

## Control Rod Guiding Assemblies

A safety and essential structural component for Large and Small Modular Reactors

Framatome designs and qualifies CRGA  
For SMR/PWR designers and operators

### Challenge

- ✓ Make a structure for the Upper Reactor Pressure Vessel Internals
- ✓ Join upper support plate and upper core plate together
- ✓ Ensure Rod cluster control assembly (RCCA) seamless movement to:
  - Have perfect control of nuclear reactivity, enabling load follow
  - Ensure permanently safe drop time thanks to long lasting reliability
- ✓ Designed and manufactured according to applicable construction codes (ASME & RCC-M)

### Solution

Framatome designs and qualifies on test loops to delivers Control Rod Guiding Assemblies with the highest level of safety & quality standards, while **addressing all nuclear safety concerns**.

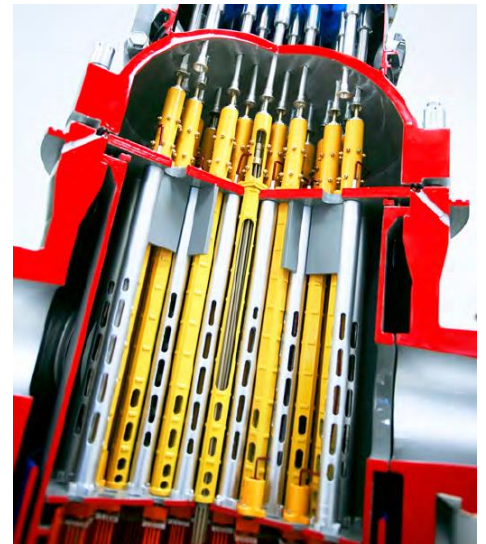
**Continuous guidance** is the key feature.

Framatome CRGA avoid stress crack corrosion & loose components thanks to **latest generation of locking pins** and **nitride surface coated guiding pins** to:

- Reduce drastically risks of cracking / crushing of smaller fixing items
- Ensure repeatedly through time alignment of internals components

### Technical information

CRGA	F-900 125"	F-900 96"	F-1300 96"	F-1650 96"
Qualified with • FUEL • CRDM	✓ AFA 3G 900 ✓ <b>F-900</b>		✓ AFA 3G 1300 ✓ <b>F-1300</b>	✓ AFA 3GLE 1600 ✓ <b>F-1650</b>
Lengths	4,1m	4,05m	4,4m	4,5m
• Upper cover	➤ 0,9m	➤ 1,6m	➤ 1,9m	➤ 1,6m
• Lower cover	➤ 3,2m	➤ 2,5m	➤ 2,5m	➤ 2,9m
Weight	282kg	296kg	312kg	241kg
Square flange largest side	254mm			280mm



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### Key figures

- **7500** Control Rod Guiding Assemblies designed & delivered since 1970
- **85** NPPs equipped worldwide



### Customer benefits

- Extensive qualification (> 40 years) to ensure safe Control Rod Drive System
- Compute drop time available with **CIGAL** digital solution model

**Your performance  
is our everyday commitment**

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