UNIVERSITY of HOUSTON

PLANT OPERATIONS

Capital Renewal & Deferred Maintenance *(CRDM)*

PROJECT REQUEST FORM

Business Services Only Request # :

Project Title: CHILLER 2A MOTOR REWIND	
Building # 515	Building Name: POWER PLANT
Emergency or Immediate Funding* ☑ Yes ☐ No	Managing Shop/Area: UTILITIES SERVICES - POWER PLANT
New Funding Request* ☐ Yes ☐ No	Add Funding to Project # P779521

Project Description/Scope (*attach any estimate prior to request*):

MOTOR REPAIR IS $147,890, INCLUDES A RUSH FOR REPAIR AND 5 YEAR WARRANTY. ADDITIONAL FUNDING TO PROJECT #P779521. MOTOR REPAIR COSTS ARE MORE THAN ESTIMATE, BUT WILL BE COVERED THROUGH REMAINING BALANCE IN P-ACCOUNT.

Plant Ops Use Only

Desired Construction Start Date	Desired Completion Date	Contract Date
3/17/11	4/18/11	

*If Emergency Provide Justification and impact on business continuity:	Shop Request:	Purchased Material & Services	$147,890.00
		In-House Labor	
		Contingency	
		3% Admin Fee (as applicable)	
		Total Estimate	$147,890.00

Requested By: PAUL ROBINSON	Date 3/14/2011	Director: SAMEER KAPILESHWARI	Date 3/14/2011
Department Contact: PAUL ROBINSON	Date 3/14/2011	Division Administrator:	Date
Project Manager Assigned:		Executive Director, Facilities Management: Per Email comm. file OK to proceed 3-17-11	
Project Number Assigned:			
Funding Source:			

Submit completed Project Request Form to:

George Rea, CRDM Program Coordinator | E-mail: grea@central.uh.edu

Submit by Email

Ramos, Cynthia M

From: Ramos, Cynthia M
Sent: Wednesday, March 16, 2011 4:10 PM
To: Rockwell, Melissa; Moore, Spencer; Kapileshwari, Sameer; Ness, Craig; Anderson Fletcher, Elizabeth; Murphy, Diane L; Davis, Malcolm C; Johnson, David W; Dhirani, Laura L; Lee, T R; Yancey, Mike; Wanjagi, Lillian W
Cc: Rea, George; Ramos, Cynthia M
Subject: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind
Attachments: CRDM Request - Power Plant Chiller 2A Motor Rewind 3.16.11.pdf

Importance: High

CRDM Committee Members:

An emergency funding request has been submitted by the Plant Ops Utilities group that will require committee approval. An electronic committee vote is needed as the next CRDM committee meeting is scheduled for late April 2011. Listed below are the details regarding this project request.

Project
Power Plant Chiller 2A – motor rewind

History
Power Plant Chiller 2A tripped off line in February 2011. After investigating the issue, it was found that the motor for this chiller had been shorted. The motor needs removal, repair and re-installation. Due to the location of the motor, it can only be moved through a set of louvers along the south wall of the plant. Utilities group does not have the experience, staff or equipment to move and repair this motor given the size and weight of it. Therefore, the university must contract this project for repair work.

Project Scope
Remove, review, dissemble, inspect, test, repair and reinstall of Chiller 2A motor. *For complete project scope, please refer to the attached quote from Grayson Armature (page 3 of attachment).*

Project Cost

Contracted service & materials	$147,890
Labor (in-house)	N/A
Contingency	N/A
Administrative Fee (3%)	N/A
TOTAL	**$147,890**

Emergency Justification
Currently, the Power Plant has no spare cooling capacity due to the power plant renovation and expansion project. Unless the motor for Chiller 2A is repaired, the power plant will not be able to meet the campus cooling needs and demand for this upcoming summer semester. Due to proprietary nature of the work and the urgency of getting the chiller back in service we will sole source this project to Grayson Armature.

CRDM Available Balance – $2,965,048

After review of this request, including the attached supporting documentation, please reply to this email utilizing the "Approve" or "Reject" options available on the voting feature above. Please forward all questions for clarification to Sameer Kapileshwari or Melissa Rockwell. **Your response is needed by Friday, March 18, 2011.**

Thank you for your continued support.

Cynthia Ramos
Executive Admin. & Projects Assistant
UNIVERSITY of HOUSTON
Office of Facilities Management
Phone: 713-743-5566
Fax: 713-743-5741
cmramos@central.uh.edu

Ramos, Cynthia M

From: Yancey, Mike
Sent: Wednesday, March 16, 2011 4:12 PM
To: Ramos, Cynthia M
Subject: Approve: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Ramos, Cynthia M

From: Murphy, Diane L
Sent: Wednesday, March 16, 2011 4:15 PM
To: Ramos, Cynthia M
Subject: Approve: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Ramos, Cynthia M

From: Kapileshwari, Sameer
Sent: Wednesday, March 16, 2011 4:15 PM
To: Ramos, Cynthia M
Subject: Approve: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Ramos, Cynthia M

From: Moore, Spencer
Sent: Wednesday, March 16, 2011 4:17 PM
To: Ramos, Cynthia M
Subject: Approve: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Ramos, Cynthia M

From: Rockwell, Melissa
Sent: Wednesday, March 16, 2011 5:17 PM
To: Ramos, Cynthia M
Subject: Approve: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Ramos, Cynthia M

From: Anderson Fletcher, Elizabeth
Sent: Wednesday, March 16, 2011 4:17 PM
To: Ramos, Cynthia M; Rockwell, Melissa; Moore, Spencer; Kapileshwari, Sameer; Ness, Craig; Murphy, Diane L; Davis, Malcolm C; Johnson, David W; Dhirani, Laura L; Lee, T R; Yancey, Mike; Wanjagi, Lillian W
Cc: Rea, George; Ramos, Cynthia M
Subject: Re: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

I vote to approve. Liz

Ramos, Cynthia M

From: Ness, Craig
Sent: Wednesday, March 16, 2011 5:35 PM
To: Ramos, Cynthia M
Subject: Approve: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Ramos, Cynthia M

From: Dhirani, Laura L
Sent: Thursday, March 17, 2011 8:04 AM
To: Ramos, Cynthia M
Subject: Approve: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Ramos, Cynthia M

From: Davis, Malcolm C
Sent: Thursday, March 17, 2011 10:07 AM
To: Ramos, Cynthia M
Subject: Approve: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Ramos, Cynthia M

From: Thomas.Lee@mail.uh.edu on behalf of T. Randall Lee <trlee@uh.edu>
Sent: Wednesday, March 16, 2011 8:31 PM
To: Ramos, Cynthia M
Cc: Rockwell, Melissa; Moore, Spencer; Kapileshwari, Sameer; Ness, Craig; Anderson Fletcher, Elizabeth; Murphy, Diane L; Davis, Malcolm C; Johnson, David W; Dhirani, Laura L; Yancey, Mike; Wanjagi, Lillian W; Rea, George
Subject: Re: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Importance: High

I vote to approve as well.

Ramos, Cynthia M

From: Wanjagi, Lillian W
Sent: Wednesday, March 16, 2011 4:10 PM
To: Ramos, Cynthia M
Subject: Out of Office: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

I am currently out of the office and will return Monday, March 21. If your inquiry requires immediate attention, please contact Camille Porter @3-1337 or Dawn Taylor @3-5214. Otherwise, I will respond to your email when I return to the office.

Sincerely,
Lillian Wanjagi - Did not vote.

UNIVERSITY of
HOUSTON
Plant Operations

To: Cynthia Ramos
Executive Administrative & Projects Assistant

From: Paul Robinson
Plant Operations Supervisor

Subject: CRDM Funding for Chiller 2A Motor Repair

Date: March 15, 2011

Chiller 2A tripped off line on Friday evening, February 11th. An investigation the following Monday found Phase A on the motor to be grounded (or shorted). This is a 1750HP, 12,400Volt motor that weighs 13,844 pounds. I have not had prior experience in getting a motor this size (both in horsepower and voltage) repaired.

Given the location of the motor, the only way to remove it was through a set of louvers along the south wall of the plant. The employees here at the plant do not have the experience or equipment to move something this heavy.

I also needed to get the electrical components disconnected/reconnected and the shaft uncoupled and re-coupled and aligned after repairs. Attached are the quotes from Able Machinery Movers ($13,200.00), Jonmar Electric ($5,502.00) and Johnson Controls ($3.045.00) for doing this work

After the motor was removed from the plant it went to Grayson Armature for inspection and repair estimate. When Grayson's estimate came in at just under $148,000 with a five year warranty, I asked Southwest Industrial Motors for a repair quote. Their estimate is $248,000.

The lead time for this motor repair is 4-5 weeks minimum. We have no spare cooling capacity at the plant at this time because of the plant expansion project. Without this chiller's motor repaired, we will not be able to meet the campus cooling demand this summer.

If there is any other information you may need concerning this repair, please feel free to contact me.

Cc: Sameer Kapileshwari

4211 Elgin Rm 122
Houston, TX 77204-1011

Location: Power Plant

www.uh.edu/plantops

Grayson Armature Works, Inc.
1910 Jasmine Drive • Pasadena, Texas 77503
713-473-3231 • Fax 713-473-4201

Authorized Sales and Service Center for G.E., TECO-Westinghouse and Baldor/Reliance Large Motors & Generators

03-11-2011

University of Houston
Power Utility Services
4211 Elgin
Room 120
Houston, TX 77204-1012

Attn: **Paul Robinson – Supervisor, Power Plant Operation.**
(713) 743-5794, (713) 749-7165 fax
phrobin@mail.uh.edu

Re: York, 1,750HP, 12kV, 69Amp, Frame 5612SPCL, Serial 9141AA-1, Rev.1

Paul,

The following is our work scope and pricing to rewind the above mentioned motor. Please review and let us know if you have any questions.

Work Scope:

- Receive, visually inspect and photograph motor
- Completely disassemble motor
- Thoroughly clean and inspect all components
- Sand blast clean all components to remove buildup and rust
- Dimensionally measure and record the following mechanical items:
  - All shaft journals, shaft fits
  - All seals
  - Bearings and housings
  - Rotor total indicated run - outs (TIR)
- Inspect rotor for broken rotor bars
- Perform incoming electrical inspections
  - MegOhm Test
  - Polarization Index Test
  - Surge Comparison Test of Windings
  - Visual inspection
  - Blocked air ducts
- Measure and test all RTD's and thermocouples
- Core loss test laminations prior to burnout
- Burnout stator windings using a controlled oven
- Remove all windings and thoroughly clean iron
- Perform second Core Loss Test
- Prepare stator for rewind
- Provide complete set of Class H high voltage VPI construction stator coils
- Rewind stator utilizing COIL-LOCK BRACING SYSTEM techniques
- Insert coils, fillers and RTDs
- Wedge with approved materials
- Silver braze all connections
- MegOhm Test windings
- Perform Surge-Comparison Test of winding
- Preheat stator prior to VPI processing
- VPI completed stator in a thixotropic, high retention-high-build 100 % solids epoxy resin
- Dynamically balance rotor
- Completely reassemble motor
- Record final MegOhm and PI Test on stator windings
- Bolt motor to a vibration-isolated test bed for testing
- Test run motor at full voltage - Observe and document the following:
  - Phase current
  - Voltage
  - RPM and rotation
  - Vibration at both bearing housings in the horizontal, vertical, and axial planes
  - Bearing temperatures
- Spray paint exterior of motor and hood assembly and prepare motor for shipment
- Block rotor to prevent movement during shipment
- Transport motor to customer site
- Provide report of inspections and tests

Repair Price – $147,890.00
Delivery – 4 to 5 weeks
Stator Winding Warranty – 5 years after shipment from Grayson Armature

THIS IS A TECO-WESTINGHOUSE COMPLETE FACTORY WINDING SYSTEM INCLUDING VPI

In the event that any additional electrical and/or mechanical defects are discovered during the course of repairs, these repairs will be billed in addition to the above quoted price. Quoted pricing is valid for 60 days.

Thank you for the opportunity to quote these repairs. I look forward to a favorable response and welcome the opportunity to work with you on this motor. If I can be of further service, please call.

Sincerely,

Terry Griggs
Operations Manager – Large Motor Division

Phone: **(713) 473-3231**
Fax: **(713) 473-4201**
Cell: **(281) 924-4734**
Email: tgriggs@gawinc.com

Cc: Kurt Flanagan – Sales

Ramos, Cynthia M

From: Ramos, Cynthia M
Sent: Thursday, March 17, 2011 5:36 PM
To: Rockwell, Melissa; Moore, Spencer; Kapileshwari, Sameer; Ness, Craig; Anderson Fletcher, Elizabeth; Murphy, Diane L; Davis, Malcolm C; Johnson, David W; Dhirani, Laura L; Lee, T R; Yancey, Mike; Wanjagi, Lillian W
Cc: Rea, George; Ramos, Cynthia M
Subject: APPROVED: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind
Attachments: CRDM Emergency Request - Power Plant Chiller 2A Motor Rewind

Importance: High

CRDM Committee Members:

In follow up to yesterday's emergency CRDM funding request to repair the motor for Chiller 2A (Power Plant); the committee has unanimously approved to proceed with this project with the fund request of $148K. As also mentioned in yesterday's email, this project will be sole sourced to Grayson Armature and work will begin immediately. Project schedule will be from 4-5 weeks and completion is anticipated in early May 2011

Please forward any questions regarding this CRDM project to Melissa or Sameer.

Thank you for your continued support.

Cynthia Ramos
Executive Admin. & Projects Assistant
UNIVERSITY of HOUSTON
Office of Facilities Management
Phone: 713-743-5566
Fax: 713-743-5741
cmramos@central.uh.edu