

A Success Story: Rad-Hard CCTV System Retrofit Increases Monitoring Performance



Challenge

- Malfunctioning CCTV systems at nuclear facility caused operation delays
- Unreliable integrated pan, tilt, and zoom functionality

Solution

- Modular Diakont CCTV camera systems with industry-leading duty cycle
- Rad-hard D70 camera with integrated zoom lens
- Pan and tilt camera housing with versatile mounting
- Simple network integration with standard protocols

Results

- Diakont CCTV systems installed in facility using existing CCTV camera mounts
- Systems integrated into network using existing video systems and operation protocols
- CCTV system performance dramatically increased – image quality, pan, tilt, and zoom



Diakont successfully completed a recent CCTV system retrofit project for a North American nuclear facility. With 100 MegaRad lifetime dose and 3×10^5 Rad/hr dose-rate capabilities, the D70 camera was identified to handle the radiation requirements of the installed locations within the facility. Figure 1 shows the standard Diakont D70 CCTV camera with a steel pan and tilt housing.

Diakont engineering teams performed a site survey and determined that camera housing modifications were necessary to seamlessly integrate the camera solution into the facility. The end result was a pan and tilt camera housing with a mounting design compatible with the existing CCTV systems.

Further minimizing installation work, Diakont CCTV systems were integrated into the existing network infrastructure. Diakont also incorporated tabletop controllers with joy sticks to simplify operations.

Diakont's CCTV systems have operated reliably since installation and are designed for maintenance-free monitoring through the facility's full duty cycle.

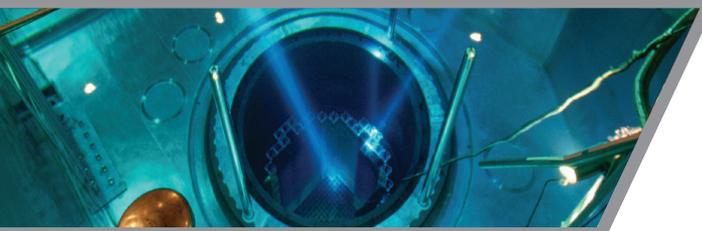
Solutions Partner

Nuclear remote monitoring applications are never straightforward – an off-the-shelf network switching system simply does not provide the level of performance required in the extreme environment of a reactor. Let Diakont use our years of operating experience to guide you to a video system that works for you. We offer a wide array of customization choices to ensure that you get the best value for your investment befitting the specific needs of your operation.



Figure 1: Standard Diakont Rad-Hardened D70 CCTV Camera





Proven Reliability

Diakont's proven rad-hardened camera systems are utilized by nuclear facilities worldwide. For a complete reference of all Diakont CCTV users worldwide, including commercial nuclear power plants, please contact Diakont.

Country	End User	Year of supply	Qty	Camera System	Application
USA	General Atomics AFRRRI TRIGA Facility	2014-2016	5	PTZ 70	Monitor various experiments at TRIGA Mark-F reactor and high-level cobalt facility
Austria	Austrian Research Centers at Seibersdorf	2015	2	PROTON + D40	Visual inspection of reactor vessel and reactor internals surveillance in hot cells
Bangladesh	Bangladesh Atomic Energy Commission	2014	1	PTZ 70	Visual inspection of reactor vessel and reactor internals
Malaysia	Malaysia Nuclear Agency	2014	1	D40	Visual inspection of reactor vessel and reactor internals
Ghana	National Nuclear Research Center	2016	2	PROTON + D40	Visual inspection of reactor vessel and reactor internals.
Switzerland	CROCUS Research Reactor	2011	1	PROTON	Surveillance of research reactor operation
Belgium	Belgian Nuclear Research Center SCK-CEN	2012-2016	6	2 D40 4 PROTON	D40 – inspection of reactor channels PROTON – surveillance of fuel handling operations in reactor pool
Norway	Institute for Energy Technology, Halden Reactor Project	2011	1	D40	Visual inspection of reactor internals
Japan	Japan Proton Accelerator Research Complex (J-PARC)	2006	14	PTZ 70	Surveillance of accelerator operation
Japan	Center of Linear Accelerators, Japan Atomic Energy Agency	2010	1	PTZ 70	Surveillance of accelerator operation
Bulgaria	Institute of Nuclear Research & Nuclear Energy	2008	1	PTZ 70	Surveillance of technological operations with fuel
Russia	Science Research Institute of Nuclear Reactors	2009-2015	7	PTZ 70 + D40	PTZ 70 – surveillance in “hot cells” D40 - visual inspection of reactor internals
Russia	National Research Centre "Kurchatov Institute"	2011-2016	2	D40 + PROTON + PTZ 70	PTZ 70, PROTON – surveillance in “hot cells” D40 – visual inspection of reactor internals
Russia	Ioffe Physical Technical Institute	2012	1	D40	Surveillance of scientific tests
Russia	Russian Scientific Radiology and Surgeon Center	2009	1	D40	Surveillance of cyclotron
Czech Republic	Rez Nuclear Research Centre	2012	2	PTZ 70 + D40	Surveillance of technological operations with fuel and visual inspection of reactor internals
Belarus	JIPNR, Sosny	2010	3	PTZ 70 + D40	Surveillance of technological operations with fuel and visual inspection of reactor internals
Kazakhstan	Institute of Nuclear Physics	2008-2013	3	2 D40 1 PTZ 70	D40 – inspection of reactor vessel and reactor internals PTZ 70 – surveillance in “hot cells”
Uzbekistan	Institute of Nuclear Physics	2009-2012	6	2 D40 + 2 D25 + 2 PROTON	Surveillance of technological operations with fuel and visual inspection of reactor internals

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