

Operating Concept User Interface (UI)

Sachin Patel Head of R&D Beam

pro-beam GmbH & Co. KGaA
September 2025

www.pro-beam.com

What is the operating concept

Influences on the operating concept

Design Evolution

Creating the new operating concept

Key objectives

Interaction between humans and machines for intuitive use, taking into account efficiency, ergonomics, and safety

Intuitive use

Operation is possible without extensive training

Efficiency

Tasks can be completed quickly and in a resource-efficient manner

Ergonomics

Controls are easily accessible and understandable

Safety

Operating errors are detected and prevented

User



- Machine operator
- Developer
- Service

Process

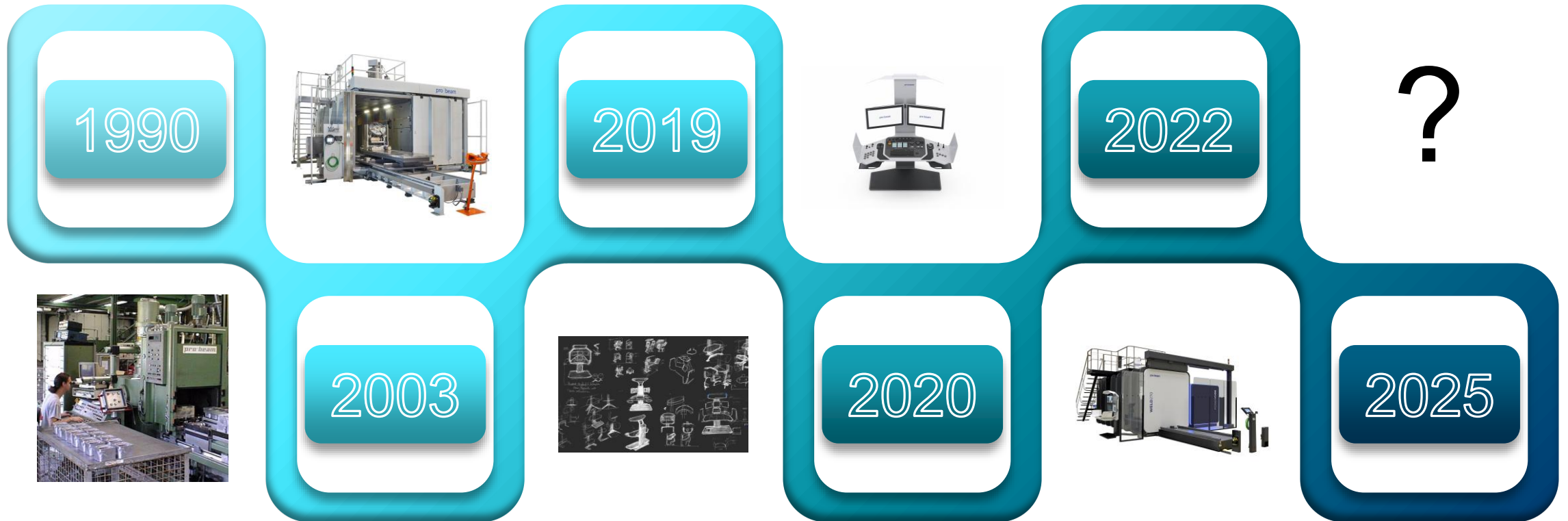


- Weld
- Micro drilling
- WEBAM
- EBM

Design



- PowerCube
- ErgoSpace
- Chamber



pro beam

08.07.19 16:29:36

427 2019-07-08

MCS machine axes

X	-75.000 mm	100 %
Y	260.000 mm	100 %
A	0.000 grd	100 %

beam current

SQ	0.00 mA
Set val.	0.00 mA

high voltage

Ua	150.13 kV
Set val.	150.00 kV

calibration

osc. pattern	0 -
frequency	0 Hz
offset X	0.00 mm
offset Y	0.00 mm
amplitude X	0.00 mm
amplitude Y	0.00 mm
vector	0.00 grd

anode current

I (a)	0.001 mA
-------	----------

Bias voltage

Uu	2117.7 V
----	----------

Filament current

I(f)	18.43 A
Set val.	36.90 A

lens current

SL	2035.00 mA
Set val.	2036.00 mA

cathode on[h:min]

cathode	13 : 32
---------	---------

feed rate

F Lin	0.000 mm/s
-------	------------

vacuum generator

	2.9e-2 mbar
--	-------------

vacuum chamber

	9.9e+2 mbar
--	-------------

Programm: BEARBEITEN.MPF [mm]

=====

KUNDE

:PROJEKT

:ERSTELLDATUM

:MASCHINEN

filament

adjustment

observation

calibration

main screen

generator

vacuum

diagnostics

process

PLC/NC

Prog. Editor

subsystem

UI/UX: Operating Concept Main Screen

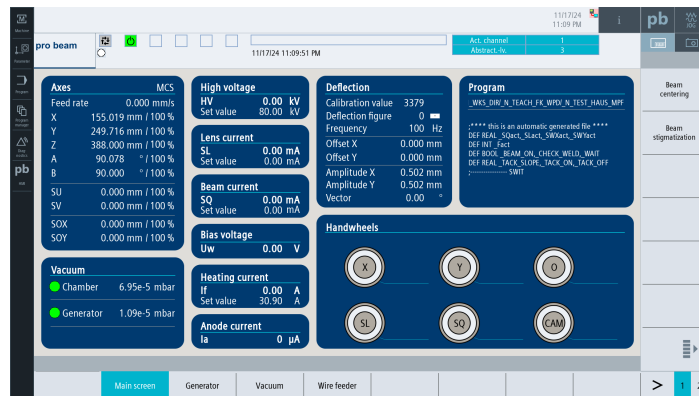
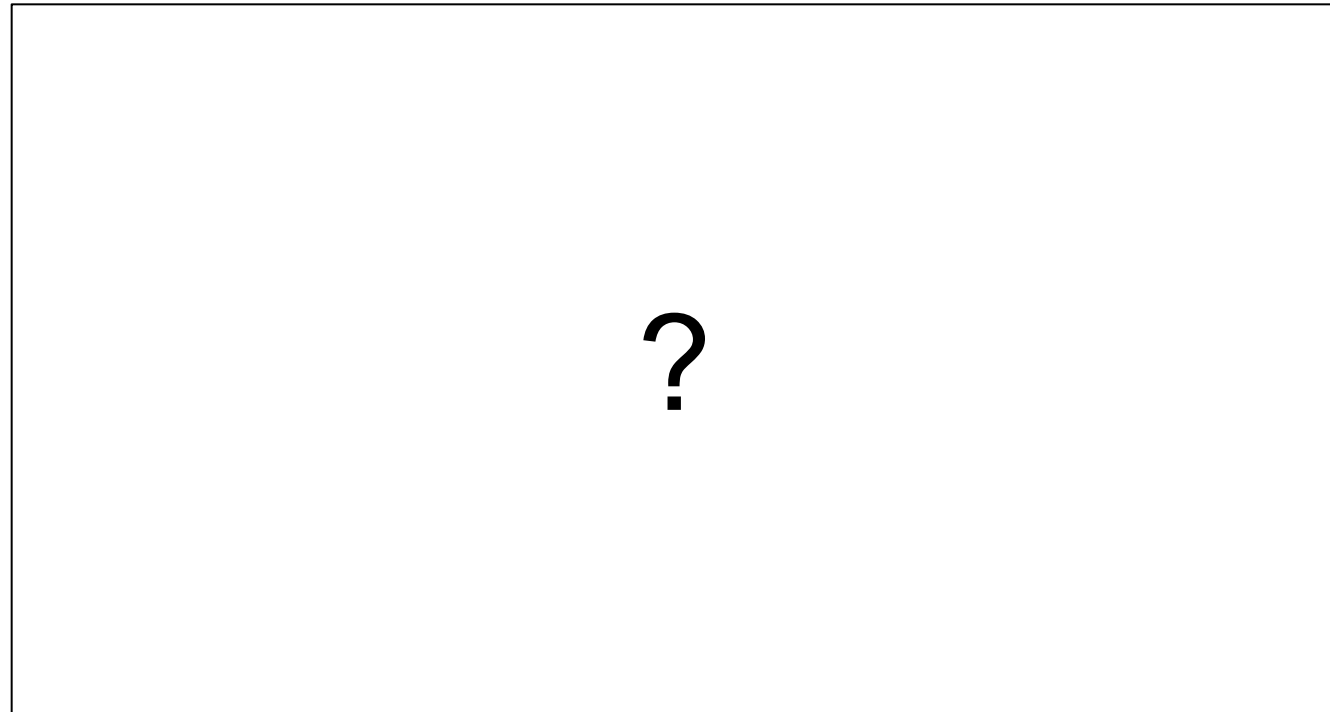
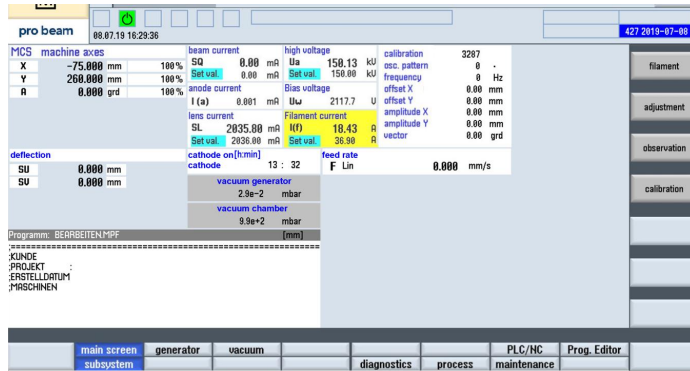
pro beam

The screenshot shows the main screen of the pro beam system. It features a top status bar with the 'pro beam' logo, a power button, and a date/time display. The main area is divided into several sections: 'MCS machine axes' showing X, Y, and A coordinates; 'deflection' showing SU and SV coordinates; and 'vacuum' showing chamber and generator pressures. A 'Program' section at the bottom left displays the current program name and its parameters. A vertical sidebar on the right contains icons for 'filament', 'adjustment', 'observation', and 'calibration'.

Parameter	Value	Unit
X	-75.000	mm
Y	260.000	mm
A	0.000	grd
SU	0.000	mm
SV	0.000	mm
Chamber	6.95e-5	mbar
Generator	1.09e-5	mbar

This screenshot shows a more detailed view of the pro beam main screen. It includes a top status bar with the 'pro beam' logo, a power button, and a date/time display. The main area is divided into several control panels: 'Axes' showing feed rate and coordinates; 'High voltage' showing HV and Set value; 'Lens current' showing SL and Set value; 'Beam current' showing SQ and Set value; 'Bias voltage' showing Uw and Set value; 'Heating current' showing If and Set value; 'Anode current' showing Ia and Set value; 'Deflection' showing calibration value, deflection figure, frequency, and offsets; and 'Program' showing the current program name and its parameters. A 'Handwheels' section at the bottom right contains six circular buttons labeled X, Y, O, SL, SQ, and CAM. A vertical sidebar on the right contains icons for 'Beam centering' and 'Beam stigmatization'. A bottom status bar shows the current screen and navigation buttons.

Parameter	Value	Unit
Feed rate	0.000	mm/s
X	155.019	mm / 100 %
Y	249.716	mm / 100 %
Z	388.000	mm / 100 %
A	90.078	° / 100 %
B	90.000	° / 100 %
SU	0.000	mm / 100 %
SV	0.000	mm / 100 %
SOX	0.000	mm / 100 %
SOY	0.000	mm / 100 %
HV	0.00	kV
Set value	80.00	kV
SL	0.00	mA
Set value	0.00	mA
SQ	0.00	mA
Set value	0.00	mA
Uw	0.00	V
If	0.00	A
Set value	30.90	A
Ia	0	µA
Calibration value	3379	
Deflection figure	0	
Frequency	100	Hz
Offset X	0.000	mm
Offset Y	0.000	mm
Amplitude X	0.502	mm
Amplitude Y	0.502	mm
Vector	0.00	°



Getting Input

- 2 Day Workshop with internal Task Force
 - Machine Operator
 - Process engineers
 - Customers

Focus on

- Process technologies: Welding, Microdrilling or Additive Manufacturing
- Symbols vs Text for function keys
- Optimizing the work experience with our pro-beam machine



Aiming for an optimized operating concept

- Efficient: reduced clicking effort and optimized process visualization
- Consistent: uniform look and feel facilitates training of new employees on all machines
- Modern design: appealing UI design with a clear visual structure
- Usability: optimized usability for optimal process monitoring
- Error-proof: clear warning and confirmation mechanisms minimize operating errors



Not just built by developers for developers, but crafted for users - delivering one seamless workflow experience from hardware to software

What are your ideas?

Sachin Patel

Contact: sachin.patel@pro-beam.com

www.pro-beam.com