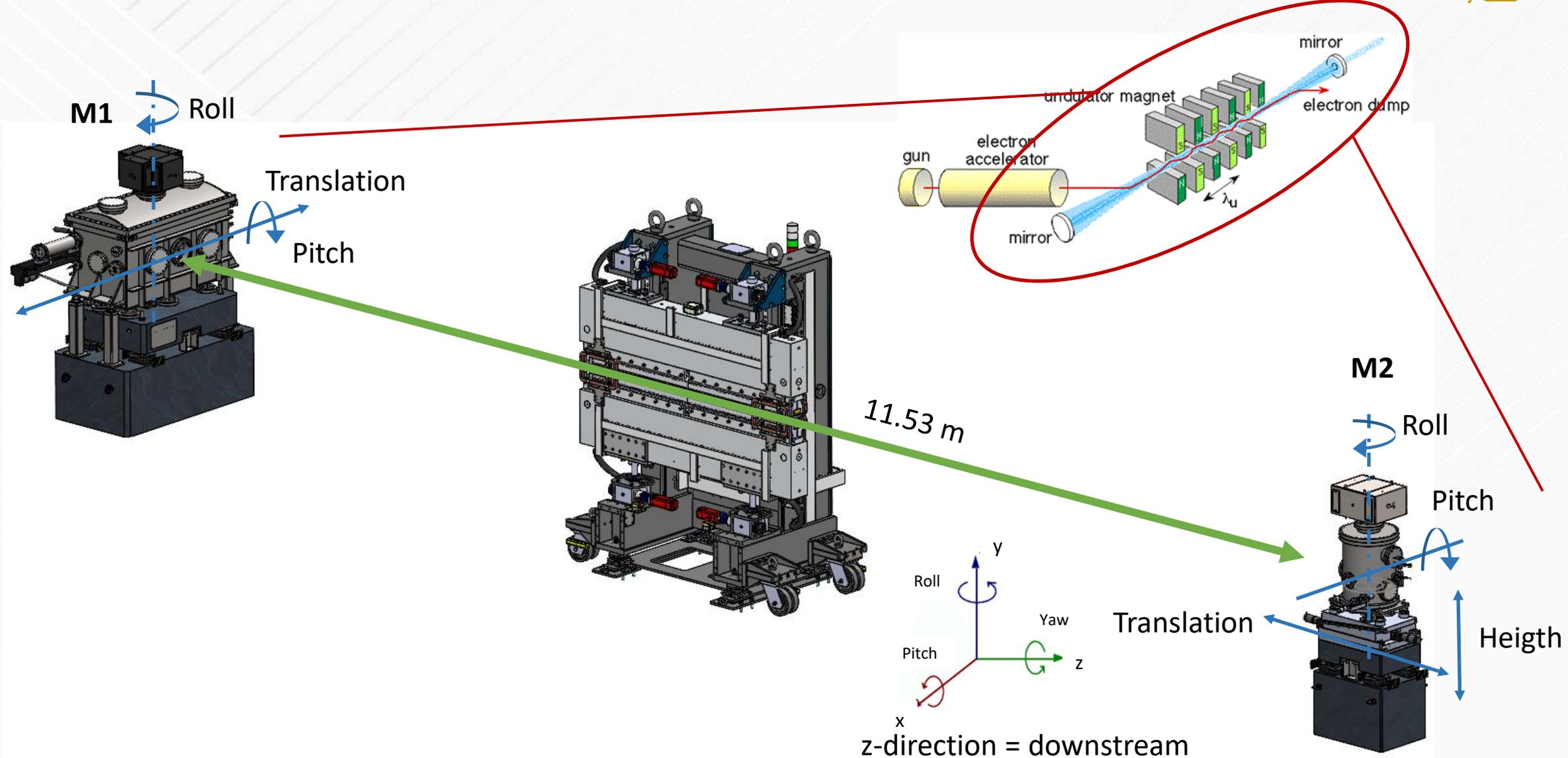
- TARLA SEL Teknik Özellikler
- Optik Rezonatör M1
- Optik Rezonatör M2
- Güncel durum

**GRANTED**

2236 Co-Funded Brain Circulation Scheme2



# Teknik Özellik

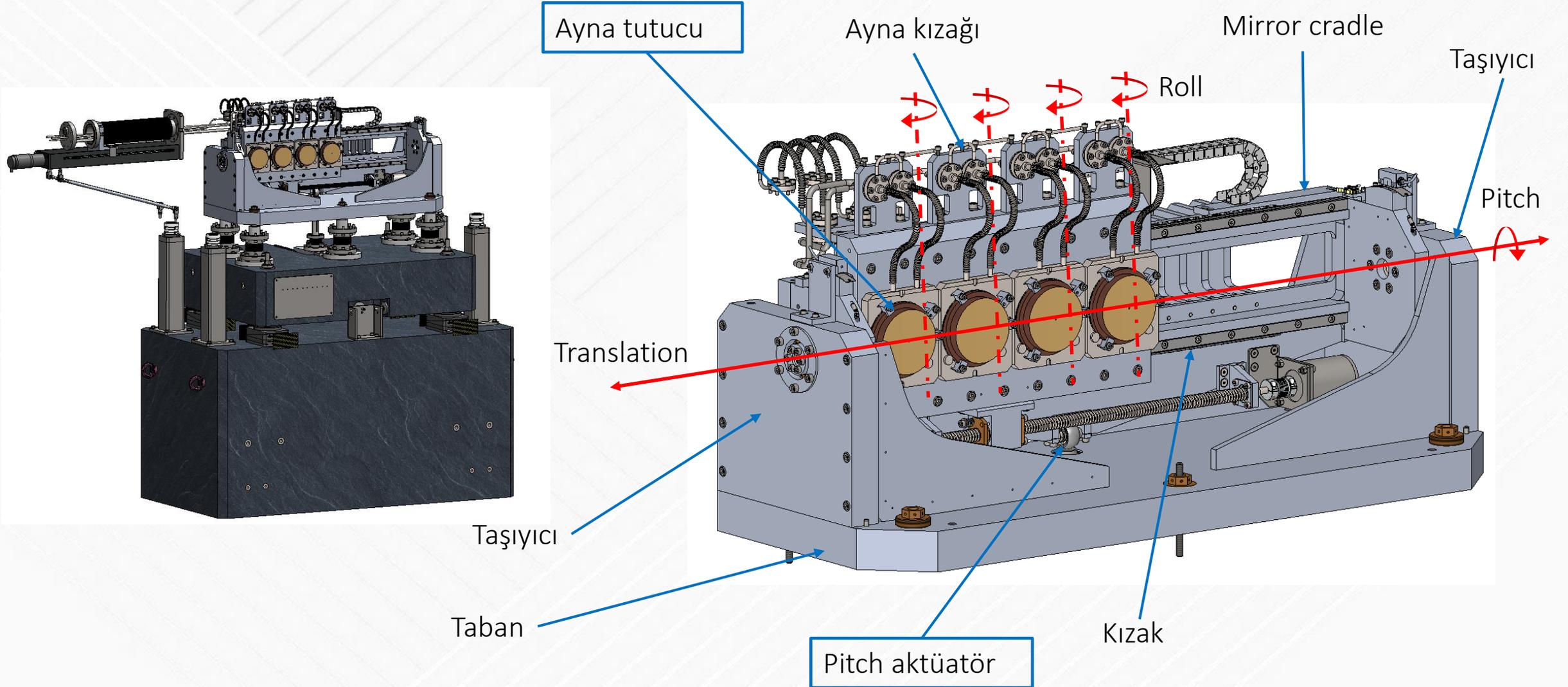


# Teknik Özellik

- Dalga boyu 3.6  $\mu\text{m}$  - 37  $\mu\text{m}$
- Spot boyutu 20 mm – 71.6 mm
- 4 adet outcouple ayna (0.5 mm, 1 mm, 1.5 mm, 2 mm)
- Ayna yarı çapı 5.85 m
- Kavite uzunluğu 11.5 m

Axis	Desired performance	Best effort
Repeatability of pitch after translation (M1 and M2)	$\leq 2 \mu\text{rad}$	$\leq 1 \mu\text{rad}$
Repeatability of roll after translation (M1 and M2)	$\leq 2 \mu\text{rad}$	$\leq 2 \mu\text{rad}$
Stability (M1 and M2)	$\leq 100 \text{ nrad}$	$\leq 50 \text{ nrad}$
Repeatability of pitch after pitch rotation (M1, M2)	$\leq 2 \mu\text{rad}$	$\leq 1 \mu\text{rad}$
Repeatability of roll after pitch rotation (M1 and M2)	$\leq 2 \mu\text{rad}$	$\leq 1 \mu\text{rad}$
Repeatability for translation along y (only M1)	$\leq 400 \text{ nm}$	$\leq 300 \text{ nm}$
Repeatability for translation along z and x (only M2)	$\leq 100 \text{ nm}$	$\leq 50 \text{ nm}$

# Optik Rezonatör M1



# Optik Rezonatör M1

## □ Pitch aktüatör

	Çözünürlük	Oran
Okuyucu	11 nrad	+/-2°
Pitch aktüatör	21.5 nrad	+/-2°
Piezo aktüatör	3.2 nrad	+/- 0.16 mrad

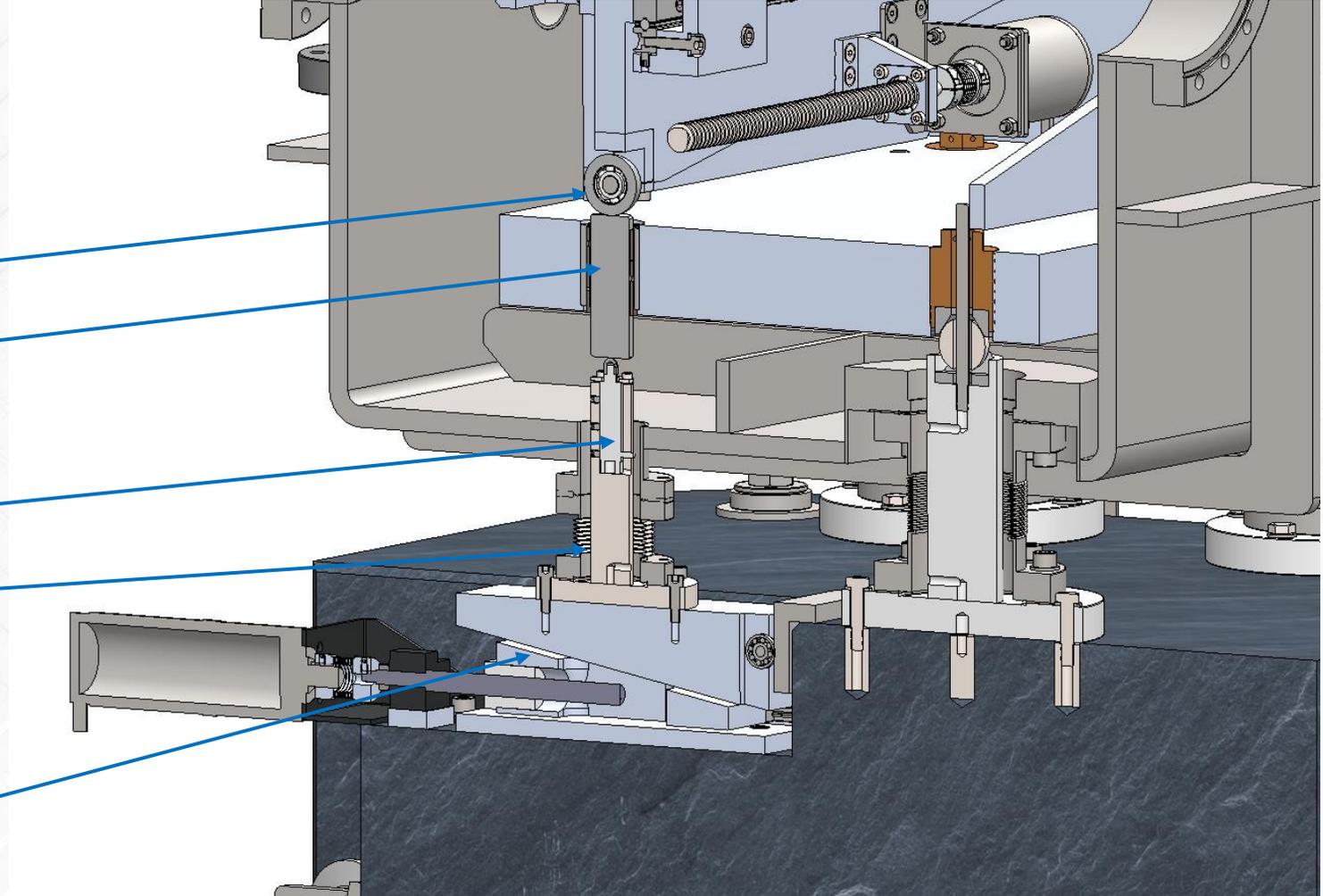
Sertleştirilmiş teker

Rotatory stroke bearing

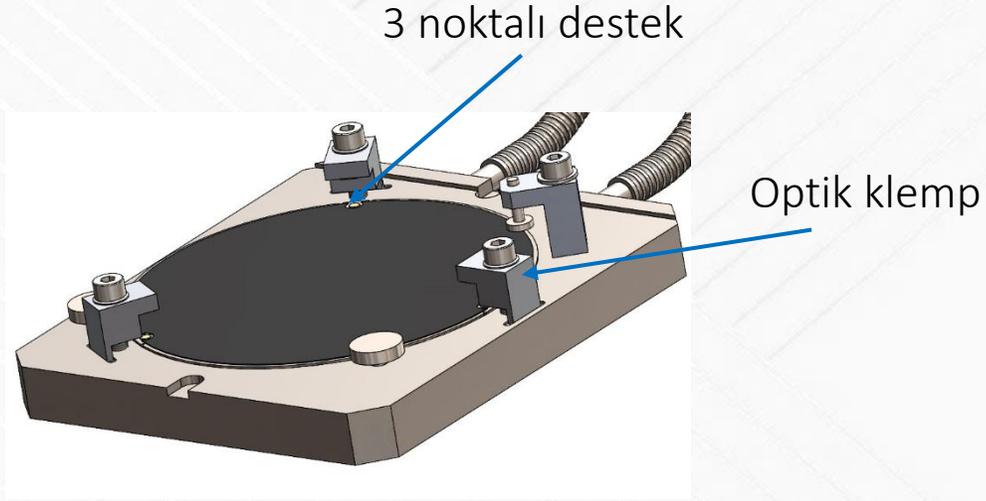
Piezo aktüatör

Körük

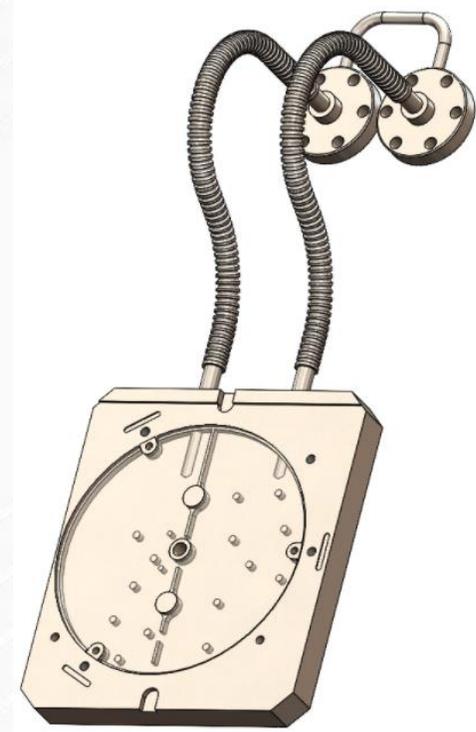
Wedge leveler



# Optik Rezonatör M1



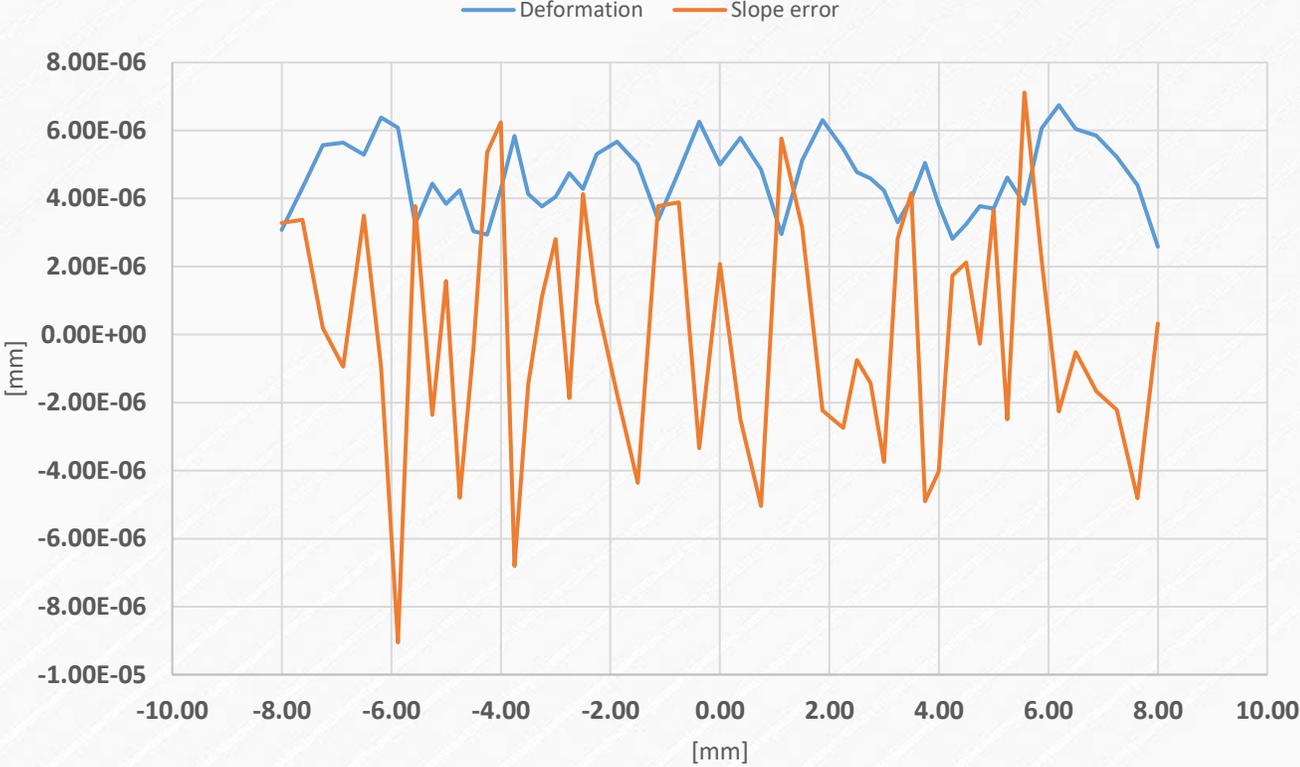
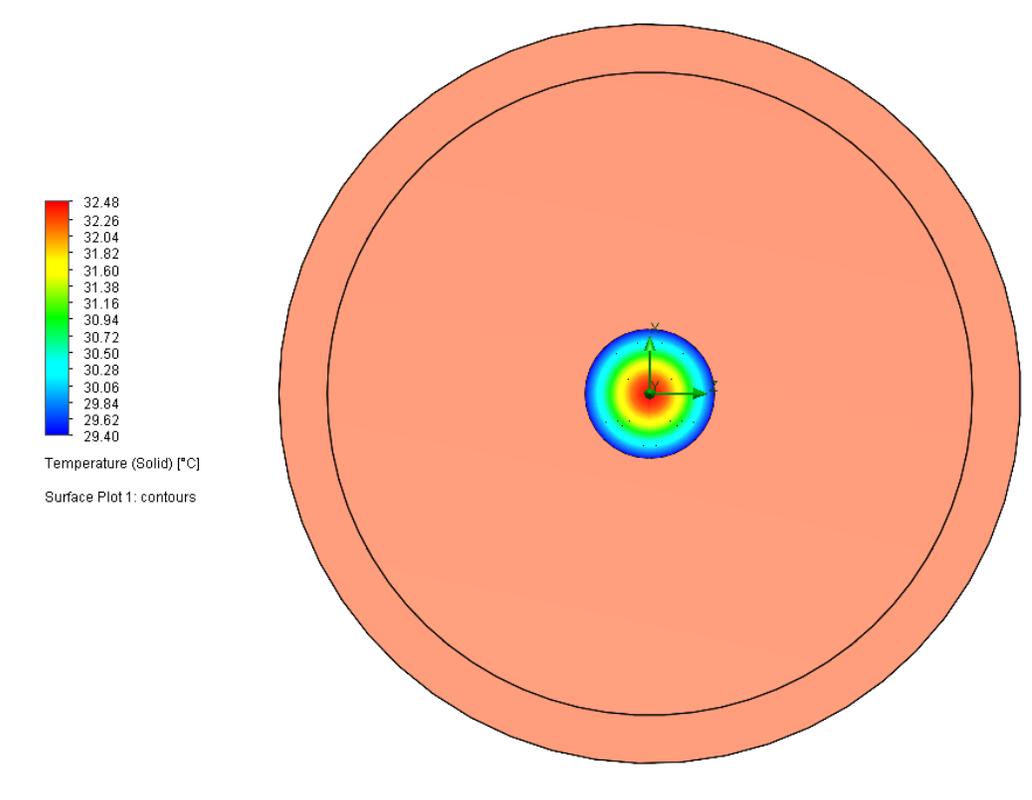
1) GaIn karışım



2) Indium

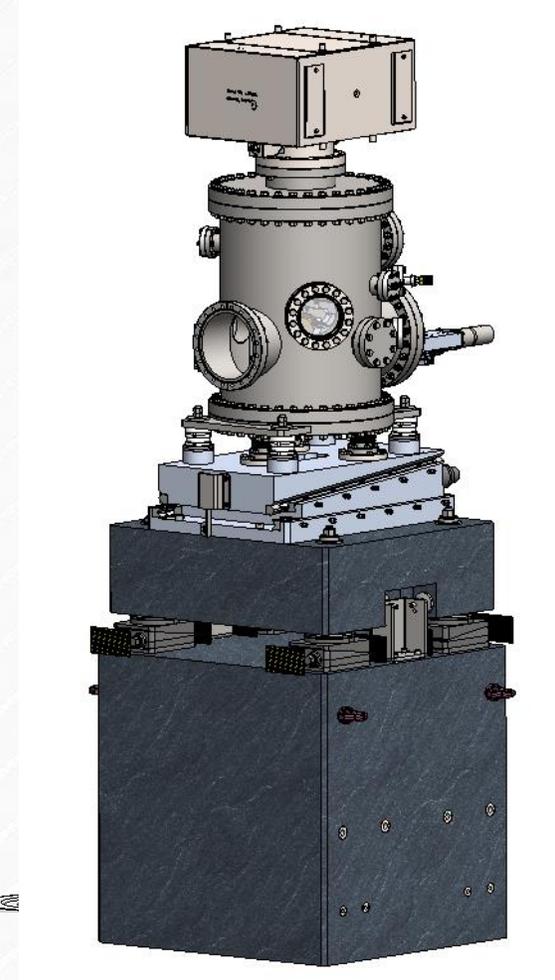
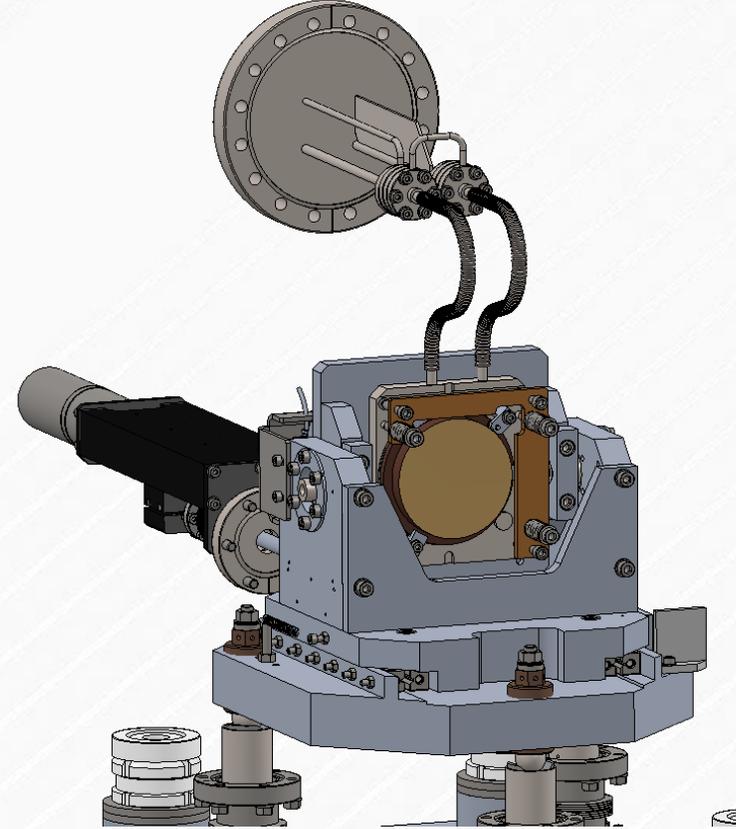
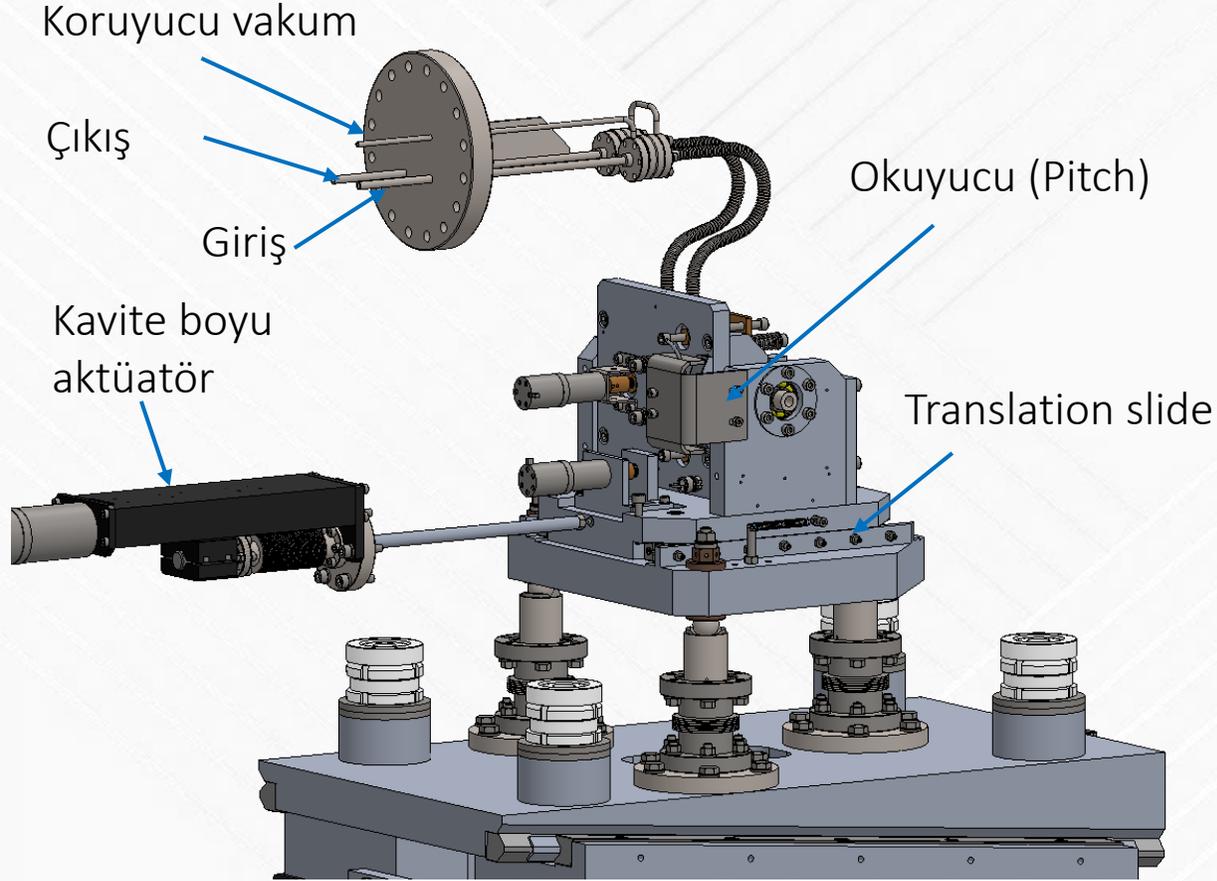


# Optik Rezonatör M1



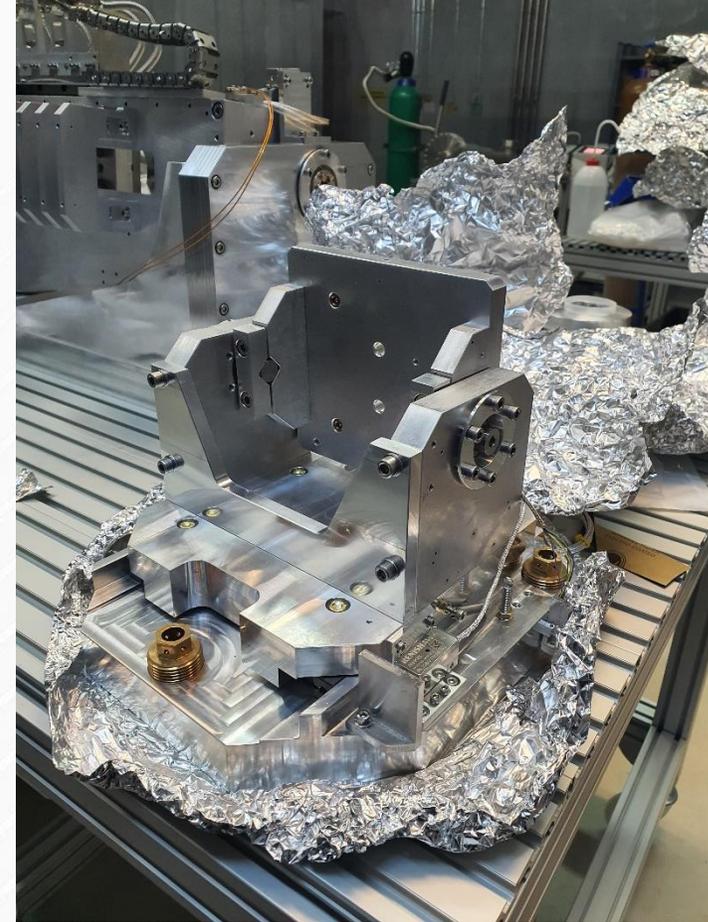
RMS slope error 3.6  $\mu$ rad

# Optik Rezonatör M2



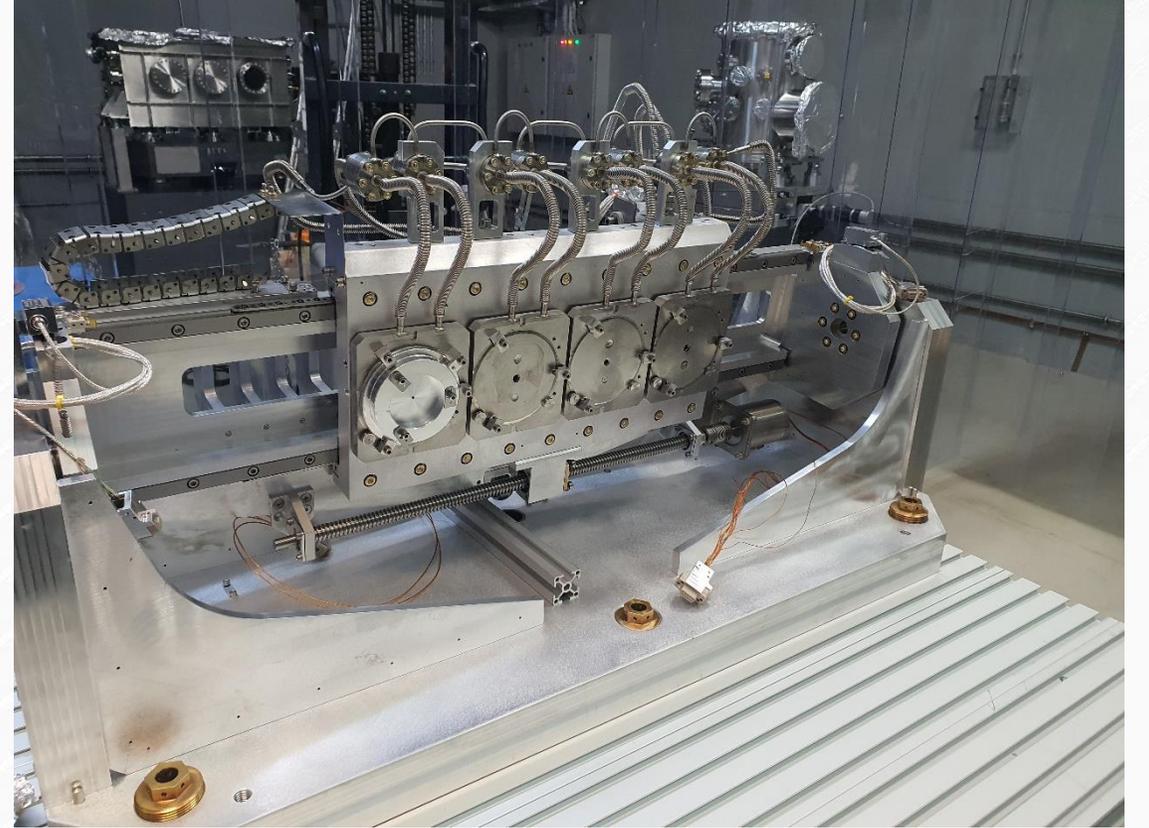
# Güncel Durum

## □ M2



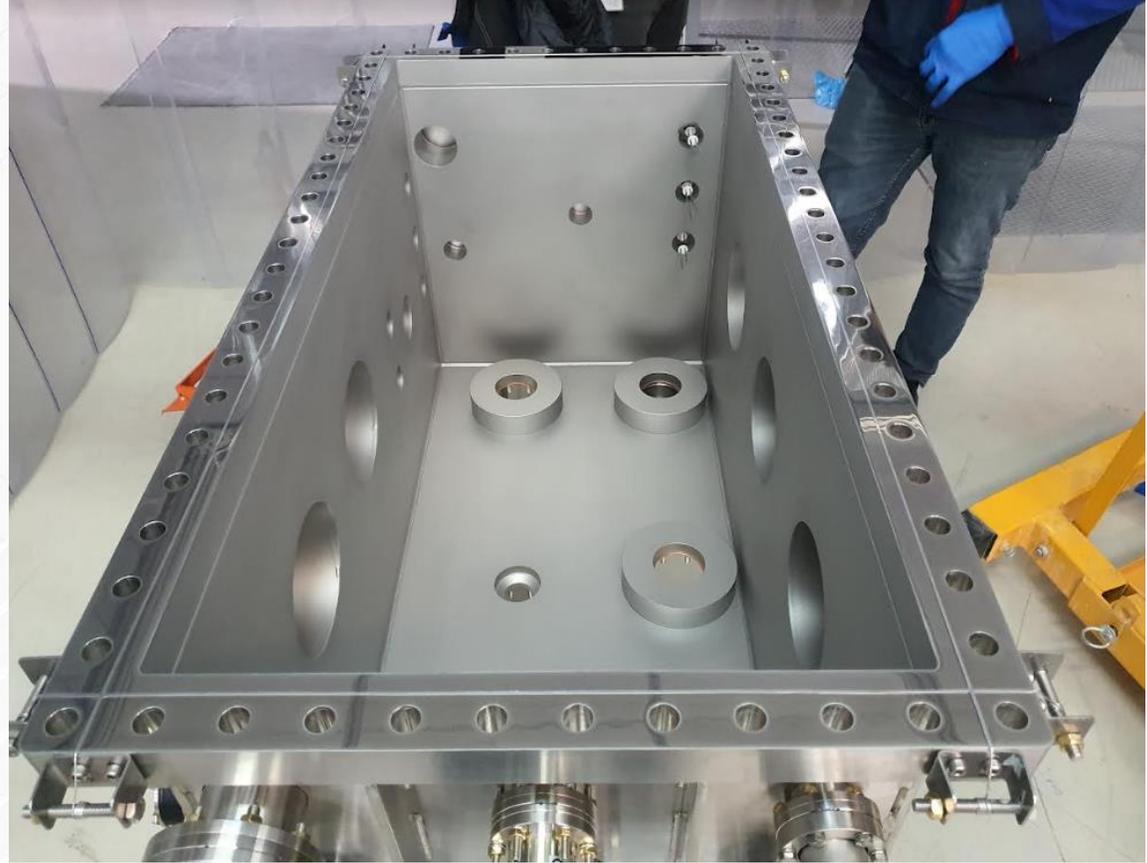
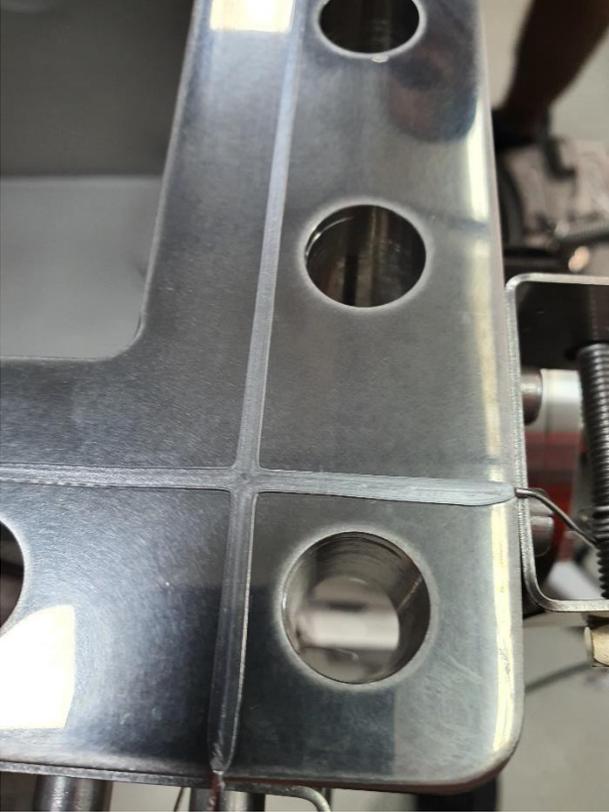
# Güncel Durum

## □ M1



# Güncel Durum

□ M1



# Teşekkürler