

# Mabema Fuel 3D

## OVERVIEW

The Mabema Fuel 3D-system measures **length, bow, bulge** and **twist**. The measurement is done in 3D by using laser triangulation and high resolution cameras.

The fuel assembly is lowered into the system and during this movement bulge is measured over the whole length. When fixated, length and bow is measured in 0.2 seconds. Bow is measured at 3-7 levels depending on customer demands.

The same system can with small modifications be used to measure bow without fixating the fuel assembly, i.e. on the fly. This can be done while transporting the fuel from A to B just passing the measuring system, without stopping.

Camera and laser housings are delivered by Mirion Technologies, guaranteeing radiation tolerance and waterproofness.

The same system can with small modifications be used for measuring the geometry of PWR fuel assemblies.

The system includes cables and an electrical cabinet with PC and software.



## Benefits

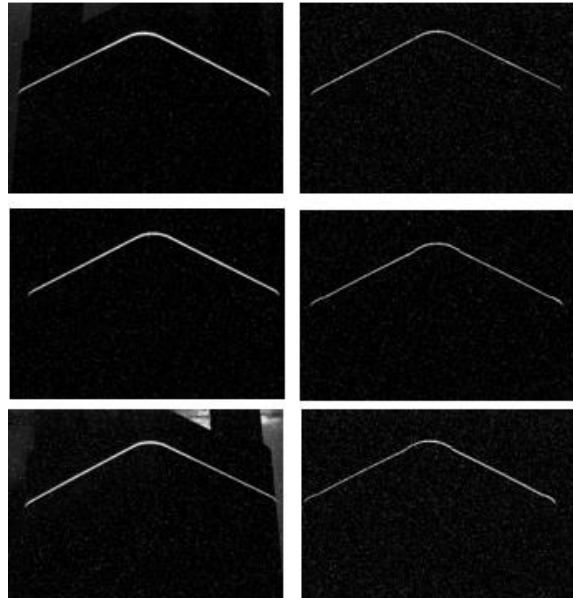
- Accurate measurement.
- Saves a lot of time at critical path during campaign.
- Well proven hardware technology with high quality.
- Very easy operation

## Specifications

Accuracy	Length +/- 0.5 mm Bulge +/- 0.2 mm Bow +/- 0.2 mm Twist +/- 0.1 degree
Time	0,5 s
Dimensions	Length 4650 mm Width 2400 mm Weight 300 kg
Material	Fixture: stainless steel Housings: stainless steel Brackets: alloy

## Options

- Measuring bow at 5 or 7 levels by adding cameras and lasers.
- Measuring bow on the fly with the fuel assembly un-fixated.
- Measuring fuel geometry at PWR:s (no fuel channel)



## About Mabema

*Mabema is the leading supplier of advanced machine vision systems to the industry in Sweden. Since 2002 Mabema Nuclear has been a supplier of underwater cameras, maintenance and advanced systems to the NPP:s in Sweden.*

*In 2010 Mabema released Core 3D for parallel core mapping and height measurement at BWR:s. The system has been used at all outages at EON OKG plants since then. Since 2014 the FIDZ system is also used by the Vattenfall Forsmark plant.*

*Mabema is qualified as a supplier to the Swedish NPP:s by Sellihca Achilles.*