

## FOR BOARD ACTION

Agenda Item # 5

Meeting Date: 9/25/2007

**SUBJECT:** Silver Lake Plant Emissions Reduction Project  
Professional Services Agreement with Novaspect Inc.

**PREPARED BY:** Wally Schlink, Director of Power Resources

### ITEM DESCRIPTION:

The Emission Reduction Project (ERP) continues to proceed according to the project schedule.

The Utility Board has previously approved a series of individual engineering and equipment purchase agreements that comprise the various parts and processes for the ERP, and now we submit a proposal for the instrumentation and controls activities that are required to bring all the parts together into an integrated system.

In 2001 the RPU Utility Board approved the selection of Novaspect Inc. as the supplier of the Emerson Delta V Digital Control System to control all the operations and protective activities on the SLP boilers and auxiliary equipment which set a direction and standard for how we would control and integrate future processes at the facility. The direction was confirmed and strengthened when Novaspect supplied the same professional services for controls for the steam line, the water treatment plant and other auxiliary equipment additions. In addition, Novaspect Inc. has provided system performance services related to preventative and corrective maintenance, software and hardware upgrades, engineering and technical support as well as access to critical parts inventory for the control equipment.

The addition of the multitude of emissions reduction equipment that must interface with all the existing boiler and auxiliary equipment requires an integrated control system including some hardware, but overwhelmingly software and control logic development. It must also integrate with the existing control room operator interfaces and graphics which require an intimate knowledge of and expertise in the existing control logic.

It is for all these reasons that staff recommends that Novaspect Inc. be awarded a contract for professional services for the software development, logic development, documentation, start-up and incidental hardware supply as documented in the attached recommendation from the project engineers, Utility Engineering. The costs breakdown is also documented in the letter of recommendation from U.E. Novaspect Inc. has agreed to the terms and conditions that govern the existing agreements between the City and Novaspect and which have been approved by necessary parties in the past.

This item is an approved budgeted item in the 2007 capital budget.

  
Acting General Manager

9/20/07  
Date

**ROCHESTER PUBLIC UTILITIES**

## FOR BOARD ACTION

Agenda Item # 5

Meeting Date:

9/25/2007

### UTILITY BOARD ACTION REQUESTED:

Staff recommends that the Utility Board approve a contract agreement with Novaspect, Inc. for professional services in the amount of \$400,000 contingent on the approval of the RPU General Manager and the City Attorney, and that the Mayor and City Clerk execute the contract.

\_\_\_\_\_  
Acting General Manager

\_\_\_\_\_  
Date

**ROCHESTER PUBLIC UTILITIES**



901 Marquette Avenue, Suite 2900, Minneapolis, MN 55402  
612.215.1300 • Fax 612.766.0360 • Web: [www.ue-corp.com](http://www.ue-corp.com)

September 17, 2007

Mr. Walter Schlink  
Director of Power Production  
Rochester Public Utilities  
4000 East River Road NE  
Rochester, MN 55906-2813

Subject: Silver Lake Plant Unit 4 Emissions Reduction Project  
Recommendation to Purchase DCS System & Services from Novaspect Inc.

Dear Mr. Schlink:

Utility Engineering Corporation (UE) recommends the award of the Distributed Control System (DCS) for the Ash Handling, NOx Control and Balance of the Plant (BOP) purchase to Novaspect, Inc. Novaspect has been providing professional services for RPU for over 10 years. They have extensive knowledge of how RPU displays, documentation, and control strategies function. They currently provide System Support under a separate agreement approved in May, 2007.

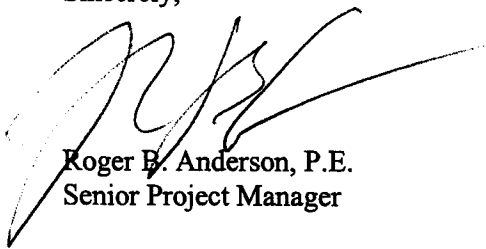
#### **Novaspect, Inc. Proposal**

Novaspect submitted a proposal for providing the software development, documentation, start-up and the DCS hardware for the Ash, NOx, and BOP systems. Software and hardware fixed price is \$305,968, the time and expense start-up estimate is \$36,990, sales tax is \$8,036 and the contingency is \$49,006, for a total of \$400,000. UE's estimated cost was \$240,000. UE believes that Novaspect's price is responsive to RPU's terms and conditions and their equipment and professional services are of adequate quality based on an evaluation of their proposal and their history with RPU.


#### **Recommended Contract Price**

UE recommends that Novaspect be awarded the contract to provide the DeltaV DCS software and hardware and related services per the attached proposal. UE recommends the approval of a contract agreement with Novaspect, Inc. for \$400,000. This price includes a contingency fund of \$49,006 which will be under RPU/UE control. To ensure that the bid price and milestone schedule dates remain valid, UE recommends that the agreement be executed by October 4, 2007.

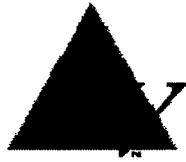
Sincerely,



Roger B. Anderson, P.E.  
Senior Project Manager



RBA for Rick McClenagan  
Rick McClenagan, P.E.  
Group Controls Engineer



**Proposal For**

**Rochester Public Utilities**  
**Rochester, MN**

**Emissions Reduction Project**

Rev.	Date	Description	By	Reviewed By / Date
3-a	09/11/07	Modifications from meeting with RPU & UE on 9/11/07	SDL	MK / 13Sep07
2-a	09/11/07	Addition of BOP, Update of Mobotec Scope	MK	SDL / 11Sep07
1-b	08/13/07	Addition of Mobotec Control, Training, & BMS Mods	MK	KAS / 14Aug07
0-b	07/11/07	Original	MK	JLP/12Jul07

**Note:** Number in Rev. identifies version sent to customer. Lower case letter in Rev. identifies internal version.

**Prepared By:**

**NOVA***spect*.....●  
PROCESS MANAGEMENT SOLUTIONS  
An Emerson Process Management Local Business Partner

**Novaspect, Inc.**  
*An Emerson Process Management  
Local Business Partner*  
7565 Corporate Way  
Eden Prairie, MN 55344

	 <small>PROCESS MANAGEMENT SOLUTIONS</small> Rochester Public Utilities Emissions Reduction Rochester, MN	Proposal Number 10628	
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## 1. Project Overview

This proposal includes the automation of the National Conveyor Corp ash conveying system and the Mobotec ROFA and Rotamix systems. It also includes the configuration of a furnace draft control loop and on-off control for a new ID fan as well as modifications to the existing Burner Management System.

The National Conveyor Corp Ash system covers the conveying equipment from the bag house hoppers to the ash silo. The ash unloading system including from the silo to the ash trucks will be controlled by a separate panel that will be provided by others. The control of the scrubber to the bag house will be in DeltaV and will be provided by others. The control to empty the bag house hoppers will be coordinated with the bag house control.

The Mobotec control includes the ROFA system, the Rotamix system, and additional I/O that supports these two systems. The ROFA will have ties into the existing Burner Management system and Combustion Control system. The Rotamix system will take place after the combustion control and will be controlled with the Ash Conveying controller.

An estimated I/O list is included for each of the above systems. When design is complete on these systems, the I/O list and control strategies can be finalized and this proposal can be updated. Customer involvement and support throughout the project is desired and paramount to project success.

## 2. Preliminary Engineering

This proposal is based on our current understanding of the stated project requirements as well as our preliminary engineering. The "Proposal Development Checklist" documents how the data for the preliminary engineering was gathered. The results of the preliminary engineering are documented in Appendix A, "Engineering Data Sheet". Disagreement with any of this data or the stated assumptions should be immediately brought to Novaspect's attention.

Continuous Control Field I/O Counts (Hardwired)	X			
Continuous Control Field I/O Counts (Serial)				X
Continuous Control Field I/O Counts (Bus Based)				X
Discrete Control Field I/O Counts (Hardwired)	X			
Discrete Control Field I/O Counts (Serial)				X
Discrete Control Field I/O Counts (Bus Based)				X

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External Interface Data Flow				X
Hardware I/O Requirements	X			
Continuous Control Strategies Types and Count		X		
Discrete Control Strategies Types and Count		X		
Batch and Recipe Control Types and Count				X
Controller Requirements	X			
Graphic Interfaces Types and Count	X			
Console Types and Count				X
Other Control System Hardware Requirements				X
Documentation Types and Count	X			
Subcontractor Requirements or Options				X

## 2.1. Customer Supplied Drawings

Type	Drawing #	Rev	Date
Ladder Diagram	M012668-FLYC0001 SO1 RP		5/10/2007
Sequence of Operation	M012668-FLYC0002 SO1 RP		5/10/2007
Ladder Diagram	M012668-FLYC0003 SO1 RP		5/10/2007
Electrical Diagram	D-E1712-ED1	0	4/30/2007
Electrical Diagram	D-E1712-SA1	0	4/30/2007
Electrical Diagram	D-E1712-FD1	0	4/30/2007
Electrical Diagram	D-E1712-E01	0	4/30/2007
Electrical Diagram	D-E1712-E02	0	4/30/2007
Electrical Diagram	D-E1712-E03	0	4/30/2007
Electrical Diagram	D-E1712-E04	0	4/30/2007
Electrical Diagram	D-E1712-E05	0	4/30/2007
Electrical Diagram	D-E1712-E06	0	4/30/2007
Electrical Diagram	D-E1712-E07	0	4/30/2007
Electrical Diagram	D-E1712-E08	0	4/30/2007
Electrical Diagram	D-E1712-E09	0	4/30/2007
Electrical Diagram	D-E1712-E10	0	4/30/2007
Electrical Diagram	D-E1712-E11	0	4/30/2007
Electrical Diagram	D-E1712-E12	0	4/30/2007
Electrical Diagram	D-E1712-E13	0	4/30/2007
Electrical Diagram	D-E1712-E14	0	4/30/2007
Mobotec Preliminary I/O Count	Xcel file	1	04/26/2007
Mobotec P&ID	SLV4-200-1	P1	08/23/2007
Mobotec P&ID	SLV4-200-2	P1	08/23/2007
Mobotec P&ID	SLV4-201-1	P1	08/23/2007
Mobotec P&ID	SLV4-201-2	P1	08/23/2007
Mobotec P&ID	SLV4-202-1	P1	08/23/2007
Mobotec P&ID	SLV4-202-2	P1	08/23/2007
Mobotec P&ID	SLV4-203-1	P1	08/23/2007
Mobotec P&ID	SLV4-203-2	P1	08/23/2007
Mobotec P&ID	SLV4-204-1	P1	08/23/2007
Sample ROFA Control Description	Word file		
Sample Rotamix Control Description	Word file		

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## 2.2. Assumptions

- 2.2.1. This project will be completed using DeltaV version 8.4.1.
- 2.2.2. This project will be configured using the DeltaV configuration standard currently used at the Silver Lake Plant.
- 2.2.3. This proposal assumes a minimum of 6 calendar months (kickoff meeting to completion of customer acceptance testing) to complete the project.
- 2.2.4. The pricing presented in this proposal is valid until 10/15/2007.
- 2.2.5. This proposal is based on an I/O listed derived from the revision 0 drawings listed above. The I/O lists are included in Appendix A.
- 2.2.6. The Balance of Plant (BOP) I/O is assumed to be standard I/O in this proposal. Novaspect, RPU, and UE have discussed the motors presented in the BOP Preliminary I/O List may change to DeviceNet motors and require a DeviceNet DeltaV Card.
- 2.2.7. The BOP DeviceNet motors are assumed to be provided by Allen Bradley using the following DeviceNet devices.

On/Off Motors without Current: DSA DeviceNet Starter Auxilory  
On/Off Motors with Current: E3 Solid-State Overload Relay  
Variable Speed Drives: 1200-GK61 SMC Dialog Plus


Direct interface from the DeltaV System to the devices mentioned above is assumed. Intermediate gateways between the DeltaV System and the devices mentioned above are NOT assumed. If the BOP DeviceNet motors are not Allen Bradley additional services may be required to configure the device.

- 2.2.8. The drawings defined in Appendix A – Engineering Data Sheet will be updated by Novaspect based on the as-built redlines from loop checkout and startup. Novaspect will provide the completed as-built drawings within 1 month of receiving the redlines.
- 2.2.9. The integration of the Clyde Bergemann configuration with the Ash Conveying and Mobotec System may require additional engineering services.
- 2.2.10. Novaspect has assumed the NOX and Opacity signals will be Analog Output (4-20mA) signals from the CEMs PLC and Analog Input (4-20mA) signals on the DeltaV System.
- 2.2.11. Novaspect has included, by direction of RPU, to include 10% spare DeltaV rack space, 15% spare DeltaV I/O, and 15% spare DeltaV Licensing. Novaspect will consider the Control Room Consolidation Project in the licensing spares.
- 2.2.12. Novaspect will provide DeltaV I/O card schematics similar to CBEEC schematics. Novaspect will incorporate the cable tag numbers redlined by RPU on their final as built drawings.

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2.2.13. Novaspect, RPU, and Utility Engineering have agreed that the final I/O and database freeze date will be March 1, 2008.

2.2.14. Novaspect, RPU, and Utility Engineering have agreed that Novaspect will deliver the DeltaV Hardware onsite by July 1, 2008 provided Utility Engineering delivers a PO to Novaspect by January 1, 2008.

### 3. Proposed Services

Described within this section are the services that are required to complete the project in an effective manner. This section will also document the tasks that Novaspect will be providing under this proposal. The proposed services are based on the results of the section 2.0 "Preliminary Engineering" as well as on your responses documented on the following "Project Performance Checklist". Please review this Checklist for those performance areas that are currently marked as "Customer Responsibility" and plan accordingly.

Note: Any services not explicitly defined as being "Included" in the following table are assumed NOT to be included in the lump sum price.


#### 3.1. Project Performance Checklist

Project Management	X			
Kickoff Meeting	X			
Design Review Meetings	X			
Additional On-Site Project Meetings				X
I/O Database and Associated Engineering Parameters	X			
Specification of Field Instrumentation			X	
Process Graphics	X			
Motor and Other Discrete Control Logic	X			
External Interfaces				X
Continuous Control Strategies	X			
Advanced Control Strategies				X
Batch and Recipe Control Strategies (Phase Logic Modules)				X
Production Reports				X
Historical Data Requirements	X			
Display Directory	X			
System Security				X
Control System Hardware	X			
Electrical Design			X	
Foundation Fieldbus Segment Design	X			

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Process Control Tuning (T&E)		X	X (Lead)	
Operation Verification Testing (T&E)		X	X (Lead)	
Simulator System Development (Operator Training Tool)				X
Operators	X			
Engineers				X
Maintenance Personnel				X
System Engineering Manual	X			
Operator Manual				X

### 3.2. Project Management

A Project Manager will be assigned to every Project Team. The remainder of the project team will consist of Lead Engineers, Consultants, Application Engineers and Designers as required. Customer communications will be primarily through the Project Manager. All communications and meetings minutes will be documented, distributed and preserved via email. There will be four project meetings. The first meetings will be the project kick-off meetings for 1/2 day each at the Silver Lake Power Plant in Rochester, MN. One of the kickoff meetings will be with the NCC team. The other meeting will be with the Mobotec team. The second set of meetings will be the design review meetings for 1 day with each system, also at the Silver Lake Plant.

Standard change order control will be used by the Novaspect Project Manager. Depending on when a change order is received and the type of change, the affect to the project schedule and budget will be communicated to the customer.

### 3.3. Detailed Design

The following describes the detailed design services needed to complete a successful project. Refer to the "Project Performance Checklist" in section 3.1 for the definition of responsible parties. Refer to the "Engineering Data Sheet" in Appendix A for the details of types and quantities.

#### **I/O Database and Associated Engineering Parameters**

Development of a software database that documents the field inputs and outputs to/from the Control System. This database contains appropriate parameters including tag names, engineering units, range and alarm points.

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### **Specification of Field Instrumentation**

Development of field device specifications in sufficient detail to procure or to request supplier bids. These specifications are based on process parameters, control system needs and purchasing guidelines provided by the customer.

### **Process Graphics**

Development of the operator interface graphics, including the Index, Overview, Area and Process graphics. These graphics will be utilized by the operator to interface with and control plant/production area operations as well as special graphics that represent other unique control functions. The development of these graphics can be completed directly on the control console or via hand sketches. Novaspect will provide two-dimensional graphic templates (dynamos) that will serve as the basis for graphic development. Modifications to these templates can be completed via a change order. Alarm Management Philosophies are also defined in this area of detailed design services.

### **Motor and other Discrete Control Logic**

Development of the discrete logic requirements of the control system including all interlock, start/stop, and on/off functions to be displayed, controlled or acted upon by the control system and/or the operator.

### **External Interfaces**

Development of control strategies and data/information flow between the Process Automation System and other specified electronic control, display, monitoring and/or data acquisition systems. Design of the changes required to the external device is not included in this proposal.

### **Continuous Control Strategies**

Development of all closed and open loop continuous control elements including type of control, available modes of operation, setpoint options, and other related controller parameters.

### **Advanced Control Strategies**

Development of control strategies that utilize advanced technologies such as Neural Nets, Fuzzy Logic and Model Predictive Control. No advanced control strategies will be required for this project.

### **Production Reports**

Develop layout and content of shift, daily, or other production reports.

### **Historical Data Requirements**

Develop the list of points and associated parameters whose history has been indicated by the user as beneficial in the analysis of process efficiency, quality or other attribute. Make list ready and available for implementation into the Historian Software.

### **Display Directory**

Develop the list of process graphics to be accessed from the display directory.

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### **System Security**

Determine plant security philosophy, the levels of security required and the authority granted to each level.

### **Control System Hardware**

Based on the results of the preliminary engineering and section 3.3 "Detailed Design" services, specify the Control System components and architectural layout required to implement. Refer to the "Bill of Materials" in Appendix for further detail.

### **Electrical Design**

Not Applicable

### **Foundation Fieldbus Segment Design**

Determine Fieldbus device assignments to segments based on process requirements, required execution rates, loading, and physical length limitations.

### **DeviceNet, AS-Interface, Profibus Segment Design**

Determine device assignments to segments based on process requirements, segment loading, and physical length limitations.

### **Subcontractor Specifications**

Provide schedule requirements, design criteria and the operational and physical attributes necessary for a subcontractor to quote and/or provide the equipment and/or services requested.

### **Detailed Design Documentation**

Diagrams and Drawings developed during Detailed Design will be provided to the customer as delineated in the "Documentation" section of the "Engineering Data Sheet" in Appendix A.

Following the completion of Detailed Design phase of the project, the results are documented in the "Detailed Design Document". The Detail Design Document will be the document that is used as the basis for implementation and testing by Novaspect. The Detail Design Document is distributed to the customer for review and approval. Upon receipt of customer approval, the design services will be considered complete and project implementation can begin. Changes to the Detail Design Document after the implementation has begun will be considered as a change of scope and may require a change order to complete.

## **3.4. Drawings**


The following describes the drawing services needed to complete a successful project. Refer to the "Project Performance Checklist" in section 3.1 for the definition of responsible parties. Refer to the "Engineering Data Sheet" in Appendix A for the details of types and quantities. **Please reference Appendix B for example drawings.**

### **P&IDs Piping and Instrument Diagrams**

Drawings that convey process, instrument, and control equipment information.

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**Control System Architecture (Appendix B drawing – Sample01)**

Drawings depicting the location and general connections of the control system cabinets, PCs, UPS units, switches, and other control system hardware.

**Control System Network (Appendix B drawings – Sample02 & Sample03)**

Ethernet drawings depicting nodes and the location of nodes on the Ethernet Network. Includes a drawing for Ethernet pin-out and shielding specifications.

**Control System Cabinet (Appendix B drawing – Sample04)**

Drawings required to locate and label control system hardware on the cabinet panel.

**Control System Power and Grounding (Appendix B drawings – Sample05, Sample05\_2)**

Drawings depicting the wiring of incoming AC power, DC power supplies, and specific grounding rules for the control system.

**Field Device Termination (Appendix B drawings – Sample06)**

Control System I/O drawings, which depict the field device to be terminated at the control system I/O. These drawings consist of I/O cards, interposing relays/terminals, and field devices. These drawings do not typically include marshalling or junction box drawings located in the field unless specifically addressed in this proposal.

**External Interface (Appendix B drawings – Sample07 & Sample08)**

Control System drawings which depict the wiring and physical architecture of the control system interface to an external system or device.

**SAMA (Appendix B drawings – Sample09)**

Functional control diagrams using symbols developed by the Scientific Apparatus Maker Association (SAMA).

### 3.5. Procurement

Procurement of the items indicated as “Included” on the “Project Performance Checklist” and delineated in “Bill of Materials” Appendix. Procurement includes placing the order, monitoring order status, handling supplier problems, product inspection and testing when applicable and overall assurance of proper order fulfillment.

### 3.6. Software Configuration


Implement, via application software provided within the Control System, those elements designed during the “Detailed Design” phase of the project (section 3.3).

### 3.7. Pre-Installation Testing

The Novaspect project team will perform internal testing at the Novaspect’s testing facility to ensure that all aspects of the implemented Control System configuration meet the customer approved “Detailed Design Document”.

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Upon successful completion of internal testing, the Customer Acceptance Test will be performed in the same manner and location with guidance and support from the Novaspect project team. Successful completion of the Customer Acceptance Test will release all system software components for shipment to the customer's site. This proposal includes 4 days for Customer Acceptance Testing at the Novaspect facility in Eden Prairie, MN. Additional time may be added as a change order if required.

Novaspect will use simulation software to perform these tests. The simulation will be low fidelity, including I/O manipulation and generic tie-backs only.

### 3.8. Installation

All required demolitions and physical installation of the control system, associated field instrumentation, valves, and piping, as well as the connection of all field wiring to the system, are the responsibility of the customer. Additionally, when a bus architecture is used the electrical contractor's experience and knowledge will need to be verified to ensure that the installation will be completed properly.

### 3.9. Startup and System Operational Verification

Startup and system operational verification is not included in the fixed price portion of this proposal and is therefore the customer's responsibility. In order to ensure a smooth and efficient startup, we offer and recommend the optional services below.

#### Optional Startup Services

On a "Time and Expense" basis, Novaspect will support the loop checkout, provide initial tuning of control loops and provide operations with guidance and support during the startup period. The time allotted and the sequence of tests to be performed to verify proper Control System functionality will be defined and mutually agreed upon by Novaspect and the customer. Successful completion will be documented via customer's signature on Novaspect's "Final Customer Acceptance Form". Time and expense rates are delineated in the "Rate Schedule" contained in the Appendix.

Due to Novaspect's close working relationship and many years of experience with the Novaspect/Emerson product lines, we have found that overall startup duration is reduced when all of the field devices are provided by Novaspect/Emerson.

### 3.10. Training

Operator Training has been estimated as a part of this proposal. This training will assume a basic knowledge of DeltaV basics. The proposed training will provide four hours of NCC process training and 4 hours of Mobotec process training. The training will be repeated four times so that each shift will receive the training. Each training group will consist of up to 12 people. This class will be conducted using six rental stations over a one week duration. The training will be conducted over four contiguous days. If

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deviation from this schedule is required the cost proposed will be adjusted to reflect the impact of the schedule changes.

Medium fidelity process simulation (mass balance) will be provided on a Mimic process simulator to support the initial training.


### 3.11. Manuals

The System Engineering Manual is an updated copy of the Detailed Design Document with as-built information from the Customer Acceptance Test.

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#### 4. Financial Summary

##### Fixed Price Services

##### **Engineering Services**

**Control System Project Management and Meetings** **155,163.00**

Preliminary Engineering  
Control System Detailed Design  
Control Configuration  
Graphic Implementation  
Pre-installation Testing and Customer Acceptance  
DeltaV Panel Design  
DeltaV Installation Drawing (see appendix)  
Project expenses

**Operator Training** (including preparation and travel) **24,042.00**

**BMS Testing** - Several modifications will be required to the MFT, Balance Draft Control, and Directional Blocking while this project is implemented. The BMS will require a complete FAT to confirm the changes were implemented properly. **11,960.00**

##### **DeltaV Hardware**

Per Bill of Materials in Appendix C **103,553.00**

Panel (60 x 72 x 16) with legs, all equipment installed and wired **11,250.00**

**305,968.00**

**Total Fixed Price Services and Hardware: \$305,968.00**

##### Time and Expense Services (Estimated)

##### **Commissioning, Loop Checks, & Startup**

Power and Grounding Checks 4 hr **30,240.00**

Communications Testing 4 hr

Loop Checkout 80 hr

Loop Tuning 16 hr

Operational Verification Testing 40 hr

Mobotec Tuning Support 80 hr


BMS Verification and Testing 50 hr **6,750.00**

**36,990.00**

**Total Time and Expense Services (Estimated): \$36,990.00**

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### Summary

#### **Total Fixed Price and T&E Estimate**

**Total Fixed Price Services and Hardware:** \$305,968.00  
**Total Time and Expense Services (Estimated):** \$36,990.00

#### **Vendor Contingency**

**Fixed Price Contingency 7%:** \$21,418.00  
**Time and Expense Contingency 30%:** \$11,097.00

**Total Fixed Price, T&E, and Contingency:** \$375,473.00

### Payment Schedule Based on Financial Summary

On Receipt of Order	15%	\$45,895.20
Design Review	20%	\$61,193.60
Software Acceptance	30%	\$91,790.40
Shipment of Hardware and Software from Emerson	30%	\$91,790.40
Successful Completion of Startup, As-Built Drawings, and Punch List Items	5%	\$15,298.40
<b>Total:</b>		<b>\$305,968.00</b>

### **Note:**

The project pricing is contingent upon client agreement with the attached Novaspect Terms and Conditions. Requested modifications to these Terms and Conditions will require a pricing adjustment.

### Payment Schedule

On Receipt of Order	15%
Design Review	20%
Software Acceptance	30%
Shipment of Hardware and Software from Emerson	30%
Successful Completion of Startup, As-Built Drawings, and Punch List Items	5%
Time and Expenses Services	Monthly

### **Notes:**

1. Terms and Conditions are listed in the Appendix.
2. All freight charges will be pre-paid and billed at cost.
3. Change orders will be handled via defined change request procedures. All change orders will be priced individually and agreed upon prior to commencement of the work.

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**Please request information from and send purchase order to:**

**Novaspect, Inc.**  
**7565 Corporate Way**  
**Eden Prairie, MN 55344**  
**Attn: Ray Kisner**  
**Phone 952-934-5100**  
**FAX 952-934-1279**

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## APPENDIX A – Engineering Data Sheet

	2	35	14	51
		13	4	17
	2	48	18	68
	68	42	42	152
	33	42	13	88
	101	84	55	240
	0	0	0	0
		13	3	16
	2	22	12	36
			1	1
	2	35	16	53
	0	0	0	0
	35	15	29	79
	33	21	15	69
	1	5	3	9
	69	41	47	157

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2	2	1 new plus Modify 6 ex	11
2	2	7	11
1			1
1			1
1			1
15	15	5	35
18	15	5	38
0	0	0	0

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## NCC System Derived I/O List

Air Bleed No. 1	DO	DeltaV	
Air Bleed No. 1 Close	DI	DeltaV	
Air Bleed No. 1 Open	DI	DeltaV	
Ash Silo High Level Switch	DI	DeltaV	
Ash Transport Temp Xmitter	AI	DeltaV	
Ash Transport Vacuum Xmitter	AI	DeltaV	
Atmospheric Equal Valve	DO	DeltaV	
Blower #1 Butterfly Valve Close	DI	DeltaV	From Ash Unloading Panel
Blower #1 Butterfly Valve Open	DI	DeltaV	From Ash Unloading Panel
Blower #2 Butterfly Valve Close	DI	DeltaV	From Ash Unloading Panel
Blower #2 Butterfly Valve Open	DI	DeltaV	From Ash Unloading Panel
Broken Bag Dust Detector	DI	DeltaV	
Compressed Air Pressure Switch	DI	DeltaV	PS4019
Compressed Air Pressure Switch	DI	DeltaV	PS4036
Disc valve hopper No. 1	DO	DeltaV	
Disc valve hopper No. 1 Close	DI	DeltaV	
Disc valve hopper No. 1 Open	DI	DeltaV	
Disc valve hopper No. 10	DO	DeltaV	
Disc valve hopper No. 10 Close	DI	DeltaV	
Disc valve hopper No. 10 Open	DI	DeltaV	
Disc valve hopper No. 2	DO	DeltaV	
Disc valve hopper No. 2 Close	DI	DeltaV	
Disc valve hopper No. 2 Open	DI	DeltaV	
Disc valve hopper No. 3	DO	DeltaV	
Disc valve hopper No. 3 Close	DI	DeltaV	
Disc valve hopper No. 3 Open	DI	DeltaV	
Disc valve hopper No. 4	DO	DeltaV	
Disc valve hopper No. 4 Close	DI	DeltaV	
Disc valve hopper No. 4 Open	DI	DeltaV	
Disc valve hopper No. 5	DO	DeltaV	
Disc valve hopper No. 5 Close	DI	DeltaV	
Disc valve hopper No. 5 Open	DI	DeltaV	
Disc valve hopper No. 6	DO	DeltaV	
Disc valve hopper No. 6 Close	DI	DeltaV	
Disc valve hopper No. 6 Open	DI	DeltaV	
Disc valve hopper No. 7	DO	DeltaV	
Disc valve hopper No. 7 Close	DI	DeltaV	
Disc valve hopper No. 7 Open	DI	DeltaV	
Disc valve hopper No. 8	DO	DeltaV	
Disc valve hopper No. 8 Close	DI	DeltaV	
Disc valve hopper No. 8 Open	DI	DeltaV	
Disc valve hopper No. 9	DO	DeltaV	
Disc valve hopper No. 9 Close	DI	DeltaV	
Disc valve hopper No. 9 Open	DI	DeltaV	

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Gate Fault Indicator	DI	DeltaV	From Ash Unloading Panel
Guard Filter DP Switch	DI	DeltaV	
High Pressure Fault Indicator	DI	DeltaV	From Ash Unloading Panel
Hopper Vibrator Auto No. 1	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Auto No. 10	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Auto No. 2	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Auto No. 3	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Auto No. 4	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Auto No. 5	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Auto No. 6	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Auto No. 7	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Auto No. 8	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Auto No. 9	DI	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 1	DO	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 10	DO	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 2	DO	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 3	DO	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 4	DO	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 5	DO	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 6	DO	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 7	DO	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 8	DO	DeltaV	CBEEC Installed Vibrators
Hopper Vibrator Start No. 9	DO	DeltaV	CBEEC Installed Vibrators
Isolation Swing gate No. 1	DO	DeltaV	
Isolation Swing gate No. 1 Close	DI	DeltaV	
Isolation Swing gate No. 1 Open	DI	DeltaV	
Isolation Swing gate No. 2	DO	DeltaV	
Isolation Swing gate No. 2 Close	DI	DeltaV	
Isolation Swing gate No. 2 Open	DI	DeltaV	
Isolation Swing gate No. 3	DO	DeltaV	
Isolation Swing gate No. 3 Close	DI	DeltaV	
Isolation Swing gate No. 3 Open	DI	DeltaV	
Low Pressure Indicator	DI	DeltaV	From Ash Unloading Panel
Lower Dump Gates Centrifugal Receiver Open	DI	DeltaV	
Lower Dump Gates Closed	DO	DeltaV	
Lower Dump Gates Jet bag filter Open	DI	DeltaV	
Mechanical Exhauster No. 1 High inlet air temp swth	DI	DeltaV	
Mechanical Exhauster No. 1 High inlet vacuum switch	DI	DeltaV	
Mechanical Exhauster No. 1 Not Running	DI	DeltaV	
Mechanical Exhauster No. 1 Run	DI	DeltaV	
Mechanical Exhauster No. 1 Start	DO	DeltaV	
Mechanical Exhauster No. 2 High inlet air temp swth	DI	DeltaV	
Mechanical Exhauster No. 2 High inlet vacuum switch	DI	DeltaV	
Mechanical Exhauster No. 2 Not Running	DI	DeltaV	
Mechanical Exhauster No. 2 Run	DI	DeltaV	
Mechanical Exhauster No. 2 Start	DO	DeltaV	

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Pulse Jet Bag Filter DP Switch	DI	DeltaV	
Pulse Jet Bag Filter Timer	DO	DeltaV	
Pulse Jet Bag Filter Vibrator		DeltaV	Air Pilot no DO
Pulse Jet Filter Dual Dump gate vibrator		DeltaV	Air Pilot no DO
Rotary Feeder Jam Indicator	DI	DeltaV	From Ash Unloading Panel
Upper Dump Gates Centrifugal Receiver Open	DI	DeltaV	
Upper Dump Gates Closed	DO	DeltaV	
Upper Dump Gates Jet bag filter Open	DI	DeltaV	
Vacuum Breaker No. 1	DO	DeltaV	
Vacuum Breaker No. 1 Close	DI	DeltaV	
Vacuum Breaker No. 1 Open	DI	DeltaV	
Vacuum Equalization valve	DO	DeltaV	
Vent Filter DP Switch	DI	DeltaV	
Vent Filter timer	DO	DeltaV	
Washout On Indicator	DI	DeltaV	From Ash Unloading Panel

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## Mobotec Preliminary I/O List

Area	AI	AO	DI	DO	Comments
<b>ROFA system</b>					
ROFA fan start/stop control			2	2	
ROFA fan inlet damper		1	1		
ROFA fan discharge duct	3				Flow, temp, press
ROFA box pressures	6				
ROFA box dampers		6			
<b>ROFA system subtotals</b>	<b>9</b>	<b>7</b>	<b>3</b>	<b>2</b>	
<b>Burner Management Inputs</b>					
ROFA system dampers at purge position			7		
<b>Rotamix system</b>					
Rotamix injection air fan			2	2	
Rotamix injection air pressure control	1	1	1		
Urea storage tank	1		3	1	
Urea recirculation / transfer system	3		4	7	
Urea dilution tank	2		1	1	
Urea metering pumps		4	8	16	
Humidification water tank	1			1	
Humidification water pumps			4	4	
Humidification water distribution	2	1	8	8	
Ammonia slip	1		1		
Furnace temperature	1				
<b>Rotamix system subtotals</b>	<b>12</b>	<b>6</b>	<b>32</b>	<b>40</b>	
<b>Optional inputs</b>					
ROFA fan/motor bearing vibrations	4				Per site-specific standard
ROFA fan/motor bearing temperatures	4				Per site-specific standard
ROFA fan motor stator RTDs	6				Per site-specific standard
Damper position feedback					At owner's discretion
<b>Optional I/O totals</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Total</b>	<b>35</b>	<b>13</b>	<b>35</b>	<b>42</b>	

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## Balance of Plant Preliminary I/O List

FURN PRESS XMTR	BCS	2			
ID FAN VFD	BCS		1		
FURN PRESS TRIP	BCS			4	
ID FAN DAMPER	BCS	1			
ID FAN DAMPER	BCS		1		
ID FAN STATUS	BMS			2	
ID FAN START	BMS			1	
FURN PRESS TRIP	BMS			4	
XFORMER PRESS RELIEF	ASH			1	
HI RESIST GND SYS	ASH			1	
(3) MV CIRCUIT BKRS	ASH			6	
(3) MV CIRCUIT BKRS	ASH			6	
(3) MV MCC MTRS	ASH			6	
LV MAIN CIRCUIT BKRS	ASH			2	
LV MAIN CIRCUIT BKRS	ASH			2	
(5) FEEDER BKRS	ASH			10	
(2) VOLTS	ASH	2			
AMPS	ASH	1			
KVAR	ASH	1			
KW	ASH	1			
FREQUENCY	ASH	1			
FIRE PROTECTION	ASH			4	
HI/LO TEMP OF PDC BUILDING	ASH			2	
BATTERY CHARGER	ASH			2	
UPS TROUBLE	ASH			1	
SCHWEITZER RELAY	ASH			1	
NOX	CEMS	1			
OPACITY	CEMS	1			
<b>Total</b>		<b>11</b>	<b>2</b>	<b>42</b>	<b>13</b>

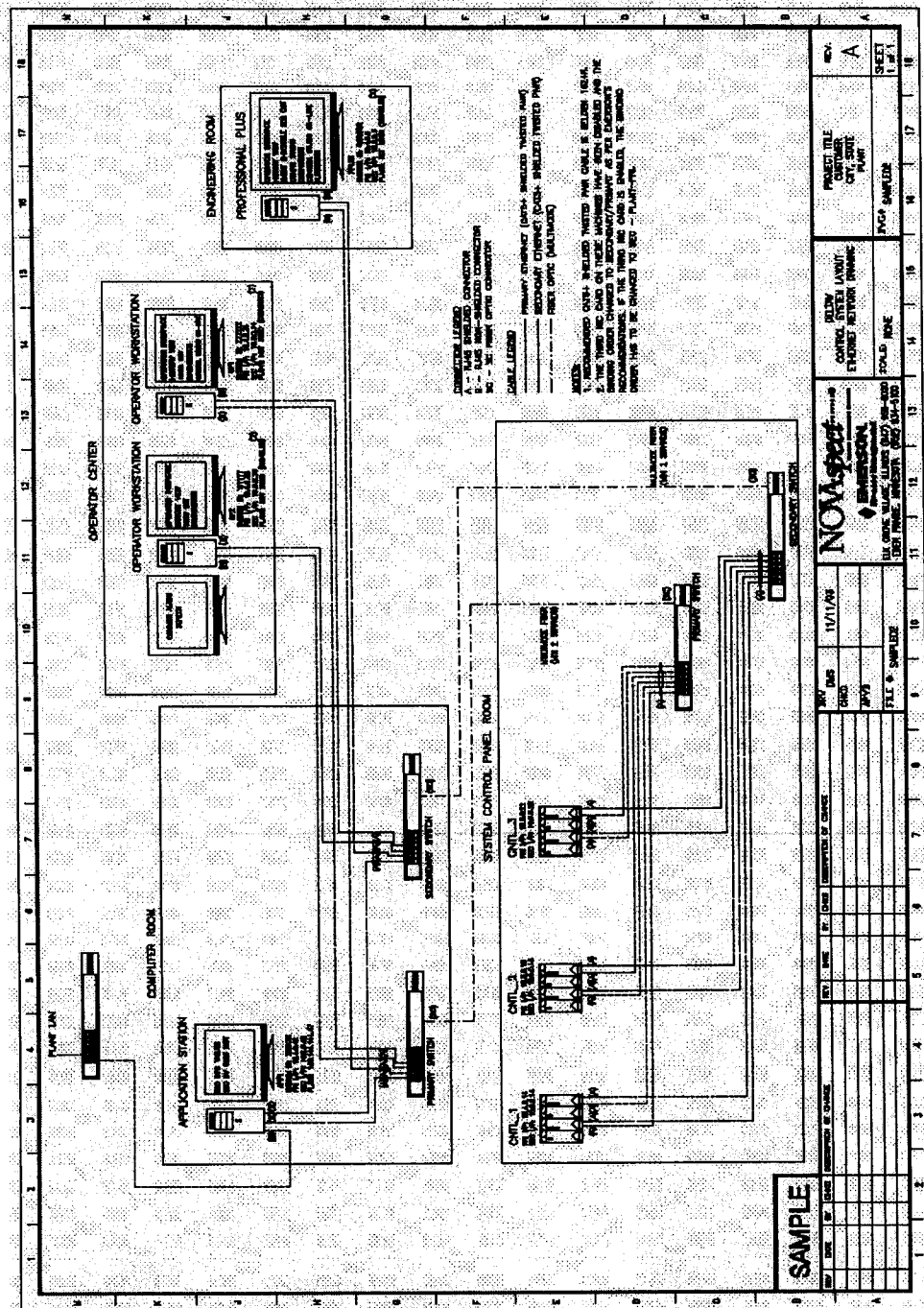
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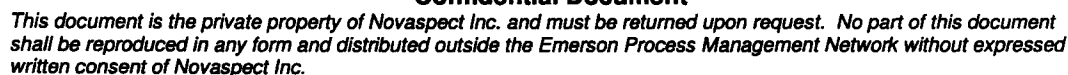
Sample02 – DeltaV Control System Network Drawing




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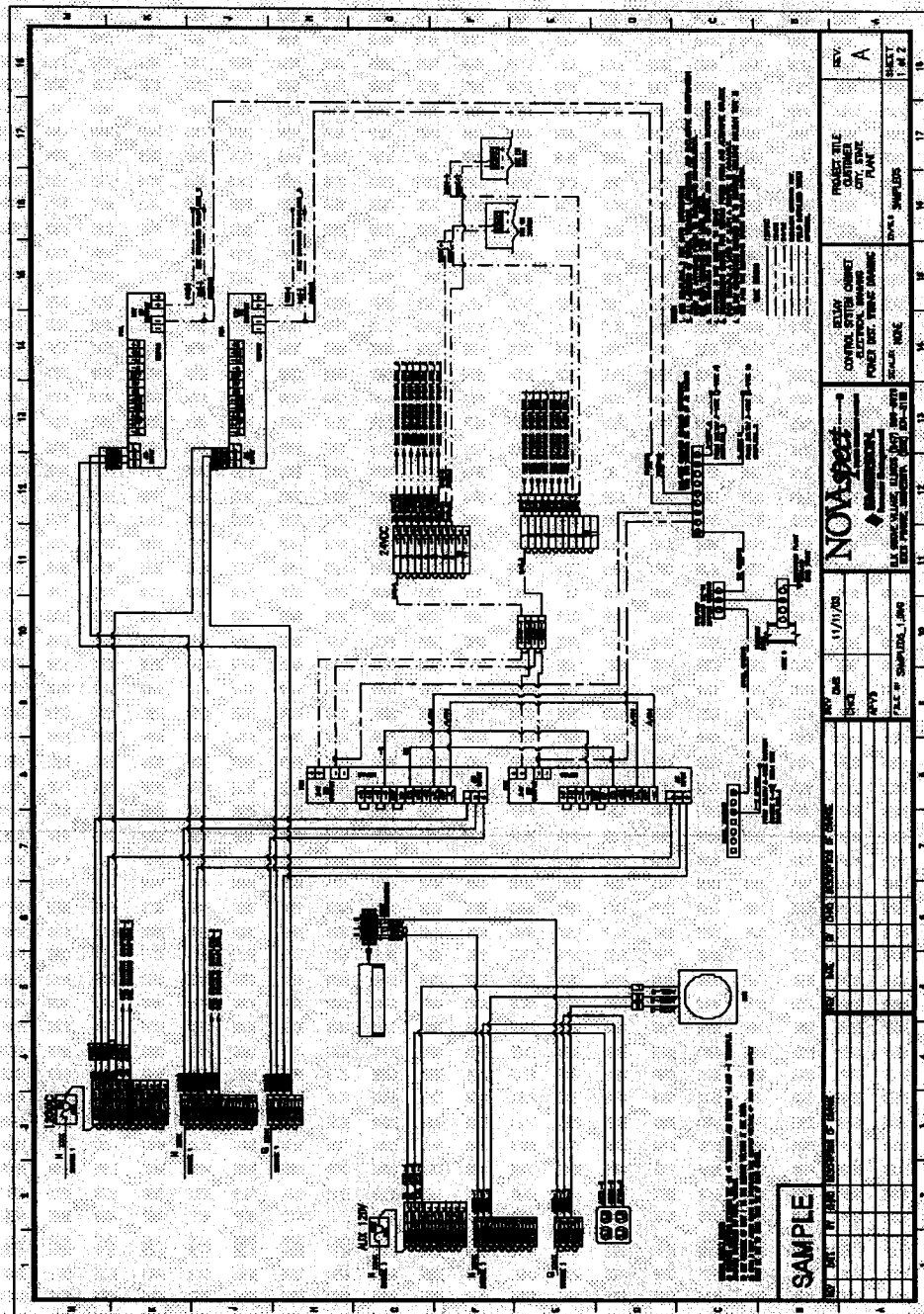
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Sample05 – DeltaV Control System Power and Grounding Drawing

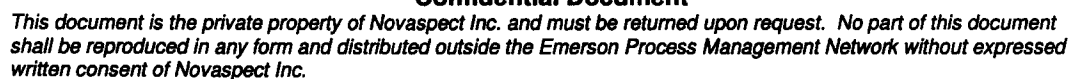


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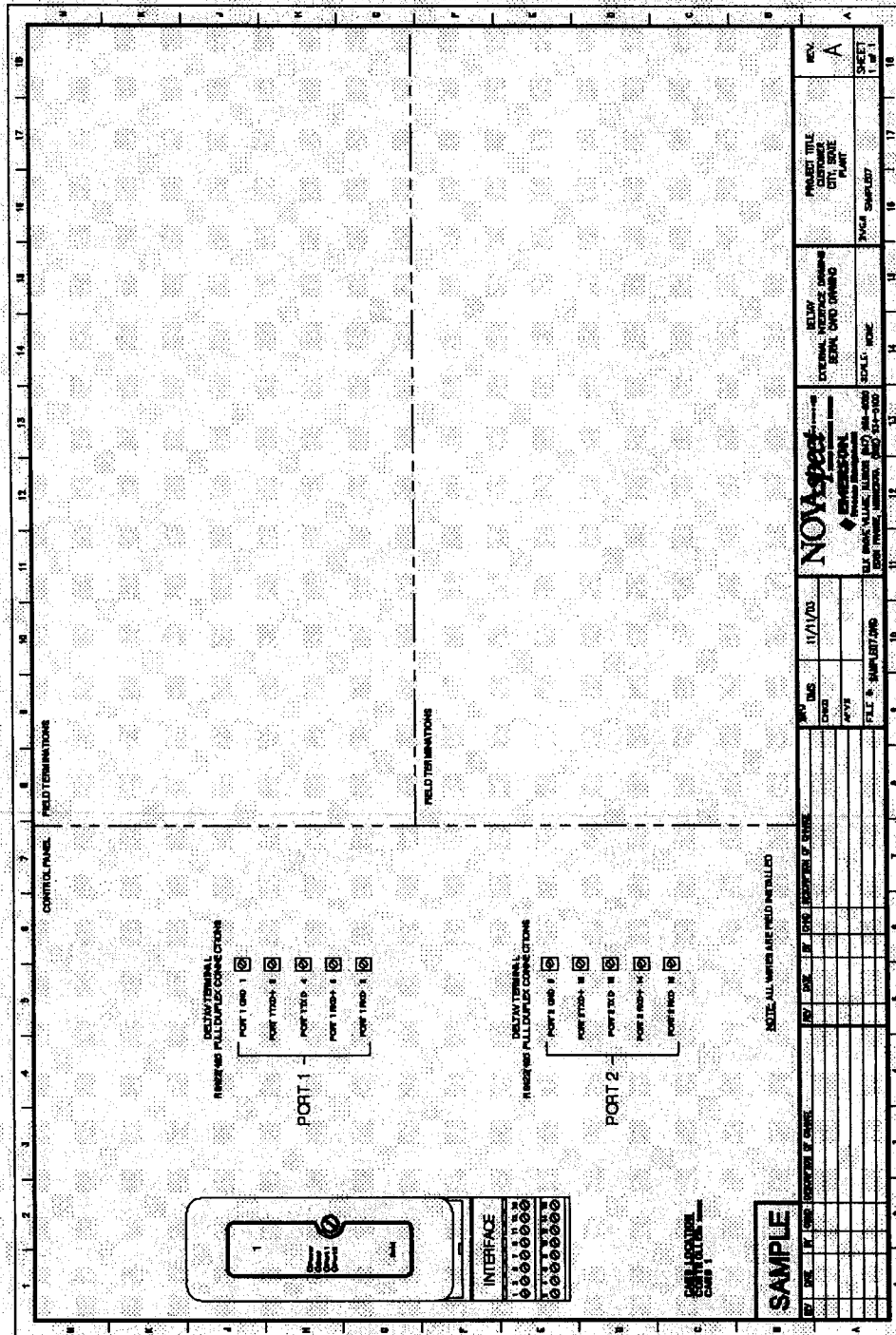






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Sample07 – DeltaV External Interface Drawing (Serial Card Drawing)

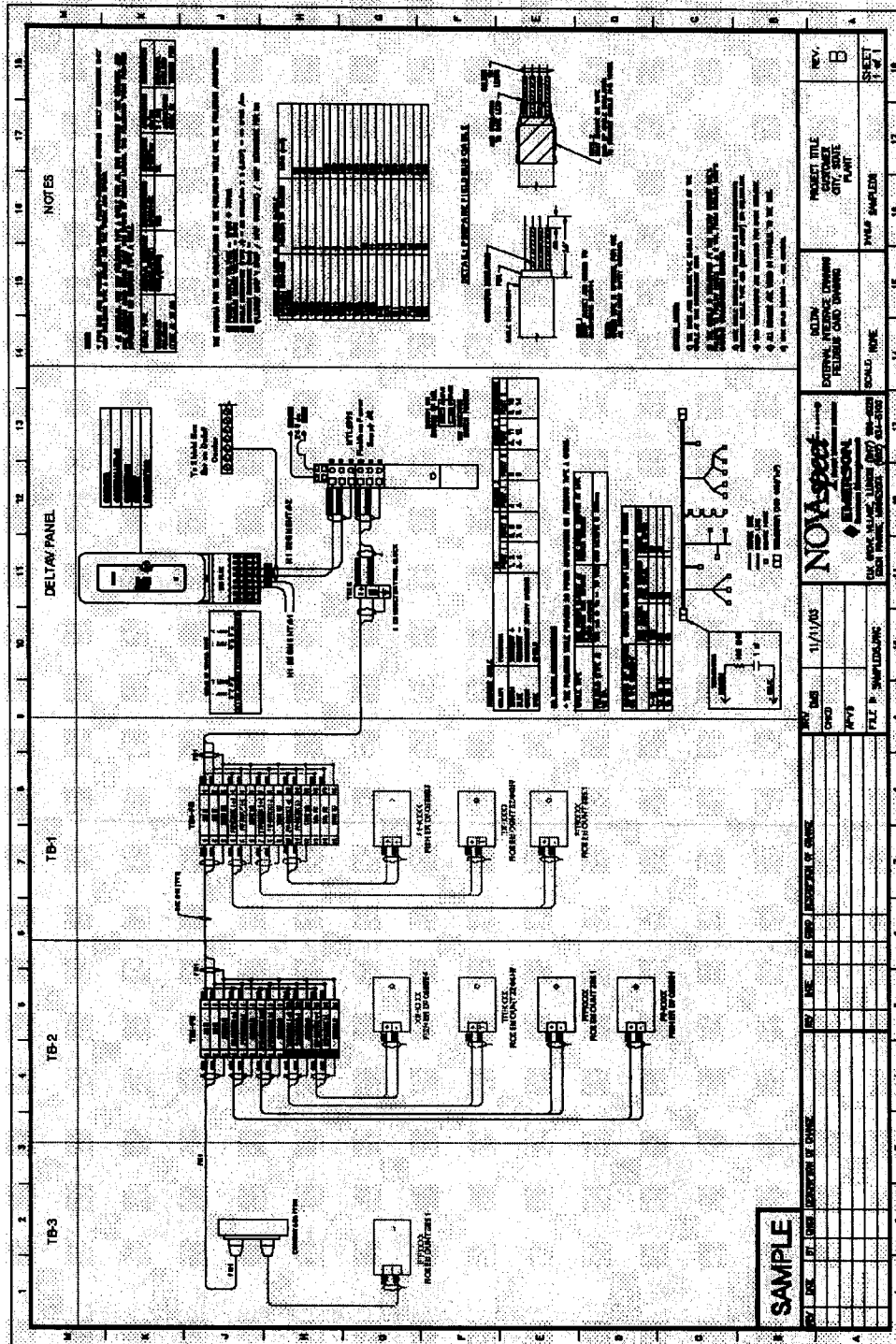


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Sample08 - DeltaV External Interface Drawing (Fieldbus Card Drawing)



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## APPENDIX C – Bill of Materials

Item	Qty	Description	Unit Price (\$)	Total Price (\$)
<b>Emissions Reduction Project</b>				
<b>Controllers</b>				
10	2	<b>VE3006</b> MD Plus Controller	5,973.25	11,946.50
20	1	<b>VE31RED</b> Controller Redundancy	1,242.78	1,242.78
30	2	<b>VE3051C0</b> 2-Wide Power/Controller Carrier	292.62	585.24
<b>Control Network</b>				
40	4	<b>VE6019</b> 1-Port Fiber, 4-Port Copper Switch	347.2	1,388.80
<b>Power and Distribution</b>				
50	2	<b>VE5008</b> 24/12 Vdc System Power Supply	813.46	1,626.92
60	2	<b>VE5011</b> DIN-rail Mounted Bulk AC-to-24 Vdc Power Supply	638.89	1,277.78
70	2	<b>VE5012</b> DIN-rail Mounted Bulk AC-to-12 Vdc Power Supply	638.89	1,277.78
<b>IO Products</b>				
<b>Ash Handling, Rotamix, BMS, &amp; BOP</b>				
80	4	<b>VE4003S2B2</b> Analog Input Card: 8 Channels 4-20 mA; HART; Fused I/O	1,100.43	4,401.72
<b>Termination Block</b>				
90	2	<b>VE4005S2B2</b> Analog Output Card: 8 Channels 4-20 mA; HART; Fused I/O	1,213.41	2,426.82
<b>Termination Block</b>				
100	21	<b>VE4001S3T1B2</b> Discrete Input Card: 8 Channels 120 Vac; Isolated; Fused I/O	599.92	12,598.32
<b>Termination Block</b>				
110	13	<b>VE4002S2T1B2</b> Discrete Output Card: 8 Channels 115/230 Vac; Isolated; Fused I/O	669.97	8,709.61
<b>Termination Block</b>				
120	3	<b>VE4050E1C0</b> 8-Wide I/O Interface Carrier with Carrier Shield Bar and Single Enhanced Carrier Extender Cable	1,129.80	3,389.40
130	3	<b>VE4050S2K1C0</b> 8-Wide I/O Interface Carrier with Carrier Shield Bar	821.36	2,464.08
<b>ROFA System</b>				
140	1	<b>VE3051C0</b> 2-Wide Power/Controller Carrier	292.62	292.62
150	1	<b>VE5008</b> 24/12 Vdc System Power Supply	813.46	813.46
160	1	<b>VE4021</b> Remote Interface Unit for Zone 2 Remote I/O	1,168.21	1,168.21
170	1	<b>VE4050S2K1C0</b>	821.36	821.36


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		<b>NOVA<sup>spect</sup></b> ..... <small>PROCESS MANAGEMENT SOLUTIONS</small> Rochester Public Utilities Emissions Reduction Rochester, MN		<b>Proposal Number</b> 10628	
				<b>Date</b> 09/13/07	<b>Rev</b> 3-a
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8-Wide I/O Interface Carrier with Carrier Shield Bar					
180	0	<b>VE4003S2B2</b>	1,100.43	0.00	
Analog Input Card: 8 Channels 4-20 mA; HART; Fused I/O					
Termination Block					
190	2	<b>VE4005S2B2</b>	1,213.41	2,426.82	
Analog Output Card: 8 Channels 4-20 mA; HART; Fused I/O					
Termination Block					
200	2	<b>VE4001S3T1B2</b>	599.92	1,199.84	
Discrete Input Card: 8 Channels 120 Vac; Isolated; Fused I/O					
Termination Block					
210	1	<b>VE4002S2T1B2</b>	669.97	669.97	
Discrete Output Card: 8 Channels 115/230 Vac; Isolated; Fused I/O					
Termination Block					
220	1	<b>VE4017P0 (Installed in Existing Boiler 4 CCS Cabinet)</b>	2,982.67	2,982.67	
Simplex H1 Fieldbus I/O Interface (Series 2) with Termination Block					
230	2	<b>KLD2-FBPS-1.25.360 (Installed in Existing Boiler 4 CCS Cabinet)</b>	254.6	509.20	
Fieldbus Power Supply					
240	1	<b>VE4005S2B2</b>	1,213.41	1,213.41	
<b>Workstation Hardware and Software</b>					
250	1	<b>VE21UPS037</b>	5,891.23	5,891.23	
ProfessionalPLUS Station 500 DST Scaleup					
260	10	<b>VE21UPS010</b>	530.34	5,303.40	
Operator Workstation Software Scaleup 100 DST					
270	2	<b>VE31UPS062</b>	2,827.77	5,655.54	
Discrete Monitor Input Scaleup 100 DST					
280	0	<b>VE31UPS061</b>	765.69	0.00	
Discrete Monitor Input Scaleup 25 DST					
290	1	<b>VE31UPS072</b>	8,542.90	8,542.90	
Discrete Control Output Scaleup 100 DST					
300	2	<b>VE31UPS081</b>	2,592.79	5,185.58	
Analog Monitor Input Scaleup 25 DST					
310	1	<b>VE31UPS091</b>	7,541.10	7,541.10	
Analog Control Output Scaleup 25 DST					
<b>Sub Total (\$):</b>				<b>103,553.06</b>	
<b>Total (\$):</b>				<b>103,553.06</b>	

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## APPENDIX D – Rate Schedule

Any rates specified in an existing and current Service Contract will supersede the corresponding rate below.

<b><u>SERVICE DESCRIPTION</u></b>	<b><u>Scheduled Hourly Rate</u></b>	<b><u>Demand Hourly Rate</u></b>
Drawing Services / Project Support Services	\$83.00	
Control System Designer	\$110.00	\$125.00
Instrumentation Engineering	\$135.00	\$150.00
Valve Asset Manager / Valve Diagnostic Engineer	\$135.00	\$150.00
Control System Engineering (See * Note 4)	\$160.00	\$210.00
Control System Field Service Engineer (See * Note 4)	\$175.00	\$225.00
Project Manager / Lead Project Engineer	\$175.00	
Custom Training Courses	\$185.00	
Control Loop Performance Consulting	\$200.00	
Process Consulting (Steam Generation, Refining, Batch)	\$225.00	

**Primetime** – Hourly Rate times 1 (Straight time)  
Monday - Friday, 7:00 AM to 6:00 PM (8 hour maximum)

**Overtime** - Hourly Rate times 1.5 (Time and one-half)  
Monday - Friday hours exceeding 8 hours but less than 12 hours  
Saturday, 7:00 AM to 6:00 PM (8 hour maximum)

**Premium Overtime** - Hourly Rate times 2 (Double time)  
Monday - Friday hours exceeding 12 hours  
Saturday hours exceeding 8 hours  
Sundays and Novaspect scheduled holidays

- \* Note 1 - A four (4) hour minimum charge (including travel time) applies to demand services.
- \* Note 2 - A four (4) hour minimum charge will be applied for calls canceled or re-scheduled with less than 24 hours prior notification.
- \* Note 3 - The appropriate multiplier applies to all minimum charges.
- \* Note 4 - Rates are subject to discount for large projects and Service Agreements based upon project size or services committed under a Service Agreement.
- \* Note 5 - For time and material engagements, Novaspect will invoice one hour for project management time for every 20 hours of engineering services provided.

Phone technical support is available at the defined rate for the service type required. A two (2) hour minimum will be charged for Primetime hours and a four (4) hour minimum will be charged for non-Primetime hours.

### **TRAVEL AND EXPENSE CHARGES**


- Travel time is calculated portal to portal at prevailing rates.
- All travel and living expenses will be invoiced at cost plus 10% as incurred by Novaspect.
- Auto mileage will be invoiced at the IRS rates per mile (currently \$0.485/mile).

### **EQUIPMENT RENTAL CHARGES**

- Control system equipment is available for rental. Pricing upon request.
- Control system test equipment is available for rental (i.e. Combustion Gas Analyzer)

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## APPENDIX E – Terms and Conditions

### Terms and Conditions from Novaspect, Inc. System Support Plan Contract #5190 with Rochester Public Utilities

**These terms and conditions may be replaced with mutually agreed upon terms  
and conditions between Novaspect, Inc., Rochester Public Utilities, and Utility  
Engineering**

### NOVASPECT, INC.

The proposal to which these Terms and Conditions are attached (the "Proposal"), these Terms and Conditions and any Change Orders (as defined herein) shall constitute the entire agreement between the parties and shall collectively be referred to herein as the "Agreement."

1. **ACCEPTANCE.** ACCEPTANCE OF THIS AGREEMENT BY BUYER WITHIN 30 DAYS OF THE DATE HEREOF (OR SUCH LONGER PERIOD AS NOVASPECT, INC. ("NOVASPECT") SHALL, IN ITS SOLE DISCRETION, AGREE TO IN WRITING) CREATE A CONTRACT BETWEEN NOVASPECT AND BUYER FOR THE PERFORMANCE OF SERVICES ("SERVICES") AND THE SALE OF HARDWARE, SOFTWARE, FIRMWARE AND/OR OTHER PRODUCTS ("GOODS"), EACH AS PARTICULARLY DESCRIBED IN THE PROPOSAL. BY ACCEPTING THIS AGREEMENT WITHIN THE REQUISITE TIME PERIOD, BUYER AGREES TO ACCEPT ALL OF THE TERMS AND CONDITIONS OF THIS AGREEMENT. TO THE EXTENT BUYER'S PURCHASE ORDER OR ANY OTHER STATEMENT OF BUYER CONTAINS ANY TERMS OR CONDITIONS IN ADDITION TO OR DIFFERENT FROM THE TERMS OF THIS AGREEMENT, SUCH TERMS AND CONDITIONS ARE HEREBY REJECTED BY NOVASPECT AND HEREBY WAIVED BY BUYER AND SUCH TERMS AND CONDITIONS SHALL NOT AFFECT THIS AGREEMENT NOR BE BINDING UPON NOVASPECT ABSENT AN EXPRESS WRITTEN STATEMENT BY NOVASPECT TO THE CONTRARY. THIS AGREEMENT CONSTITUTES THE ENTIRE AGREEMENT AND UNDERSTANDING BETWEEN THE PARTIES WITH RESPECT TO THE SERVICES AND THE DELIVERY OF THE GOODS AND SUPERSEDES ANY OTHER NEGOTIATIONS, AGREEMENTS AND REPRESENTATIONS BETWEEN THE PARTIES, WRITTEN OR ORAL. NO MODIFICATION OF THIS AGREEMENT SHALL BE OF ANY FORCE OR EFFECT UNLESS IN WRITING AND SIGNED BY NOVASPECT. IN THE EVENT OF ANY CONFLICT BETWEEN THESE TERMS AND CONDITIONS AND THE PROPOSAL, THE TERMS OF THE PROPOSAL SHALL GOVERN. IN THE EVENT OF ANY CONFLICT BETWEEN ANY CHANGE ORDER AND THESE TERMS AND CONDITIONS OR THE PROPOSAL, THE TERMS OF THE CHANGE ORDER SHALL GOVERN.

2. **AGREEMENT TO MAKE PAYMENT.** Buyer shall pay to Novaspect the fees and purchase prices set forth in the Proposal, as increased or decreased pursuant to any adjustments set forth in any Change Orders (the "Payments"). Any Goods ordered other than those specifically set forth in the Proposal, including additional copies of data/documentation or non-standard data/documentation, shall be priced at Novaspect's prices then in effect.

3. **INVOICES; METHOD OF PAYMENT.** Novaspect shall issue an invoice to Buyer (an "Invoice") each month for the amount due Novaspect, as determined pursuant to the terms of the Proposal. Buyer shall pay to Novaspect the amount set forth in each Invoice within 30 days of receipt of such Invoice. Any amount, which is not paid when due shall bear interest at the rate of 1.5% per month or portion thereof from the date such amount, became due through the date on which payment is received by Novaspect. All payments shall be made without deduction or setoff to Novaspect at the address set forth in the Proposal.

4. **SECURITY.** As security for the purchase price of the Goods, Buyer hereby grants and conveys to Novaspect a purchase money security interest in the Goods. Buyer shall, upon request of Novaspect, sign any financing statements and other instruments requested by Novaspect and shall otherwise cooperate with Novaspect in any manner deemed necessary to evidence, perfect or continue such security interest. The security interest granted to Novaspect shall be terminated only upon payment in full for the Goods.

5. **SCHEDULING.** Buyer understands that any product design services to be performed by Novaspect are unique, extremely complex and involve a great degree of Buyer/Novaspect interaction. The schedule for completion of the Services and delivery of the Goods set forth in the Proposal is a good faith estimate of Novaspect. The time actually required to complete the Services and deliver the Goods will be subject to Buyer availability, Buyer's timely delivery of information described in the Proposal or otherwise requested by Novaspect, the accuracy of such information, unforeseen design issues, design changes and modifications requested by Buyer pursuant to Change Orders, and other matters which generally effect product choice or product design services. Novaspect shall use all commercially reasonable efforts to meet all schedules set forth in the Proposal. Novaspect shall have no liability to Buyer or any other party for any loss or damage arising out of any Service or Good, which is provided later than designated in the Proposal.

6. **DELIVERIES.** Novaspect shall deliver to Buyer the Goods described in the Proposal. All deliveries from Novaspect to Buyer shall be F.O.B. shipping point and title and risk of loss with respect to such deliveries shall pass to Buyer upon delivery to Buyer or representatives of Buyer including, but not limited to, any common or contract carrier, bailee, agent, or employee of Buyer. If Buyer does not accept such F.O.B. delivery, Buyer shall be responsible for all storage charges and other expenses incurred in handling and moving the Goods. Buyer shall pay transit insurance, packaging, handling, shipping and carrier costs associated with the Goods and all sales, use, excise and other taxes levied upon the Goods. Buyer's sole remedy for lost Goods, damage caused during shipment or any delay attributable to shipment shall be an action against the carrier. Buyer agrees to hold Novaspect harmless against any and all penalties, claims, demands, losses, causes of action, suits, judgments, costs and expenses, including reasonable attorneys' and paralegals' fees, of whatever nature arising out of or in connection with the shipment or storage of Goods. Novaspect reserves the right to withhold any and all deliveries in the event Buyer fails to pay any invoice in accordance with its terms or in the event Novaspect has reason to believe Buyer does not have the financial ability to pay any future invoice when due.

7. **CHANGE ORDERS.** In the event that Buyer requests any modifications to the Services or to the type or number of Goods, Novaspect shall, if commercially reasonable, prepare and deliver to Buyer a Change Order Proposal describing such modifications and the changes in the Services and/or Goods necessary to effect such modifications (a "Change Order"). The Change Order will also set forth the additional Payments, if any, and the basis upon which additional Payments will be computed and an estimate of the revised schedule for completion of the Services and delivery of the Goods. After receipt of a Buyer request, verbal or written, for modifications to the Services or to the type or number of Goods, Novaspect may elect not to continue or complete the Services or deliver Goods until Novaspect receives a written authorization to proceed with the additional scope of work. The execution of the written authorization required hereunder by Buyer shall constitute authorization from Buyer for Novaspect to proceed with the Services and delivery of the Goods as modified by the Change Order and Buyer's consent to the increase or decrease in the Payments and the revised schedule set forth in the Change Order.

8. **TERMINATION.** Buyer may, by written notice to Novaspect (a "Termination Notice"), terminate its order for Goods and Services or any portion thereof at any time. Notwithstanding the "Notices" provision hereof, a Termination Notice shall not be effective until actually received by Novaspect (the "Termination Date"). Novaspect shall cease performance of the Services and delivery of the Goods as soon as is reasonably possible following receipt of a Termination Notice. Within 15 days after receipt of a final invoice, Buyer shall pay to Novaspect that portion of the Payments allocated to Services performed through the Termination Date, as determined by Novaspect, plus all expenses and non-cancelable commitments incurred by Novaspect prior to or in connection with such termination including, without limitation, the cost of all Goods and all processing, handling and fabrication costs incurred in connection with the Goods (collectively, the "Termination Payment"). Novaspect shall prepare a final Invoice with respect to the Termination Payment as soon as is practicable following receipt of a Termination Notice.


#### 9. **INDEMNIFICATION.**

- Novaspect hereby agrees to indemnify and hold Buyer harmless from and against penalties, claims, demands, losses, causes of action, suits, judgments, costs and expenses, including reasonable attorneys' and paralegals' fees from (i) the injury or death of any employee, contractor, subcontractor, agent of or other person acting on behalf of or otherwise engaged by Novaspect (a "Novaspect Representative") caused by the negligent act or omission of a Novaspect Representative and (ii) the injury or death of any person other than a Novaspect Representative caused by the negligent act or omission of a Novaspect Representative; provided however, Novaspect's liability set forth in the preceding clause (ii) shall be limited to the proportionate share of liability caused by the Novaspect Representative vis-a-vis all other parties contributing to the cause of such injury, sickness or death. In no event shall Novaspect's liability under this paragraph exceed the amount of \$1,000,000.00.
- Novaspect hereby agrees to indemnify and hold Buyer harmless from and against penalties, claims, demands, losses, causes of action, suits, judgments, costs and expenses, including reasonable attorneys' and paralegals' fees from the damage to or destruction of property caused by the negligent act or omission of a Novaspect Representative in providing the Services. In no event shall Novaspect's liability under this paragraph exceed the amount of \$1,000,000.00.
- NOTWITHSTANDING ANYTHING CONTAINED HEREIN TO THE CONTRARY, BUYER AGREES THAT NOVASPECT SHALL NOT BE LIABLE TO BUYER FOR ANY DELAY IN PERFORMANCE (UNLESS SPECIFICALLY DEFINED IN THE PURCHASE ORDER'S SCOPE OF WORK SECTION) NOR SHALL NOVASPECT'S LIABILITY IN ANY EVENT EXTEND TO INCLUDE INCIDENTAL, SPECIAL, EXEMPLARY, CONSEQUENTIAL OR PUNITIVE DAMAGES WHETHER OR NOT NOVASPECT HAS

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BEEN PREVIOUSLY ADVISED OF THE POSSIBILITY OF SUCH CLAIM INCLUDING, WITHOUT LIMITATION, LOSS OF TIME, LOSS OF USE, OR LOSS OF ANTICIPATED PROFITS OR REVENUE.

- (d) Buyer hereby agrees to indemnify and hold Novaspect harmless from and against any and all penalties, claims, demands, losses, causes of action, suits, judgments, costs and expenses, including reasonable attorneys' and paralegals' fees, of whatever nature arising from (i) the failure of Buyer to keep, perform and observe its obligations hereunder; (ii) any injury, sickness or death of a person other than a Novaspect Representative or damage to property to the extent not caused by the negligent act or omission of a Novaspect Representative; (iii) any injury, sickness or death of a Novaspect Representative not caused by the negligent act or omission of a Novaspect Representative; (iv) the failure of Buyer to comply with and observe all present and future laws, orders, codes, regulations, ordinances, rules and decrees of each governmental agency or instrumentality which may be applicable to the Goods or Buyer's business; (v) any actual or alleged infringement of any third party's intellectual property rights to the extent arising from designs, design information, specifications, processes or formulas supplied by Buyer; and (vi) specifications, design information, processes or other information or representation supplied or made by Buyer which proves to be inaccurate or which was not supplied by Buyer but should have been under the circumstances.
10. **LIMITED WARRANTY.**
- (a) Novaspect warrants that the Goods shall be fit for the purpose intended provided such purpose has been communicated to Novaspect by Buyer and provided (i) Novaspect has not indicated in a writing delivered to Buyer that it disagrees with Buyer's selection of any such Goods or (ii) the purpose intended has not been affected by (A) improper handling, storage or installation by a person other than a Novaspect Representative, (B) deterioration, corrosion or other adverse affect to the Goods arising from exposure to chemicals, fumes or other environmental variants not known to Novaspect, (C) specifications, design information, under the circumstances, (D) any alterations or repairs not approved by Novaspect or any accident affecting the Goods not caused by a Novaspect Representative or (E) abuse or improper use or maintenance of the Goods. Novaspect's Representatives' oral statements do not constitute warranties and should not be relied upon by Buyer as such. All warranty claims for the particular purpose intended shall be deemed unconditionally waived by Buyer unless Buyer shall notify Novaspect in writing of such alleged breach within one year of delivery of the Goods. Buyer shall afford Novaspect prompt and reasonable opportunity to inspect all Goods as to which any breach of warranty claim is made hereunder. If the requisite notice is provided and the Goods are not fit for Buyer's intended purpose, Novaspect will either replace or repair the Goods or adjust the matter fairly and promptly, but under no circumstances shall Novaspect be liable for any delay in performance nor shall Novaspect's liability in any event extend to include incidental, special, exemplary, consequential or punitive damages whether or not Novaspect has been previously advised of the possibility of such claim including, without limitation, loss of time, loss of use, or loss of anticipated profits or revenue. In no event shall Novaspect's liability under this paragraph exceed the amount of \$1,000,000.00.
- (b) EXCEPT AS EXPRESSLY SET FORTH IN PARAGRAPH (A) ABOVE, (i) NOVASPECT MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, AND (ii) BUYER'S SOLE AND EXCLUSIVE REMEDY HEREUNDER SHALL BE LIMITED TO THE WARRANTIES, IF ANY, OF THE ORIGINAL EQUIPMENT MANUFACTURER(S) OF THE GOODS.
11. **DEFAULTS.** In the event that Buyer fails to pay all or any portion of the Payments when the same is due and payable or is otherwise in default of any of its covenants hereunder or fails to comply with any of the terms or conditions hereof, or, in Novaspect's reasonable opinion, Buyer's ability to make timely Payments hereunder is impaired, or Buyer becomes insolvent or bankrupt or admits in writing its inability to pay its debts as they mature, or makes an assignment for the benefit of creditors, or bankruptcy, reorganization, arrangement or insolvency proceeding or other proceedings for any relief under any bankruptcy or similar law for the relief of debtors are instituted by or against Buyer, then in any such event Novaspect may, (a) terminate and cancel this Agreement forthwith upon written notice to Buyer, (b) require cash payment, satisfactory security, and/or other assurances before providing further Services and Goods, (c) declare the Termination Payment and all other sums payable to Novaspect hereunder to be immediately due and payable whereupon such amount shall forthwith become immediately due and payable to Novaspect, (d) if full payment for the Goods has not been received, enter upon Buyer's premises or any other place where the Goods are located and repossess all of the Goods without notice, hearing, court order or further process of law and otherwise exercise any rights as a secured party under the Uniform Commercial Code and/or (e) pursue any other remedy available to Novaspect at law or in equity.
12. **RETURN.** Novaspect shall not accept return of the Goods unless it notifies Buyer in writing to the contrary. In the event Novaspect accepts return of the Goods, neither transportation charges for the return of Goods nor any other costs or charges incurred in connection therewith shall be paid by Novaspect unless authorized in advance by Novaspect.
13. **SAFETY WARNINGS/COMPLIANCE WITH LAWS.** Buyer accepts and assumes all liability and responsibility for all safety warnings in connection with the Goods and for compliance of the Goods with all federal, state and local laws.
14. **INSTALLATION.** Buyer shall be responsible for receiving, storing, installing, starting up and maintaining the Goods (unless specifically defined in the purchase order's scope of work section). If requested by Buyer, Novaspect shall provide a quotation for services to assist Buyer in these functions.
15. **BUYER SUPPLIED DATA.** Notwithstanding anything contained herein, to the extent that Novaspect has relied upon any specifications, information or representation of Buyer, whether relating to the operating conditions of Buyer or any other state of affairs impacting the selection or design of the Goods, the provision of the Services or the preparation of the Proposal, which specification, information or representation proves to be inaccurate, Novaspect shall have no liability to Buyer or persons claiming under Buyer resulting from such inaccuracy. In the event of such inaccuracy, Novaspect and Buyer shall modify the Services and/or the selection of the Goods to accommodate the true state of affairs and shall modify the Proposal accordingly including, without limitation, adjusting the Payments and re-establishing time deadlines.
16. **SOFTWARE AND COMPUTER PROGRAMS.** Buyer acknowledges and agrees that Buyer's right to use any software or firmware constituting part of the Goods shall be governed by, and subject to the conditions of, a separate software license agreement. Buyer acknowledges and agrees that all title to the software or firmware constituting part of the Goods shall remain vested in the manufacturer of such software or firmware or the licensor thereof and shall be furnished to and used by Buyer only after execution of, and subject to, such separate license agreement. Buyer's sole and exclusive remedy with respect to any software or firmware provided hereunder shall be limited to the warranties, if any, of the manufacturer or licensor of such software or firmware. Buyer shall have no right to alter, modify, copy or prepare derivative works of any software or firmware except in accordance with such license agreement.
17. **NON-SOLICITATION:** Buyer agrees that during the execution of the Services by Novaspect, and for a period of twelve (12) months after performance of the Services, it will not hire any employee(s) of Novaspect or its project team and will not entice or counsel any such employee(s) to leave Novaspect employ. Buyer agrees that this covenant shall extend to its agents and affiliates. In the event that an employee of Novaspect is hired or leaves the employ of Novaspect in such circumstances, the buyer shall pay Novaspect, as compensation for the cost incurred by Novaspect in recruiting and training the employee, the sum equivalent to six (6) months salary for each employee hired from or leaving the employment of Novaspect.
18. **FORCE MAJEURE.** Novaspect shall not be liable for any failure to perform resulting from acts of God, war, riot, fire, explosion, accident, flood, sabotage, the shortage of or inability to obtain from anticipated sources adequate materials, components, parts or Goods, or transportation facilities, compliance with governmental requests, law, regulations, orders or actions, the breakage or failure of machinery or apparatus, national defense requirements or any other event beyond the reasonable control of Novaspect; or in the event of labor trouble, strike, lockout or injunction affecting Novaspect or its supplies, suppliers or transporters which event makes impractical the provision of the Services or the manufacture, procurement, transportation, delivery, acceptance or use of the Goods. Novaspect shall give written notice to Buyer with reasonable promptness after the occurrence of any such event.
19. **RELATIONSHIP OF PARTIES.** The relationship of the parties shall be that of independent contractors and not as partners or joint ventures. Each party is, and is intended to be, engaged in its own and entirely separate business.
20. **NOTICES.** All notices and other communications given hereunder shall be in writing and deemed to have been given when (i) personally delivered, (ii) one business day after delivery to a nationally recognized overnight courier service, (iii) upon the written confirmation of receipt following the transmission of a telecopy or (iv) three days after being mailed by certified mail, postage prepaid, to the addresses of Novaspect or Buyer as set forth in the Proposal or to such other addresses as either party may request by notice given in accordance with this paragraph.
21. **GOVERNING LAW; JURISDICTION AND VENUE/LIMITATION PERIOD.** This Agreement shall be governed by and construed in accordance with the laws of the State of Minnesota. NOVASPECT AND BUYER IRREVOCABLY AGREE THAT ALL ACTIONS OR PROCEEDINGS IN ANY WAY, MANNER OR RESPECT, ARISING OUT OF OR FROM OR RELATED TO THIS AGREEMENT OR ANY DOCUMENT, INSTRUMENT OR TRANSACTION IN CONNECTION HEREWITH SHALL BE HEARD OR LITIGATED EXCLUSIVELY IN COURTS HAVING SITUS WITHIN THE CITY OF CHICAGO, COUNTY OF COOK, STATE OF ILLINOIS. NOVASPECT AND BUYER CONSENT AND SUBMIT TO THE PERSONAL JURISDICTION OF ANY LOCAL, STATE OR FEDERAL COURT LOCATED WITHIN SAID CITY, COUNTY AND STATE AND IRREVOCABLY WAIVE ANY RIGHT TO TRANSFER OR CHANGE VENUE OF ANY SUCH ACTION OR PROCEEDING OR OBJECT TO THE JURISDICTION OF ANY SUCH COURT OVER THE PARTIES HERETO. NO ACTION OTHER THAN AN ACTION FOR UNPAID PAYMENTS UNDER THIS AGREEMENT MAY BE BROUGHT BY EITHER PARTY MORE THAN TWO YEARS AFTER THE CAUSE OF ACTION HAS ACCRUED.
22. **COLLECTION/ENFORCEMENT EXPENSES.** In addition to any other amounts due hereunder, Buyer shall reimburse Novaspect for all costs and expenses (including reasonable attorneys' and paralegals' fees and expenses) incurred by Novaspect in collecting any amount due to Novaspect or enforcing any provision of this Agreement. Novaspect shall reimburse Buyer for all costs and expenses (including reasonable attorneys' and paralegals' fees and expenses) incurred by Buyer in collecting any amount due to Buyer or enforcing any provision of this Agreement.
23. **GENERAL PROVISIONS.** Except as expressly set forth herein, any waiver by any party of its rights under this Agreement shall be in writing and signed by the party waiving such right. The failure of either party to enforce any of the provisions of this Agreement or any rights in respect thereto, or to exercise any election herein provided, shall not waive such provisions, rights or elections or subsequent breaches thereof. No course of dealing shall be deemed to constitute a continuing waiver of any breach or default or right or remedy hereunder. Buyer shall not assign its rights or obligations under this Agreement to any party without Novaspect's prior written consent. This Agreement shall be binding upon and inure to the benefit of the parties and their respective representatives, successors and permitted assigns. Except as otherwise stated herein, termination of this Agreement shall not release either party from any liability or obligation which has theretofore accrued and remains to be performed as of the date of such termination. Novaspect shall not assign its rights

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or obligations under this Agreement to any party without Buyer's prior written consent. This Agreement shall be binding upon and inure to the benefit of the parties and their respective representatives, successors and permitted assigns. Except as otherwise stated herein, termination of this Agreement shall not release either party from any liability or obligation which has theretofore accrued and remains to be performed as of the date of such termination.

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## RESOLUTION

BE IT RESOLVED by the Public Utility Board of the City of Rochester, Minnesota, to approve a contract agreement with Novaspect, Inc. and request the Mayor and the City Clerk to execute the agreement for

Professional Services for Software Development, Logic Development, Documentation, Start-up and Incidental Hardware Supply for the Silver Lake Plant Emissions Reduction Project

The amount of the contract agreement to be FOUR HUNDRED THOUSAND 00/100 DOLLARS (\$400,000.00) contingent upon the approval of the RPU General Manager and the City Attorney..

Passed by the Public Utility Board of the City of Rochester, Minnesota, this 25<sup>th</sup> day of September, 2007.

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President

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Secretary