

### Automatic Alignment and Focus

The automatic alignment feature works by scanning a low-power beam across a small hole in an alignment target within the chamber. The intensity of the backscattered electrons is used to align the beam-column automatically. Benefits include:



#### Improved beam quality

You can achieve better penetration when the beam is aligned correctly - typically up to 10% greater depth of weld.



#### Time-saving

The automatic alignment procedure takes 3 minutes, compared to manual alignment that can take 10+ minutes by a skilled operator.



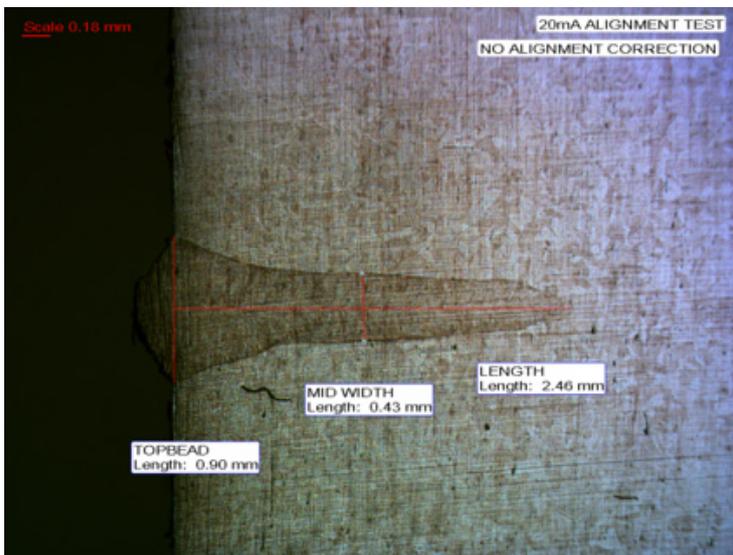
#### Repeatability

After every filament change, the beam is auto-aligned - removing variation in operator alignment skill and weld quality.

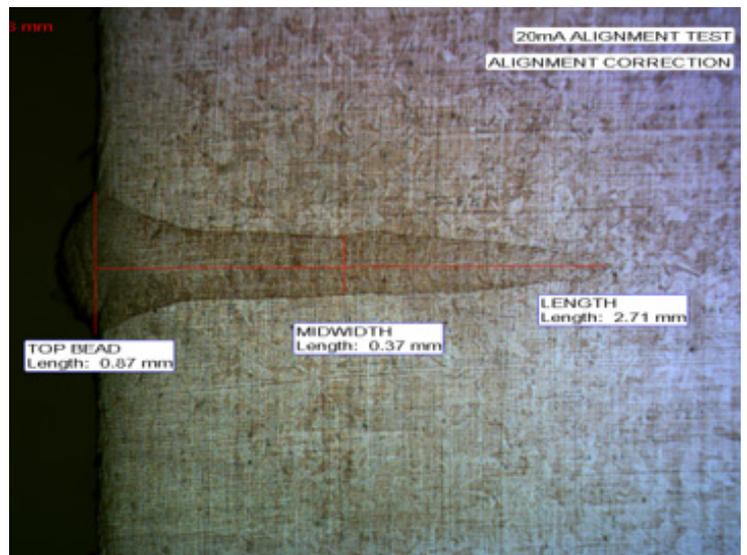


#### Automatic Focus

Automatically detect and check the working distance between the work piece and electron gun to give the highest beam intensity, removing operator configuration error.



Automatic alignment off



Automatic alignment on

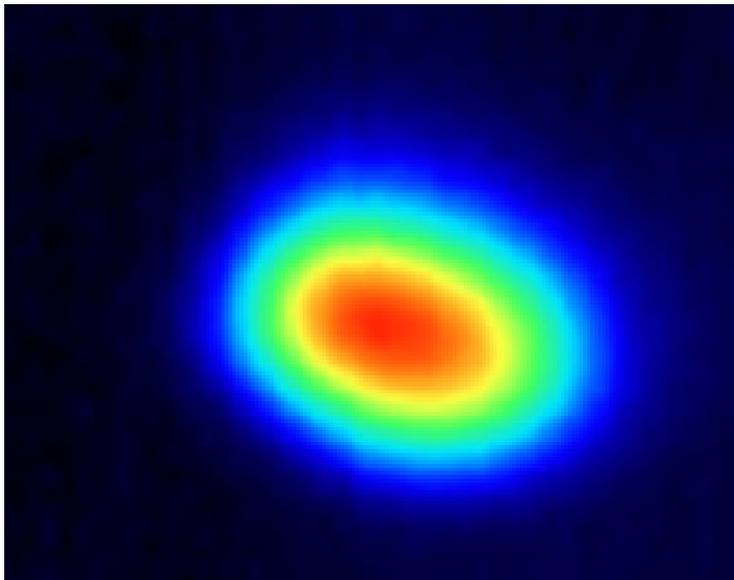
# Automatic Beam Shape Corrector

The electron beam can suffer stigmatism, due to mechanical limitations, causing the beam shape to widen. When the beam is moving quickly, the spot intensity may diminish, reducing penetration.

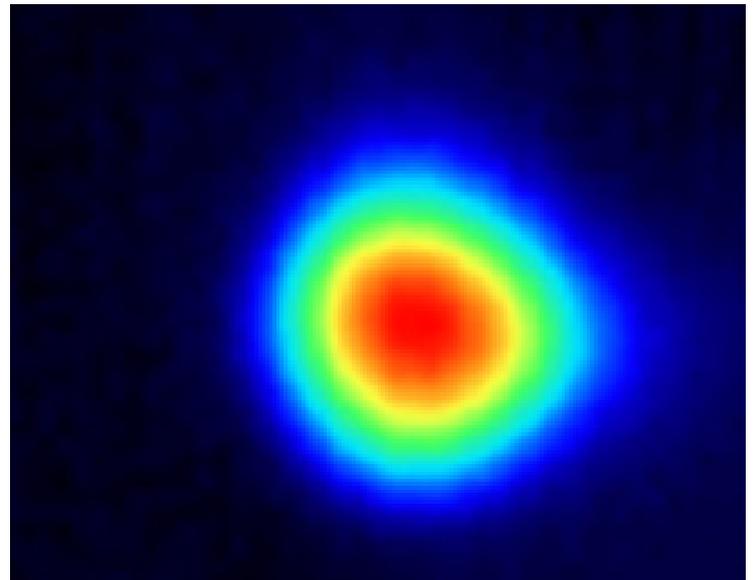
The CVE automatic beam shape corrector system uses correction coils to automatically correct beam stigmatism, with no operator skill required. This prevents uneven beam distribution and ensures the maximum possible beam penetration.

Options include:

- > **Basic:** manual control of stigmator coil correction and electrical centring, stigmatism analysis performed by the eye.
- > **Basic and probe:** manual control of stigmator coils correction and electrical centring, pinhole beam probe enables accurate measurement of beam correction.
- > **Advanced and probe:** computer algorithm determines stigmator correction automatically using the probe; the user triggers auto-set-up of the system then enters the surface focus value at which they are welding.



Automatic beam shape corrector off



Automatic beam shape corrector on

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