

WP 7 Demonstrators

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WP 7 Description of work

System 2

- **Task 7.2 *200W Laser source integration*** (C4L, AMP)
 - Integration and of laser with system developed in WP6. Optimization, Synchronization and Evaluation.
 - Task scheduled for completion M33.
- **Task 7.3 *Integration of the optical fiber*** (GLO; USTUTT, AMP, C4L, LASEA)
 - Implementation and testing of fiber modules.
 - Task scheduled for completion M34/M35.
- **Task 7.4 *Process analysis on reference samples*** (E6, C4L,)
 - Test and evaluation of process
 - Task scheduled to start M33

WP 7 Description of work

System 2

- Task 7.5 *Data handling and management* (LASEA; C4L)
 - Documentation and handling of all relevant info for controls.
 - Continuous process beginning after laser integration is complete (M33).
- Task 7.6 *Upgrade of 500 W system to the 1000 W system* (LASEA; USTUTT, AMP, C4L)
 - Upscaling and evaluation.
 - New laser timeline means C4L has limited involvement

WP 7 Update

System 2

- **Task 7.2 200W Laser source integration (C4L; AMP)**
 - 200 W Laser prototype has been installed on the station developed by C4L
 - Optimization of the optical path
 - Tests of communication and synchronization
 - Remaining work:
 - Installation of OCT (M33)
 - Installation of remaining varioscan into beam path (M33)
 - Optimization of beam path at 100W (M33)
 - Complete integration (M33)

WP 7 Update

System 2

- **Task 7.3 *Integration of the optical fiber*** (GLO; USTUTT, AMP, C4L, LASEA)
 - Objective: Fiber to be implemented and tested on the different machines
 - Remaining work:
 - Installation of fiber on demo 2 system (estimation M34/35)
 - Testing of fiber on demo 2 system (estimation M34/35)

WP 7 Update

System 2

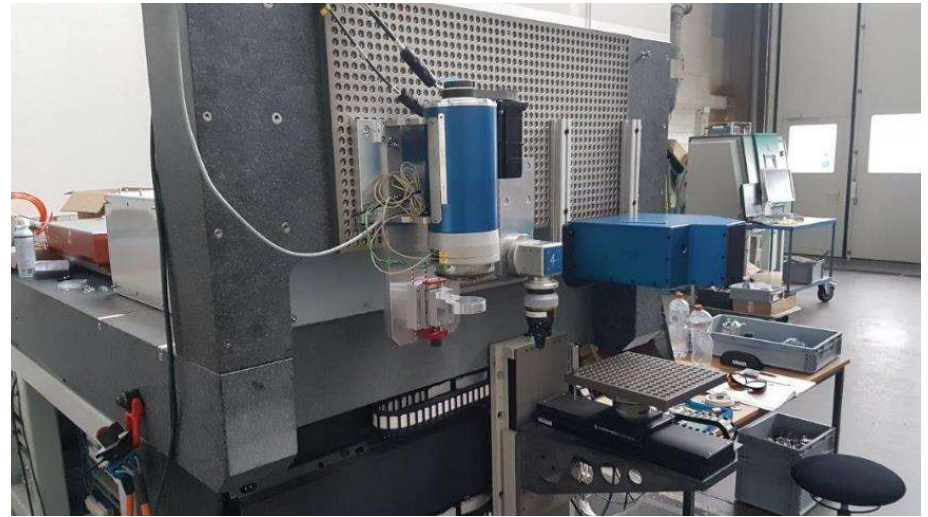
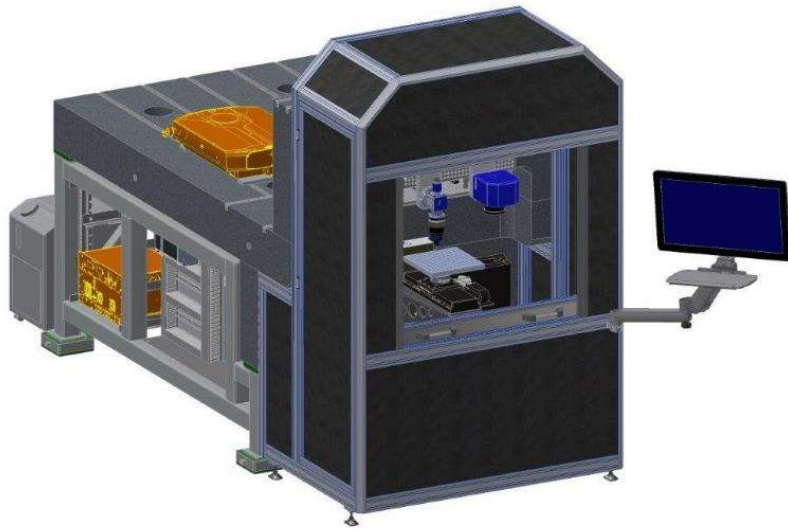
- Task 7.4.3 *Process analysis reference sample* (c4L)
 - Objective: Evaluate usefulness and potential of process
 - Remaining work:
 - Generate input from upscaling of applications WP 2 (T2.4 Upscaling) (estimation M34)

WP 7 Update

System 2

- Task 7.5 *Data handling and management* (c4L)
 - Continuous process once laser integration begins
 - Objective: Develop the relevant documentation for required laser processing strategies
 - Remaining work:
 - Continuous process during the integration / application development scheduled for completion M39

System 2: “200 W Machine”



System 1: 500 W Machine installed at IFSW

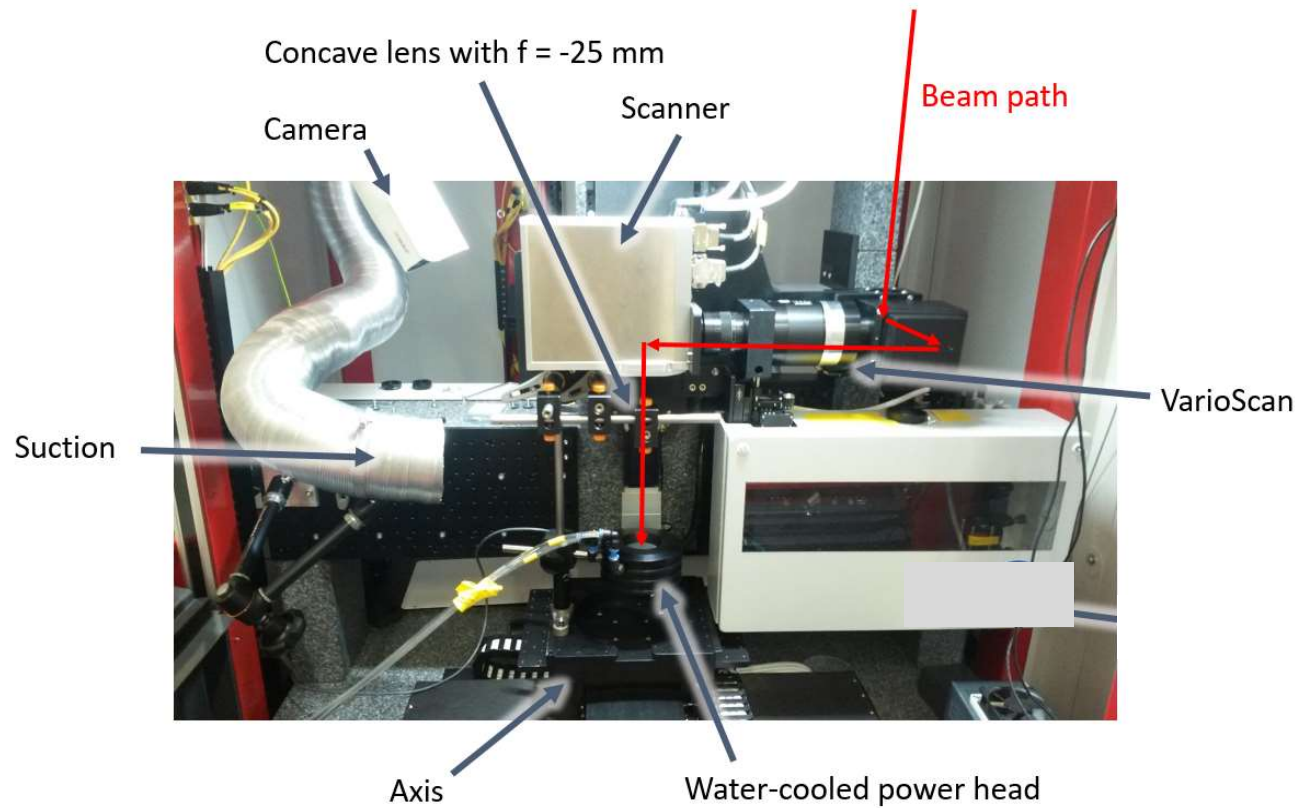


D7.2: 500 W System test

Power measurement :

Booster's output : 420W +/- 3%

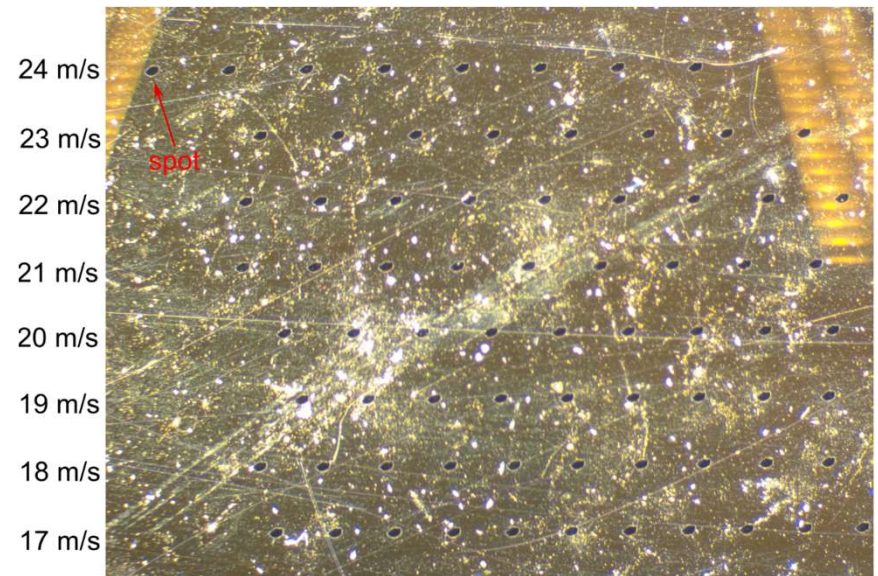
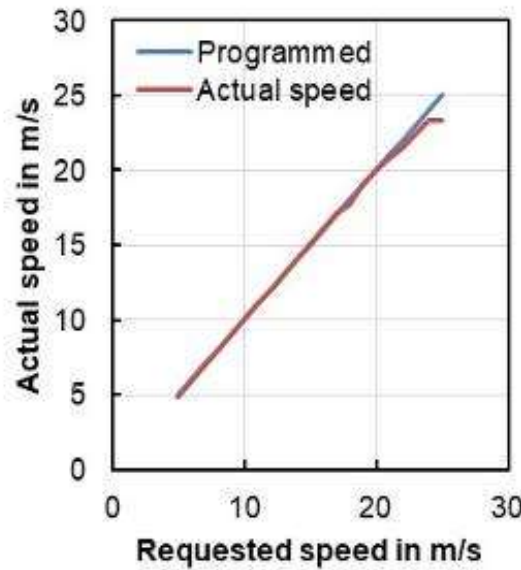
On the workpiece : 415W +/- 3%



D7.2: 500 W System test

Max speed measurement :

- Done on gold coated part
- Freq. 40kHz



D7.2: 500 W System test

Adjustments of delays:

Laser-Delays:

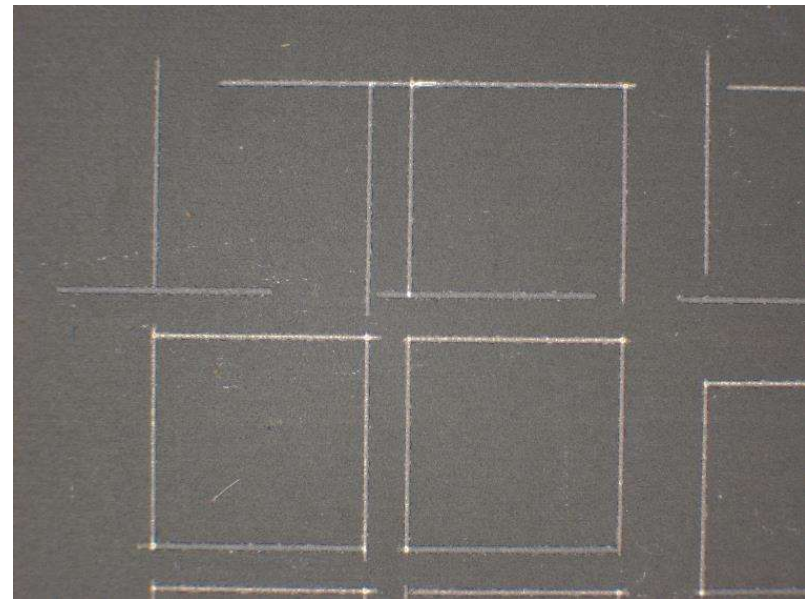
200 μ s for the LaserON-Delay
250 μ s for the LaserOff-Delay

Scanner-Delays:

1000 μ s for the Jump-Delay
200 μ s for the Mark-Delay
50 μ s for the Polygon Delay

Sky-Writing:

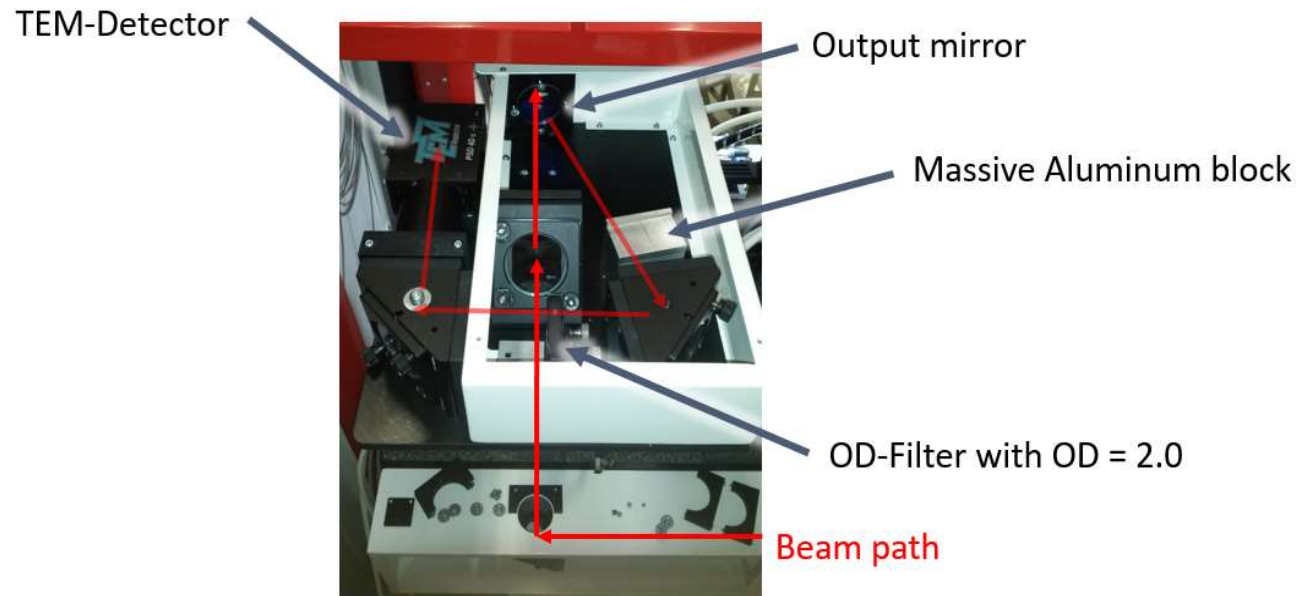
500 μ s for the Timelag
0 μ for the LaserOn-Shift
1100 μ s for the Vorlauf
600 μ s for the Nachlauf



D7.2: 500 W System test

Auto alignment :

- Add of OD filter of 2.0
- Massive aluminum block



Next steps

- Task 7.3 *Integration of the optical fiber* (GLO; USTUTT, AMP, C4L, LASEA)
 - Fiber to be implemented and tested on the different machines
 - Remaining work:
 - ???
 - D7.4: Testing of the optical fiber → M28 → delayed !
 - Firstly implemented on the demonstrator 2 → M34
 - Then to implement on the demonstrator 1

Next steps

- **Task 7.4 *Processes analysis on reference samples***
 - Process strategy for 3D Si processing will be tested and adjusted
 - Validation tests to demonstrate the assessment of the process
- **Task 7.5 *Data handling and management* (LASEA; C4L)**
 - Documentation and handling of all relevant info for controls.
 - Continuous process beginning after laser integration
- **Task 7.6 *Upgrade of 500W system to the 1000W system* (LASEA;USTUTT,AMP, C4L)**
 - Upscaling and evaluation.

WP7 : Milestones

Milestones	Description	Estimated date	Status System 1	Status System 2
MS31	Assessment of the 500W laser system design	M24	Fulfilled	/
MS32	Assessment of the 200W laser system design	M24	/	Fulfilled
MS44	Full characterisation of the performance of the 500W laser system for 3D-Si processing	M42	on going	on going
MS45	Full characterisation of the performance of the 200W laser system for 3D-Si processing	M42	on going	on going
MS46	Full characterisation of the performance of the 1000W laser system for 3D-Si processing	M42	on going	on going

WP7 : Deliverables

WP7 Demonstrators					
Tasks	Title	Status	Deliverable	Due date	Status
			D7.1	M24	Submitted
7.1	500W laser source integration	finished	D7.2	M24	sent
7.2	200W laser source integration	On going	D7.3	M24	Delayed → M33
7.3	Integration of the optical fiber	on going	D7.4	M28	Delayed → M34 on 200W machine
7.4.1	Processes analysis on reference samples	On going	D7.5	M36	On going
			D7.6	M36	On going
			D7.7	M36	On going
7.5	Data handling and management	On going			
7.6	Upgrade to 1000 W system	not started	D7.8	M42	not started

WP7: Demonstrators



Thank you

