

Introduction: Haier & Ruba (HNR) founded in 1984. In the last 30 years, through its entrepreneurial and innovative spirit, Haier transformed itself from an insolvent collectively-owned factory on the brink of bankruptcy into the No. 1 global home appliances brand. Haier is known for disruptive innovation in its product solutions and management model. As an open platform company, Haier provides leading home appliance solutions to its users all over Pakistan including

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|----------------|-------------------|---------|-------------------|
| ▪ Refrigerator | ▪ Washing machine | ▪ TV | ▪ Microwave Oven |
| ▪ Freezer | ▪ Air conditioner | ▪ Phone | ▪ Water Dispenser |

System: (HNR) has some issues regarding Leak Therefore we (Khan Brothers) recommend Agramkow's protrace system and is installed and commissioned at HNR for flammable and non-flammable refrigerants including additional features.

1. (PRO-TRACE) Why Protrace:

AGRAMKOW's PROtrace provides the testing quality necessary to give confidence in findings and helps to achieve Sigma Six level quality standards. Enhanced flow and leak testing in one new powerful system with following built in features

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|---------------------------|-----------------|-------------|
| ✚ Standard Leak detection | ✚ Blockage test | ✚ Flow test |
|---------------------------|-----------------|-------------|
1. **Inlet Filter** Preventing particle from media supply entering the application (no external add on device, easy filter element change equals cost savings).
 2. **Inlet supply pressure monitoring** Minimising down time and securing the quality level of the test.
 3. **Two level pressure testing** improved operator safety during the performance test by increasing the pressure in steps.
 4. **Flow sensor** Maximising quality and product performance.
 5. **High performance valves** Optimized process time for refrigerators (small test volume) and air- conditions (large test volume) due to high performance valves.
 6. **Pressure relief valve** Improved operator safety.
 7. **Build in active protective shield monitoring system** Maximizing operator safety.

2. HRM6-Helium Recovery Module:

Fast and efficient helium recovery, ensure maximum production uptime, efficiency and quality with AGRAMKOW's HRM6, Driven by a unique oil-free compressor and controlled by several advanced technologies, the new HRM6 helium recovery system guarantees the best possible conditions for helium quality. Designed for pressures up to six bar, the HRM6 is a value-adding solution - optimised for quality and safety conscious production lines



Figure 1: Protrace Charging Station



Figure 2: HRM6- Helium Recovery Module

3. Satellite with additional guns for Recovery:

Recovery satellite with its own guns are used for Recovery of tracer gas in order to maintain a parallel processes. I.e. Protrace is charging a unit and at the same time satellite guns are used for recovery of tracer gas from already charged & sniffed unit. **Distance between PROtrace and HRM6 was according to the process requirement**

Installation & Commissioning: Protrace Charging Station is installed/commissioned at HNR and its working according to requirement. System is running since January 2015, without any interruption.



Figure 4: Protrace, HRM6 & Satellite in line



Figure 3: Charging Tracer Gas,

Sniffing For Leaks

Recovery of Tracer Gas

On Site Training: Khan Brothers assisted the whole projects installation. Commissioning and training was done by Agramkow's Engineer Mr. Keld Jacobsen, who not only commissioned the Project but also trained the operator, Maintenance department and Haier's Engineers to better understand the functioning and monitoring of equipment.



Figure 5: Mr. Keld Jacobsen Training HNR Engineers/operators/Maintenance Department at HNR Factory.

Comments:

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✚ Mr. Ayaz (Manager Quality Assurance at Haier)

✚ Mr Asif Nagina (Factory Manager)