Level sensors for REP

For water level measurement in tanks, pools and drains

The water level measurement in tanks, pools and drains is an major parameter for nuclear power plants safety. ARCYS level sensors are qualified under RCC-E to temperature, humidity, vibrations, seismic and nuclear radiation for more than 40 years, including accidental conditions.

BENEFITS

> Robust : sensor qualified to perform Safety functions

> Simple to use : passive sensor

> No maintenance in operation

> High resistance to radiation

THE SOLUTION

ARCYS has developed two types of level sensors using the same robust and maintenance-free measuring principle : a magnetic float which moves along a chain of magnetic relays.

- For continuous level measurement (ANA), the resistance of the sensor varies proportionally with the height of water
- For the threshold sensor (TOR), it is a magnetic relay which changes state when the defined threshold(s) are reached

This technology makes it possible to cover a wide measurement range, from a few centimeters to several meters, in degraded environmental conditions.

With these sensors, ARCYS meets all the needs for qualified and unqualified level sensors for PWRs.

PROVEN TECHNOLOGY

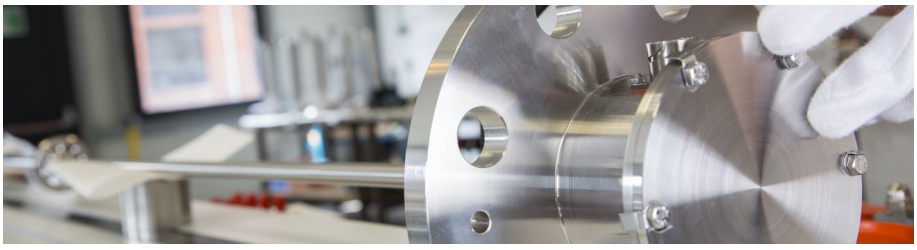
For more than 30 years, ARCYS has been using this technology for nuclear applications in PWRs and Navy compact nuclear reactor.

The magnetic float measuring principle offers many advantages :

- No calibration drift,
- Maintenance free,
- High resistance to extreme environmental
- Withstands earthquakes without damage

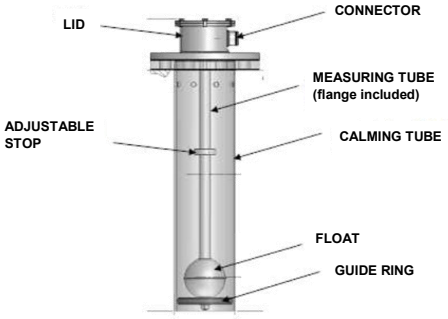
These sensors equip the EPR reactors. Thus, **more than 800 sensors** have already been delivered or are in progress.

Qualified according to RCC-E K1, K2, K3 and K3ad !



Level sensor (ANA)

Sensor with calming tube



Qualified for 40 years of service life !

TECHNICAL SPECIFICATIONS

	ANA (level)	TOR (threshold)
Electrical & functional characteristics		
Measurement range	From 0,1 m to 12m Other lengths on request.	From 0,1 m to 12m. From 1 to 3 thresholds / sensor.
Accuracy	± 21 mm	± 5 mm
Resolution	15 mm	N/A
Output signal	Min/max resistance	Open/closed circuit
Supply	V_{DC} MAX : 60V I Max : 10mA	V_{DC} MAX : 60V I Max : 250mA
Isolation	≥ 10^8 Ω under 500V_{DC}	
Dielectric strength	500 V/ 5mA	
Electrical connector	K1/K3ad : Souriau 8NA1Y1212PN00SA K2/K3ad/K3 &NC : Souriau 8N45S211225K2	
Reliability	10^{-6} breakdown/h	
Conditions of use		
Temperature of functioning	Continuous 90°C, 135°C (900 minutes), 156°C (20 minutes) and up to 160°C in accident conditions	
Pressure	Max : 18 bar at 25°C. Other preassures on request.	
Cumulative irradation	350 kGy	
Vibration	0,2 g, 10 Hz to 500 Hz	
Magnetic induction	< 4.10^{-4} T	
Earthsquake resistance	Max: 35 g / « component » RCC-E spectrum	
Other conditions (shock resistance, etc)	Available on request	
Qualifications & certifications		
RCC-E	K1, K2, K3, K3ad & NC	
ESPN / ATEX	Available on request	
Options and variations available		
Mechanical interfaces	Possibility of adaptation according to the installation constraints (flanges, still pipe, …)	
Material	Stainless steel 316L or 904L	
Transmitter	4-20mA	
Accessories	Sensor support to be screwed or welded	

CONTACT

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