



Project Name

Development of a new vacuum system for the CS-30 Cyclotron

Site

Riyadh

Department

Cyclotron and Radiopharmaceuticals:
Cyclotron section

Project Status

Completed

Project Start Date

02-01-2016

Project End Date

12-31-2016

Problem: Why the project was needed?

Cyclotron vacuum system is responsible for evacuating the cyclotron tank from residual gases and, hence, improve the particles acceleration and increasing extraction efficiency.

The original vacuum system was installed in 1981 and had never been replaced. Recently, we have noticed that the vacuum level is poor and continuous crowbarring was observed when the electrodes voltage was increased. Low vacuum level inside the extracted region will disturb the beam during acceleration and, hence, increase losses.

Benefits/Impact: What is the improvement outcome?
(check all that apply)

- Contained or reduced costs
- Improved productivity
- Improved work process
- Improved cycle time
- Increased customer satisfaction
- Other (please explain)
Click or tap here to enter text.

Aims: What will the project achieve?

To develop a vacuum system to increase the vacuum level inside the cyclotron by at least 25% from the baseline; this will improve the production of the isotope produced by the CS-30 cyclotron.

Quality Domain: Which of the domains of healthcare quality does this project support?
(Select only one)

Effective

Measures: Performance metrics to be evaluated	Targets: Expected outcomes
Vacuum level inside the cyclotron (%)	At least by 25% from the baseline

Interventions: Overview of key steps/work completed

- 1- New system (hardware and software) was developed to improve the vacuum level inside the cyclotron.
- 2- Design and simulate the system using Solidworks and Labview in-house by department's engineers.
- 3- Fabricate the hardware in the Cyclotron precision machine shop.

Results: Insert relevant graphs and charts to illustrate improvement pre and post project
 (insert relevant graphs, data, charts, etc.)



Engineers are testing the new vacuum system with leak detector before installation

Vacuum System Connection Arrangement

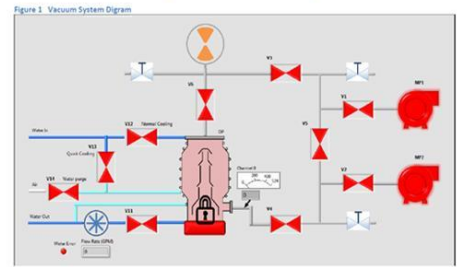
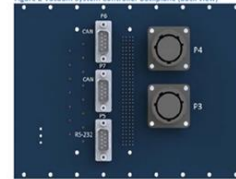
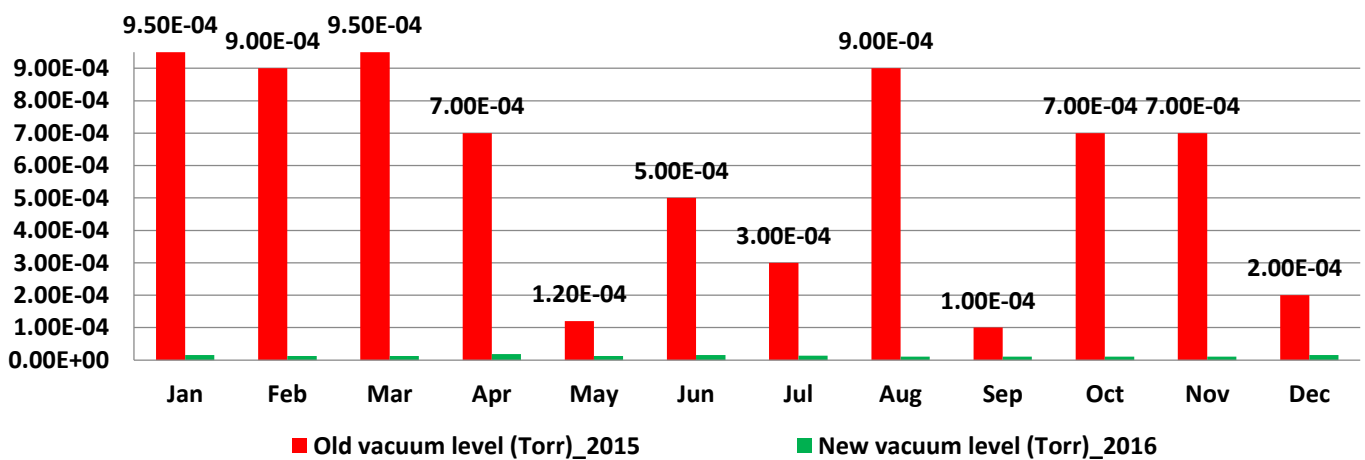


Figure 2: Vacuum System Controller Backplane (back view)



The Developed LabVIEW control system and its interface board

Cyclotron Vacuum Level 2015 Vs 2016 (The lowest the better)



Project Lead

Name

(person accountable for project)
 Faisal AIRumayan

Team Members

Names

(persons involved in project)
 John Schneider
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 Salam Rahma