

Hintergrundinformationen zu ausgewählten Themen zum nuklearen Störfall in Japan

Nr. 035
(04.04.2011, 16:00 Uhr)

Kerntechnische Hilfsdienst GmbH: Fernhantierung (KHG)

In der Bundesrepublik Deutschland haben die Betreiber von kerntechnischen Anlagen technische und personelle Vorsorge getroffen, um nach einem Störfall die Anlage zu stabilisieren, die Ursache zu analysieren und die Folgen des Störfalles zu beseitigen. Teile dieser Notfallvorsorge haben die Betreiber der Organisation „Kerntechnische Hilfsdienst GmbH“ übertragen.

Die KHG wurde 1977 von den Betreibern deutscher Kernkraftwerke, der Brennstoffkreislaufindustrie und den Großforschungszentren gegründet.

Auf der Seite der KHG finden Sie Informationen zu Fernhantierung: Hier reicht die Palette vom 22 Tonnen schweren funkgesteuerten Bagger bis zum kleinen funkgesteuerten Inspektionsfahrzeug.



Auf den folgenden Seiten sind beispielhaft Datenblättern zur Fernhantierung aufgeführt. Mehr unter [KHG](#).



Remote Handling

Radio-Controlled Hydraulic Excavator Caterpillar 320 CL

For outdoor operations in areas exposed to radiation and for contaminated environments, KHG has a hydraulic excavator available, which amongst with excavation can also perform clearance, recovery, decontamination and dismantling work.

A remote-controlled, rapid tool change system enables various types of tools to be used.

All control and video signals are transmitted by radio.

Remote control is performed from the control unit in the drivers' cabin of the transport vehicle.

Eight cameras are mounted on the excavator to enable the travel route and working area to be monitored.

Technical Data

Radio Range	max. 1 km
Weight	22.000 kg
Ground pressure	0,45 kg/cm ²
Length of transport	9. 400 mm
Width of transport	2. 980 mm
Height of transport	3. 010 mm
Speed	max. 5,5 km
Power	103kW/140PS
Periode of Service with 1 Tank	min. 8 Std.

Equipment

General purpose bucket
Ditch cleaning bucket
Demolition and sorting grapples
Multi-processor
Hydraulic hammer
Transverse cutter

Transport-system

MAN TGA 26.530

Dose rate

Dose rate	$\leq 10^2$ Gy/h
Max. dose rate	$\leq 10^4$ Gy





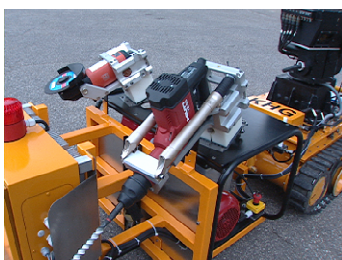
MF4 Radio-Controlled Manipulator Vehicle

The remote-controlled MF4 system is an extremely mobile device, suitable for operation in unknown environments where there are high levels of contamination and dose rates. It is used for reconnaissance, performing measurements and for work with special tools.

All control, picture and measurement signals are transmitted by radio. With a fully charged battery, the MF4 can be operated for at least 2 hours, depending upon the distance it has to travel and the work done. Cable control is also possible. The vehicle is mounted on two caterpillar tracks, and fitted with an articulated manipulator, upon which is a B/W stereo TV camera which can be pivoted and tilted, and a microphone and lighting. Various gripping tools and other implements are available for fitting to the manipulators.

Technical Data

Radio range	max. 1 km
Weight	350 kg
Net load	150 kg
Length	1.300 mm
Width	850 mm
Height	400/1.080 mm
Speed	0-30 m/min zooming
Climbing capacity	32°
Power supply battery	48V
Manipulator KM20	Variability 6
Length of arm	1.600 mm
Lifting capacity	20 daN
Transport Device	Special truck
Specials	<ul style="list-style-type: none"> • Mobile Trailer-system for electr. tools • High dose measuring system





SMF Radio Remote Controlled Heavy Manipulator Vehicle

The SMF heavy manipulator vehicle can be operated in contaminated areas inside and outside of buildings, for inspection and measurement work, for clearance and recovery work, and for decontamination and assembly.

The SMF is controlled by radio up to a distance of approx. 1 kilometre, but this distance can be increased considerably if relay technology is used. Remote control is performed from the control room of the command vehicle. A transportable function test unit is available with which diagnostic and error-seeking programmes can be performed, as well as for loading and unloading the SMF from the transport vehicle.

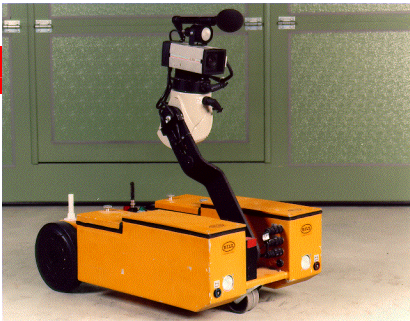
A turbocharged 90 kW diesel engine with intercooler drives the SMF, and hydraulics supply the electromechanical drive system with energy.

The chassis is fitted with two caterpillar tracks and an articulated arm with 6 axes and a total of 9 radiation resistant cameras and lighting devices.

Main Technical Specifications

Mobile Base	Crossing abilities	Stairs: 45 ° Step: 400 mm height Ditch: 400 mm breadth
	Speed	25 m/min maximum
	Spin diameter	1200 mm
	Dimensions	850 mm width 1900 mm height Variable length
Weight	Mobile base alone	880 kg
	MAESTRO config	1120 kg
	MA23 & left arm config	1120 kg
MAESTRO manipulator	Lifting capacity	100 daN
MA23M manipulator	Lifting capacity	25 daN
Left arm	Lifting capacity	27 daN





MF6 Radio-Controlled Manipulator Vehicle

(cable control is possible)

The MF6 remote-controlled inspection vehicle is so compact that it can be used for reconnaissance, inspection and to perform measurements in extremely confined locations within a nuclear facility.

All control, picture and measurement signals are transmitted by radio. With a fully charged battery the MF6 can be operated for up to approx. 4 hours, depending upon the type of use. Continuous operation can be provided by using the 100 metre cable, which is wound onto a cable drum with rotating connector fitted with a charger unit. The three-wheeled chassis is fitted with a steered wheel located centre front, and two individually powered drive wheels at the rear. This arrangement of wheels provides a highly manoeuvrable chassis for operation on level ground. A colour camera is mounted on the pivoted arm. A dose rate measuring device is also part of the standard equipment fitted to the MF6.

Technical Data

Radio Range	max. 1 km
Weight	48 kg
Length	720 mm
Width	430 mm
Height	min. 470 mm / max. 860 mm
Speed	0-25 m/min zooming
Min. turning radius	700 mm
Ground clearance	50 mm
Power supply	2x 12 V/16 A





MF3 Cable Controlled Inspection Vehicle

This remote-controlled system is conceived to be used in contaminated areas with high dose rate.

The MF6 inspection vehicle is supplied with power from a 100-metre cable connected to a 230 V power supply. All control, picture and sound signals are transmitted along the same cable. The vehicle is fitted with four pivoted caterpillar tracks which adapt well to uneven surfaces and enable it to climb stairs. It is also fitted with exchangeable, articulated manipulators, one of which is fitted with a B/W stereo TV camera which can be pivoted and tilted, as well as driving cameras with microphone and lighting. Various gripping tools and other implements are available for fitting to the manipulators.

Technical Data

Cable length	100 m
Max. Weight	max. 400 kg
Net load	250 kg
Length	2.260/940 mm
Width	745 mm
Height	400/1.080 mm
Speed	0-10 /min zooming
Climbing capacity	45°
Chassis	4, separate
Power supply	230V - /16A
Manipulator	KM20, KM80
Arm length	1.600 mm 2.000 mm
Lifting capacity	20 daN 80 daN
Transport	Special-Truck

