

Title	<i>APS Storage Ring Converters Replacement</i>			
Project Requestor	Ju Wang			
Date	04/18/2008			
Group Leader(s)	Ju Wang			
Machine or Sector Manager	Louis Emery			
Category	Obsolescence			
Content ID*	APS_XXXXXX	Rev.	ICMS_Revision	ICMS Document Date

*This row is filled in automatically on check in to ICMS. See Note ¹

Description:

Start Year (FY)	2008	Duration (Yr)	5
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Objectives:

Develop state-of-art digital DC/DC converters to replace the aging converters in the Storage Ring. This upgrade includes all the electronic cards including the backplane in the converters and the power supply control units (PSCU).

Benefit:

The project will replace the aging electronics in the Storage Ring magnet DC/DC converters to maintain high reliability and availability for next 15 years. The project will also provide opportunity, by using the latest power supply technologies, to further improvement the performance of the storage ring power supplies and potentially improve the beam performance. Through this project we will get experience and expertise that will be required for future APS upgrade.

Risks of Project: See Note ²

None

Consequences of Not Doing Project: See Note ³

The Storage Ring magnet DC/DC converters and the power supply control units are more than 15 years old. Its control electronics, especially the PSCU, have been obsolete. The fault rate in the electronics has gone up. Without a major upgrade the reliability will gone done and we will be running out of the spare parts.

Cost/Benefit Analysis: See Note ⁴

The cost benefit of this project is to maintain the high reliability of the power supplies for

next 15 years. The upgrade will also provide more diagnostics for power supply troubleshooting and possibly for the beam real time feedback system.

Description:

The power supplies in the storage ring are 15 years old. They have achieved a remarkable performance in reliability. But recently some systems have an increased failure rate, a sign of aging. In order to maintain the same reliability, a plan needs to be in place to develop new power supplies and associated electronics. This proposal is such a plan to develop and design new state-of-art control electronics for the Storage Ring DC/DC converters. This upgrade will also resolve the obsolescence issues with the existing electronics. Further more, it will provide an opportunity to improve the performance of power supplies and, potentially, the performance of the machine with new power supply technologies.

Funding Details

Cost: (\$K)

Use FY08 dollars.

Cost (\$k)

Year	AIP	Contingency
1	50	
2	226	10%
3	755	10%
4	755	10%
5	881	10%
6		
7		
8		
9		

Contingency may be in dollars or percent. Enter figure for total project contingency.

Effort: (FTE)

The effort portion need not be filled out in detail by March 28

APS Strategic Planning Proposal

Year	Mechanical Engineer	Electrical Engineer	Physicist	Software Engineer	Tech	Designer	Post Doc	Total
1		2.5						2.5
2		1.25						1.25
3		0.8						0.8
4		0.9						0.9
5		0.9						0.9
6								0
7								0
8								0
9								0

Notes:

¹ **ICMS.** Check in first revision to ICMS as a *New Check In*. Subsequent revisions should be checked in as revisions to that document i.e. *Check Out* the previous version and *Check In* the new version. Be sure to complete the *Document Date* field on the check in screen.

² **Risk Assessment.** Advise of the potential impact to the facility or operations that may result as a consequence of performing the proposed activity. Example: If the proposed project is undertaken then other systems impacted by the work include ... (If no assessment is appropriate then enter NA.)

³ **Consequence Assessment.** Advise of the potential consequences to the facility or to operations if the proposal is not executed. Example: If the proposed project is not undertaken then ____ may happen to the facility. (If no assessment is appropriate then enter NA.)

⁴ **Cost Benefit Analysis.** Describe cost efficiencies or value of the risk mitigated by the expenditure. Example: Failure to complete this maintenance project will result in increased total costs to the APS for emergency repairs and this investment of ____ will also result in improved reliability of _____. (If no assessment is appropriate then enter NA.)