

GRAPPLE SCANNER FOR RADIATION IN SCRAP METAL

起重机抓斗扫描器 用于废金属中辐射

Model Series ~ GRAPPLE SCAN- GR

Models ~ GRAPPLE SCAN- GR-A, -B, -C, & -D

FEATURES: 产品特点

- WIRELESS COMMUNICATION BETWEEN DETECTOR & CRANE OPERATOR
- 探测器和吊车操作员之间无线通信
- SURFACE SCAN, LOAD ANALYSIS, SEARCH MODES
- 表面扫描、分析和搜索模式
- FAST SCAN, REAL TIME ALARM
- 快速扫描，实时报警
- NO MOVING PARTS – QUICK CHANGE DETECTOR BETWEEN GRAPPLE HOUSINGS
- 无活动部件-抓斗机固定外箱间可快速更换探头
- DETECTS – ALL RADIOACTIVE MATERIALS, SOURCES & CONTAMINATION
- 探测-所有辐射材料辐射源及污染
- GAMMA & NEUTRON
- γ & 中子
- FITS TO ANY GRAPPLE
- 可装进任何抓斗机
- ARMORED, SHOCK MOUNTED, WATERPROOF
- 加防护安装、防震防水
- RE-CHARGEABLE BATTERY OPERATED
- 充电电池供电
- MORE SENSITIVE THAN VEHICLE MONITORS
- 比车辆监测器更灵敏
- SIMPLE OPERATION
- 操作简单
- EASILY SORTS CLEAN LOADS VERSUS CONTAMINATED LOADS
- 轻松分拣干净和受污染货物
- **OPTIONAL: WIRELESS REMOTE ALARM AND DISPLAY TO BASE STATION**
- **选择:** 无线遥控报警并显示到基站



DETECT & REJECT CONTAMINATED SCRAP METAL
探测&挑出受污染废金属

ADVANTAGES: 优点

- ALL LOADS ARE SCANNED, (Not just a few random samples).
- 所有货物全部扫描（而不仅仅随机样品）
- No additional handling.
- 无需额外工作
- Contaminated material is spotted early.
- 污染物及时锁定
- Suspicious scrap metal can be separated easily.
- 怀疑污染了的废金属很容易分离
- Reliably Detects **CFR 49C: Hazard Class 7** (Radioactive Material).
可靠探测核管会49条规定的7级危害物（辐射物）
- High sensitivity because Detector Assembly is so close to material!
- 高灵敏因为探头组件和被测材料近距离接触



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SITUATION: 情况

Large volumes of scrap metal are moved from truck to ship to railcar to foundry in the US and around the world. It is essential to know which scrap metal, if any, carries Radioactive Materials.

在美国及全世界，大量废金属从卡车转运到火车和铸造厂，了解哪些废金属带有辐射物很重要。

Doing a manual search of large amounts of metal is not feasible for many reasons. Technical Associates' Model **GRAPPLE SCAN-GR SERIES** of radiation detectors provides highly sensitive information from a Quick scan.

人工挑拣大量废金属不可行，TA公司**GRAPPLE SCAN-GR**系列辐射探测器通过快速扫描提供高灵敏信息数据。

DESCRIPTION: 描述

Detector Assembly is positioned inside a Fixed Armored Housing approximately 1 square foot up to 16 sq foot, depending on available space.

探头组件安装在面积大约1平方英尺-16平方英尺大小的固定式铠装外箱中

IMMEDIATE DATA on radioactive content of the entire grapple contents is transmitted to the Operators Console.

Having a Fixed Detector Housing mounted directly on the Grapple Crush Plate with the Detector Assembly safely inside has distinct advantage for seeing radioactive scrap material over vehicle or portal monitors.

整个抓斗内辐射物件的即时数据传到操作员控制台。固定探测器装甲外壳直接安装在抓斗粉碎盘上，里面的探测器组件安全，探测废金属优势明显高于车辆或便携式监测器。

Detecting & Rejecting Contaminated Scrap Metal:

探测并分拣受污染的废金属

Radioactive material can enter the scrap metal supply in various ways. For example:

辐射物可通过各种途径进入废金属，例如：

- A radiotherapy cancer treatment source is lost or stolen and may be present
- 癌症放疗辐射源丢失或被盗
- Diffuse radioactive materials become mixed with, or even enter the metal matrix of the scrap metal.
- 扩散放射物与废金属混在一起，甚至进入到金属板中

METHOD OF USE: 使用方法:

- **Grapple Mounted: 抓斗安装**
- The Fixed Detector Housing is mounted inside the jaws of the grapple on the crush plate (or on a crane or a spreader bar.)
- 固定探测器外箱安装在粉碎盘的齿耙内（或起重机上或吊杆上）
- The Detector Assembly is placed within the Detector Housing so that it views the metal content from above.
- 探测器组件放置在探头外箱内因此探测器俯视被测金属物。
- Electronics Assembly consists of Transmitter & Battery Pack. It is mounted on fixed plate above the Grapple Claw.
- 电子学部分包括发射器和电池组件，安装在爪齿上方的固定盘



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- The Electronics Assembly is positioned in Armored Housing & is connected to the Detector Assembly via an Armored Cable to provide wireless data transmission to the operator's console.
- 电子学组件安装在装甲外壳内，通过铠装电缆连接到探头组件以提供数据传输到操作台。

Crane Operators Console in the Cab: 驾驶室内吊车操作台

- The **Operator Console** provides data information & easy switching between Surface Scan, Load Analysis, & Search modes.
- 操作员控制台提供数据信息并轻松在“表面扫描、分析和搜索”模式间进行切换。



Model型号	GRAPPLESCAN-GR-A	GRAPPLESCAN-GR-B	GRAPPLESCAN-GR-C	GRAPPLESCAN-GR-D
Gamma Detector: γ 探头	1 each large plastic Scintillator 1个大塑料闪烁体	1 each large plastic Scintillator 1个大塑料闪烁体	2 each large plastic Scintillator 2个大塑料闪烁体	2 each large plastic Scintillator 2个大塑料闪烁体
Typical Size: 典型尺寸	12" x 12" x 7" (7 ²)	24"x24"x7" (4 ft ²)	36" x 36" x 7" (9 ft ²)	48"x 48"x 7" (16 ft ²)
Neutron: 中子	YES: ZnS(Ag)	YES: ZnS(Ag)	YES: ZnS(Ag)	YES: ZnS(Ag)

Protective Armor: Detector Assembly has high strength, protective armor shield

Unique design allows good sensitivity even for lower energy Gammas and Neutrons

防护铠装：探头组件带高强度保护铠装壳

独特设计对于低能伽马和中子的灵敏度很高



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DETECTOR SPECIFICATIONS: 探头规格

Sensitivity: Can Alarm at 7 μ R/hr rise within a few seconds (Ratemeter Mode).
Can Alarm down to 1 μ R/hr with longer count time.

灵敏度: 每上升7 μ R/hr几秒钟内报警 (计数率模式)

Range: 1 μ R/hr to 1 mR/hr

量程:

Energy Range: Gamma – 100KeV to 6 MeV

能量范围:

DETECTOR ASSEMBLY ON GRAPPLE: 抓斗上探头组件:

- Located in Fixed Armored Housing on Each Grapple Crush Plate with Easy Detector Assembly Access
- 安装在抓斗粉碎盘上固定式铠装外箱内, 探头组件易于接近。
- Each Detector Assembly is Located in its own Rugged Housing
- 每个探头组件带单独结实外壳
- Each Detector Assembly has preamp and HV plus counter
- 每个探测器组件有前置放大器和高压电源和计数器
- Each Detector Assembly is connected to Transmitter via Quick Connect Armored Cable no Tools Required.
- 每个探测器组件通过快速连接铠装线连接到传输器无需工具
- Switching Detector Assemblies between Fixed Housing on Different Grapples is Quick with Standard Tools.
- 使用标准工具快速将探测器组件在不同抓斗间进行转移

ELECTRONICS ASSEMBLY ON GRAPPLE: 抓斗上的电子学组件

- Located above Grapple Claw on Fixed Mounting Plate
- 位于固定安装盘上抓斗齿耙上方
- Electronics Assembly consists of Transmitter & Battery Pack
- 电子学组件包括传输器和电池组
- Battery Pack Switch Out - Quick with no Tools Required
- 无需工具快速断开电池组
- Switching Electronics Assembly between Grapples - Quick with Standard Tools
- 使用标准工具在抓斗间进行快速电子学组件切换
 - Disconnect Transmitter from Detector Assembly via Quick Connect Armored Cable – No Tools Required
无需工具-将传输器通探测器组件通过快速连接铠装线断开
 - Remove Electronics Assembly and Relocate on Different Grapple Fixed Mounting Plate.
将电子学组件拆下安装在不同抓斗固定安装盘上



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CHOICE OF MATERIALS: Fixed Detector Housing is available -in Steel or Titanium

材料选择: 固定探测器外壳-钢或钛

ELECTRONICS ON GRAPPLE:

抓斗上电子学

Transmitter Housing:

Armored, Removable, Quick Connect – Standard Tools,

信号传输器外壳:

铠装, 可拆卸, 快速连接-使用标准工具

Transmitter Cable:

Armored between Transmitter & Detector – Quick Connect – No Tools

传输器数据线:

传输器与探测器之间铠装线连接, 无需工具快速连接

Communication:

Wireless Transmitter from Grapple Detector Assembly to Crane Operator Console via WLAN (WiFi) and/or Bluetooth

通信:

抓斗探测器组件与操作员控制台之间通过WIFI和/或蓝牙进行**无线传输器**

Bluetooth: Class 1, 100mW, 100 Meter Max

蓝牙: 输出功率Class 1, 100mW, 最长100米

Battery Life:

Re-Chargeable via AC Lithium Ion available with 10 to 72 Hours capacity

电池寿命:

可充电锂电10-72小时容量

OPTIONAL:

Trickle Recharge from crane battery

可选:

用起重机电池进行细流充电

OPTIONAL:

Additional Re-Chargeable Battery Packs

可选:

额外可充电电池组

OPTIONAL Sensors:

Temperature, impact, motion, GPS

选购传感器:

温度, 影响, 运动, GPS



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ELECTRONICS IN OPERATORS CONSOLE: 操作员操作台上的电子学:

Display: Alarm Status: (3) Radiation Level Indicator Lights – Green, Orange, Red
Count rate
Self-Test

显示: 报警状态: (3) 辐射水平指示灯-绿, 橙, 红; 计数率; 自测

Display: Color, Touch Sensitive

显示屏: 彩色灵敏触摸屏

Setting: Level of Confidence choice of engineering units and other parameters
设定: 计量单位置信度选择及其它参数

Memory: On-Board Memory Sufficient for 1 Year of Data

内存: 1年数据机载内存

Processor: High Speed

处理器: 高速

Communication: **Each Crane Console (Node)** has its own unique IP address

通信: WiFi: Grapple Detector Assembly to Operator Console
每个起重机指挥台(节点)都有单独IP地址

WiFi: 抓斗探头组件到操作员操作台

OPTIONAL Base Station For short distances from Operator Console to base station: via WLAN

选项 基站 操作台到基站短距离通过无线局域网

Communication: For long distance: Cell Phone Modem to Satellite to Ground Station

通信: 长距离: 通过电话解调器到卫星到地面基站



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RUGGEDIZED DETECTOR ASSEMBLY SPECIFICATIONS:

坚固探测器组件规格

Temperature Range:	Per Customers Request
温度范围:	应客户要求
Vibrations:	5G RMS on 3 axis
震动:	
Shocks:	Will Withstand Severe Impact
防震等级:	可承受严重冲击
Environmental:	All Rugged detectors meet the IP 54 spec.
环境:	所有坚固探头符合IP54等级要求 IP 68 can be included per request 如要求, IP68 可提供
Salt Spray	Immune
盐雾	抗盐雾

SEARCH MODE: 搜索模式

Looking for a highly-radioactive pellet source; the Grapple with Detector Assembly can be moved at a reasonable speed over one or more piles of scrap in Ratemeter mode to pinpoint the location of the radiation source.

探测高辐射小粒形放射源; 带探头组件的抓斗在计数率模式下以合理的速度在一堆或几堆废物上锁定辐射源

LOAD ANALYSIS: 废堆料分析

When scrap is picked up and held inside the jaws of the Grapple and transported from one location to another, the close proximity of the metal to the Detector Assembly and subsequent longer time in such proximity allows the highest sensitivity. If it exceeds the alarm set point the operator will divert the load to a separate location for rejected material.

当废料被抓斗机齿耙抓起, 从一个地点转移到另一个地点, 离探头组件越接近的金属及较长时间接触获得最高灵敏度; 如果超过报警点, 操作员将此堆废料转移到单独的废料地点。

SURFACE SCAN: 表面扫描

Although the Load Analysis gives the highest sensitivity, Mid-Level sensitivity is achieved as the Grapple hovers over the material. This provides the opportunity for Mid-Level contamination to be detected and recorded and then passed over. This saves labor and time. It alerts user to the contamination, but does not mix it with the clean scrap.

尽管废料堆分析给出最高灵敏度, 但当抓斗悬在废堆上面时则给出中等水平灵敏度; 这样测到的中等水平污染被记录然后放到一边, 节约了劳动力和时间, 提醒用户污染情况但又不会和干净堆料混合。



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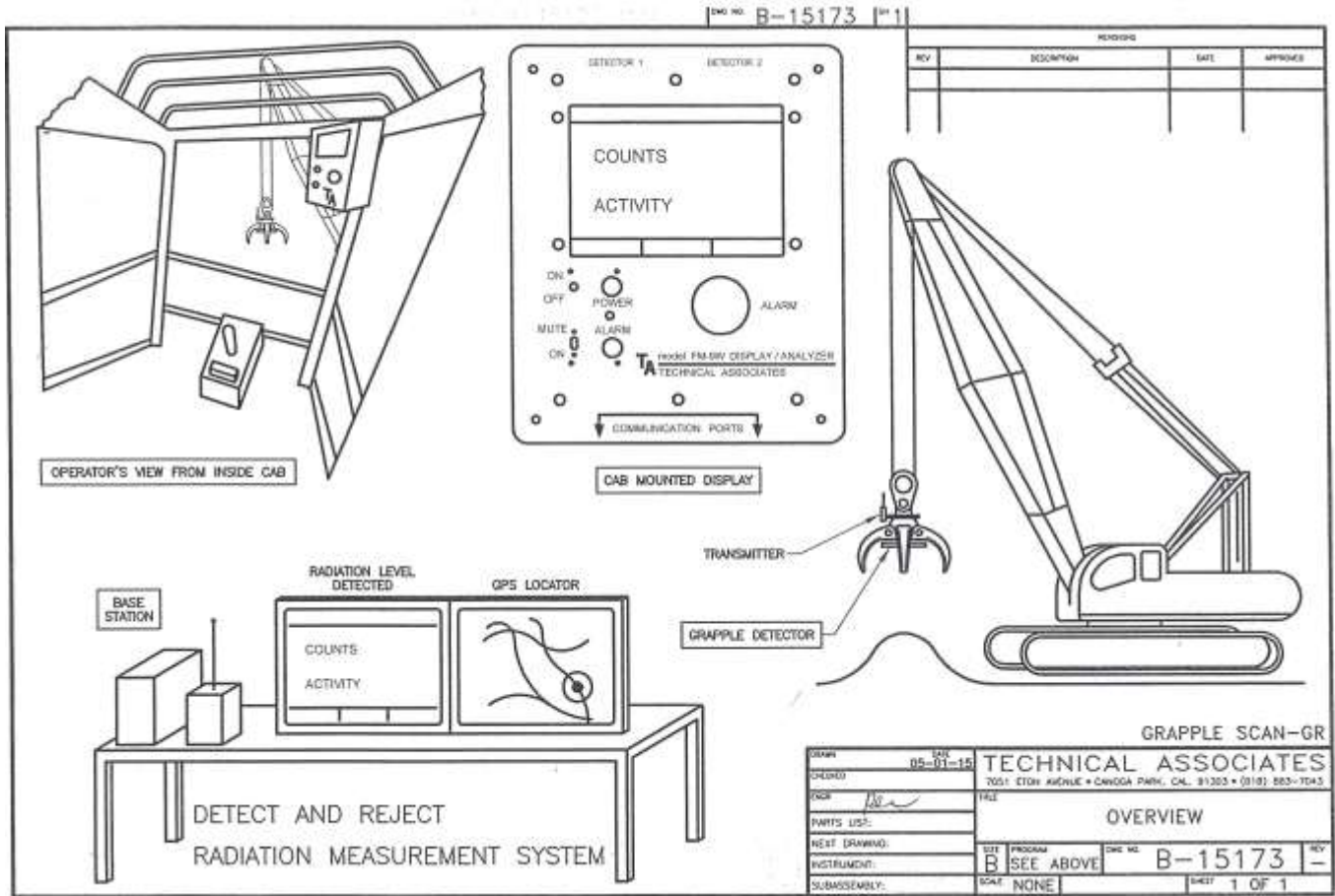
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GRAPPLE DETECTOR OVERVIEW



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