WEEF Proposals: Summer 1996

Item	Dept/Contact	Amount
Security System	Civil/M Herz	3526
16 Channel Strain and Interface	Civil/T Ridgway	3906
Computer/Data Acquisition System	Civil/M Sobon	5995
Air Sampling Pump for Env. Eng	Chem/W Anderson	1040
Tubular Flow Reactor	Chem/R Frankle	2971
Robots for Robotics Courses	E+CE/D Wang	20000
Watstar Computer Room Upgrade	E+CE/R Sanderson	8700
Laser Printer for 3rd Floor Labs	E+CE/R Sanderson	6996
Laser Printer for Systems Design	Systems/D Walsh	3013
Pentium Workstation	Geo/ C Slater	3850
Equipment for Student Machine Shop	Mech/M Kaptein	6480
CCD Camera for Classroom	Mech/M Kaptein	12000
Watstar Upgrade	Mech/M Kaptein	5784
Materials Testing Machine	Mech/M Kaptein	7000
~~Additional Printers~~	~~Mech/K Martin~~	~~5000~~
Midnight Sun	S.P./G Bridgett	7500
1997 CASI Free Flight	S.P./R Ripley	2010
SAE Aero	S.P./M Wonnacott	1500
SnowFear	S.P./M Stinson	3000
Mini Baja 1997	S.P./D Warren	1400
Formula SAE 1997	S.P./A Tseng	3125

WEEF Proposal Form
Spring 1996
DEPARTMENT OF CIVIL ENGINEERING

Proposal Title: Security System - Civil WATSTAR Undergraduate Computing Lab

Submitted by: Michael Herz (Computer Systems Manager)
Phone Number: 3411

and by: Ralph Korchensky (Computing Hardware Technologist)
Phone Number: 5045

Date of Submission: June 26, 1996

Description of Proposal: There have been a great number of computer thefts throughout the University in recent years and the trend seems to be increasing. A physical security system is one of the better lines of defence to protect our equipment (a large percentage having been funded by WEEF). Loosing equipment costs us time and money. We have installed an advanced security system that uses digital controllers and fibre optic cables. The controller immediately sounds an audible alarm and phones the campus police. The fibre optic cables are very sensitive to tampering and are virtually impossible to short circuit. The cables protect both the CPU's and the monitors.

As this matter was of immediate urgency, the system is already in place. We are hoping that WEEF will see fit to fund a portion of the costs of this system (totalling: $3526) as the alarm system is protecting equipment being used by all Civil Engineering undergraduates.

Benefits of the Proposal: All Civil Engineering Undergraduates (750 per annum).

Cost Breakdown of Proposal: Defence Security Systems - 1 PC3000 digital control panel, 1 PC3000 Key Pad, 1 Man Door Contact, 1 Dual Tec Motion Detector, 6 Black Boxes, 36 Mousetraps, 72 Carrie Nuts, 18 Splicer Set, Fibre Optic Cable, 1 Siren - $3526.

Implementation Schedule: System is already in place.

Would partial funding to the cost estimate provided above be acceptable? YES

PAPERWORK FOR CIVIL PROPOSAL Negin x3631
92-2331

WEEF Proposal Form
Spring 1996
DEPARTMENT OF CIVIL ENGINEERING

Proposal Title: Upgrade of Strain and Transducer Interface (Structures/Concrete Lab)

Submitted by: Terry Ridgway, Technologist
Phone Number: 3042

on contract

Date of Submission: June 29, 1996

Description of Proposal: Upgrade existing number of channels in A/D Data Acquisition Box in the Structures/Concrete Lab from 16 to 48 as current project have filled present channels. The boards will give a greater versatility in the lab with capability of 48 channels of strain or combinations of transducers/sensors and strain.

Benefits of the Proposal: Civ.E. 313 (Structural Concrete Design) and all Project Courses (Civ.E. 126/Env.E. 126, Civ.E. 300, Civ.E. 400) - approx. 200+ students per annum.

Cost Breakdown of Proposal: $1,980 per A.D. Board (2 required) Total: $3,960.

Implementation Schedule: Immediately.

Would partial funding to the cost estimate provided above be acceptable? YES

WEEF Proposal Form
Summer 96

Item: Computer/Data Acquisition System

Submitted by: Mark Sobon 5263 **Date:** June 27, 1996

Description of Equipment: Data logging computer system. A Pentium 100 computer with 16Mb Ram Memory. 1 GB hardrive, SVGA Monitor and Windows 95. A 16 Channel data aquistion board, Sciemetrics System 7004.

Benefits of equipment: The computer coupled with a data aquistion system would be used in several CIV E Water Quality Labs. This system would service approximately 275 students/P.A. (Approx. 50 CIV E 472, 150 in CIV E 375 and 100 CIV E 126/ENV E 126). The system would update and automate a Mixing Reactor Lab in CIV E #375. This would allow for larger data sampling at more frequent intervals (real time). It would provide for a large accurate data set for the students to work with. The CIV E 472 Carbon Adsorption Lab and CIV E 472 Biological Reactor Lab would benefit in the same manner. I can also forsee future use for logging data in CIV E 126/ENV E126 Project work.

Cost of Proposal: $2500/Computer and $3495/Data Aquistion Board.
Total: $ 5995.

Implementation Schedule: Immediate.

Additional Information: Open to partial funding between WEEF and CIVIL ENG.

Group4 Technologies
490 Dutton Drive, Unit #B7
Waterloo, Ontario
N2L 6H7
(519)888-6481
(519)888-7074

Attn: Mark Sobon
Tel:
Fax: 888-6197

April 11, 1996

Vault 5100iP 586-100 PCI E-Star Mini-Tower	
Q80586 running @ 100 Mhz w/ 256k PLB Cache	
Completely Energy -Star System for Lower Operating Cost	
16 Meg Ram Memory	
Quantum 1280A 1.2GB IDE Hard Drive	
ATI Xpression 1MG / PCI Graphics Card	
2 Serial, 1 Parallel (16550 UART Bidirectional Parallel Port)	
Hitek Enhanced 101 Key Keyboard	
Panasonic 1.44M Floppy Drive	
Logitech 3 Button Mouse	
MS Dos 6.22	
ADI 4V 15" SVGA Monitor	
System comes with a 2 year Parts & Labor Warranty	$2234.00
Upgrade to Pentium 120 System	$108.00
Add Panasonic/Mitsumi 4X CD ROM	$89.00
Windows 95	$159.00

Prices do not include taxes
Delivery within 4 business days of confirmation of order.

If you have any further questions, please feel free to give me a call.

Sincerely,
Jennifer Meyer
Group4 Technologies

SERIES 7000 — Laboratory Systems For Data Acquisition And Control

7001	**16 Channel Measurement System** Includes integrating 13-bit A/D converter, 16-channel analog multiplexer with isothermal copper plate, cold junction thermistor sensor for thermocouples, modular chassis with internal power supply, ISA-bus PC interface card and 2m cable, and Windows based software package.	2495
7002	**16 Channel Transducer Measurement System** Includes integrating 13-bit A/D converter, 16-channel analog multiplexer with on-card excitation (2.5, 5 and 10VDC) for bridge transducers, cold junction thermistor sensor for thermocouples, modular chassis with internal power supply, ISA-bus PC interface card and 2m cable, and Windows based software package.	2795
7003	**16 Channel Measurement and Control System** Includes integrating 13-bit A/D converter, 16-channel analog multiplexer with isothermal copper plate, cold junction thermistor sensor for thermocouples, 4 channels of analog output (V or mA), 4 channels of digital inputs and 4 channel of digital outputs (5V), modular chassis with internal power supply, ISA-bus PC interface card and 2m cable, and Windows based software package.	3195
7004	**16 Channel 16-Bit Transducer Measurement System** Includes 16-bit A/D converter, 16-channel transducer analog multiplexer with on-card excitation (2.5, 5 and 10VDC) for bridge transducers, cold junction thermistor sensor for thermocouples, modular chassis with internal power supply, ISA-bus PC interface card and 2m cable, and Windows based software package.	3495
7000-software	Windows Data Acquisition and Control Software *(note: this software is included in packages 7001-7004)*	595

COMMON OPTIONS

7000-OPT-16EXP	16 channel analog expansion card+cable (adds 16 more channels)	830
7000-OPT-16TRN	16 channel transducer expansion card+cable (adds 16 more channels)	1590
7000-OPT-Counter	6 channel counter/timer module	1120
7000-OPT-SSR	8 channel solid state relay module (relays extra, please specify)	590
7001-ExWarr	Additional 1-year warranty for system (total of 3 years)	250
7002-ExWarr	Additional 1-year warranty for system (total of 3 years)	280
7003-ExWarr	Additional 1-year warranty for system (total of 3 years)	320
7004-ExWarr	Additional 1-year warranty for system (total of 3 years)	350
LLSYS-OPT-CONFIG	Reconfiguration charge to modify standard LLSYS system *(applies for factory modification of a standard LLSYS system such as the addition of optional cards as listed above. Alternately, optional cards can be installed by the customer or distributor).*	150

Note: 7000 chassis holds a maximum of 6 cards. 7000-OPT-SSR card requires 2 card bays.

Post-it™ Fax Note 7671E | Date 4/6/96 | # of pages ▸ 2
To TERRY RIDGEWAY | From PATRICK DONELON
Co./Dept U of Waterloo | Co. HOSKIN
Phone # | Phone #
Fax 5198886197 | Fax #

WEEF Proposal Form

Summer 96

Proposal Title: Air Sampling Pump for Environmental Engineering Labs

Submitted by: W.A. Anderson Phone Number: Extension 5011, wanderson@chemical

Position (Student, Professor, Organization, etc.): Asst. Prof., Dept. of Chemical Engineering

Description of Proposal:

We propose to purchase one Air Sampling Pump to be used in Environmental Engineering lab experiments. This pump will provide the capability for drawing precisely known volumes of air through filters and adsorbents, allowing for the capture of air-phase contaminants in sampling tubes and their subsequent chemical analysis. In these analyses, it is critical that the sample volume be precisely known so that the original concentration in air can be back-calculated. The sampling device will give us the capability to measure indoor and outdoor air quality, as well as emissions from process equipment and air or water pollution control devices.

Benefits of the Proposal (including number of department(s) and students affected):

We are currently developing interesting and relevant lab and project experiments for use in the 3rd and 4th year Environmental Engineering program (Chemical Branch). Once operational in 1998, these experiments will be performed by at least 40 students per year. The equipment will also be made available for use by the Civil Branch of the Environmental Engineering program.

Cost Breakdown of Proposal (including partial funding options if desired):

Selected equipment is from Supelco Canada Ltd. (see attached catalogue page).
Total cost of pump and required sampling accessories: $1040. including GST.
Cost of sampling tubes ($1 - $12 for each sample) will be covered by operating budgets as required.

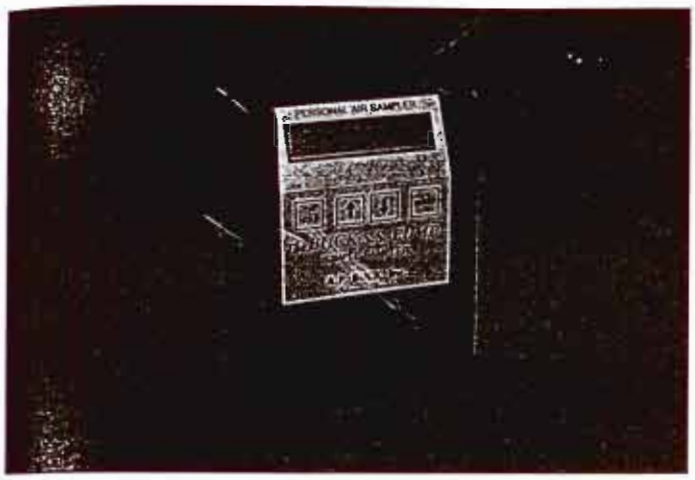
D tubes
D approx 5

Implementation Schedule for Project:

The sampling equipment will be purchased for use in the Fall 1996 term by several 4th year Chemical Engineering students to monitor emissions from polymer processing facilities. This will provide us with background data and experience in air sampling and chemical analysis, which we will then use to develop additional labs and projects in this field by 1998.

Additional Information:

If the first group of 4th year project students find this particular sampling system to be reliable and adequate, we will likely proceed to purchase several more for use in the labs, using funds from various sources.



994-0064

Buck S.S. Pump

Sampling made simple

The Buck S.S. Pump provides many of the useful features available in the more sophisticated Buck I.H. Pump, but in a more basic, automated format. It is specifically designed for the user primarily confronted with sampling using a personal filter, an impinger, or a 47mm filter holder and fiberglass filter.

A redesigned protective pouch is available separately. This nylon carrying pouch now includes a clear vinyl front for see-through ability. See sampling accessories, page 381, for ordering information.

Buck S.S. Pump

Description	Cat. No.	CAN $
Without charger	2-4831	841.35

For chargers, see page 382. For sampling accessories, see page 387.

Specifications

Constant Flow Operating Range
600-5000cc/minute. Flow automatically maintained within ±3% of set point over entire operating range.

Features

- 100% digital constant flow, within ±3% of set flow.
- Auto flow calibration to adjust for filter back pressure.
- Battery power and elapsed time displayed during sampling.
- Low battery auto shut off saves flow rate and elapsed time.
- Memory backup system.
- Battery pack short circuit protected (no fuse).
- Auto restart after flow blockage or filter fall-off.
- Keypad lock system prevents tampering during sampling.
- EMI/RFI protected.

Approvals

- UL — Class I Groups A, B, C, D; Class II Groups E, F, G; Class III
- cUL (Canada) — Class I Groups A, B, C, D; Class II Groups II F, G; Class III

913-0458

Buck H.F. (High Flow) Pump

The Buck H.F. Pump has all the many useful features of the Buck I.H. Pump on the previous page, but is designed specifically for those occasions when very high volume samples are required. It is ideal for remote, portable air sampling and for personal filter sampling requiring fiberglass filters. Patented features ensure reliable and accurate sample collection.

Contained in a compact, rugged, water-resistant, polycarbonate case with an EMI/RFI shielded circuit board. Not UL rated.

Buck H.F. Pump

Description	Cat. No.	CAN $
Without charger	2-4827	1,690.00

For chargers, see page 382. For sampling accessones, see page 387.

For Features, see Buck I.H. Pump on page 380.

Specifications

Constant Flow Operating Range.
1.0-10.0 liters/minute. Flow, automatically maintained within ±3% of set point over entire operating range.

Accessories For Buck Pumps

Description	Cat. No.	CAN $
Impinger holder	2-4858	27.30
Adjustable flow sampling tube holder	2-4848	68.70
Nonadjustable flow sampling tube holder	2-4849	51.55
Multi low flow sampling tube holder	2-4854	21.25
Clear, flexible PVC tubing, 1/4"/6.4mm OD x 10 feet/3m	2-4855	10.15
Luer adapters, pkg. of 10	2-4856	28.30
Sampling hose clips, pkg. of 10	2-4857	17.20
Protective Pouch for I. H. and S. S. Pumps only	2-4859	55.00

Protective Cover for Adjustable Flow Tube Holder

Sampling tube size determines cover OD/length. Clear – you can see the tube.

Description	Cat. No.	CAN $
6mm OD x 70mm	2-4850	11.15
8mm OD x 110mm	2-4851	13.15
10mm OD x 150mm	2-4852	14.15
10mm OD x 220mm	2-4853	17.20

110V charger $70.75 2-4832 + GST

WEEF Proposal Form

Summer 96

2296

Proposal Title: Tubular Flow Reactor

Submitted by: R. Frankle Phone Number: 6161

Position (Student, Professor, Organization, etc.): Lab Technician

Description of Proposal:

To replace existing Rotameters with

1) Flow sensor with digital readout

2) Metering Pump with digital readout

Benefits of the Proposal (including number of department(s) and students affected):

Much more accurate control of flowrates resulting in better data.
ALL CHEM ENG 040 Lab students in 4A would benefit, approx. 120 students.

Cost Breakdown of Proposal (including partial funding options if desired):

A	1 x H77300-50 Pumpdrive-contr.	$ 1555. -
B	1 x H77300-60	
C	1 x H7518 -60 Pumphead	$ 280. -
D	1 x H070- 13-04 SS Hardware	$ 15. -
E	1 x H96410 -16 Tubing	$ 59 -
F	1 x FTB 602 Flow sensor	$ 600. -
G	1 x DPF 78	$ 462. -

Implementation Schedule for Project:

To be build in as soon as equipment available, possibly for Fall 96 term

Additional Information:

Items A to E from Cole-Parmer Labcor could be purchased first $ 1202. -

Items F and G at a later date $ 1062. -

Prices are 1995 quotes, Taxes would be extra

Please submit to WEEF mailbox in the Orifice by July 3rd 96.

WEEF Proposal Form

Summer 96

Proposal Title: Educational Robots for Robotics and Control Courses

Submitted by: D. Wang (Elect. & Comp. Eng.)
M.R. Golnaraghi (Mech. Eng.)

Phone Number: ext. 3968 (Wang)
ext. 4753 (Golnaraghi)

Position (Student, Professor, Organization, etc.): Associate Professors

Description of Proposal:

Control Advancements Inc. (CAI) now has a commercial educational robot for use in undergraduate teaching. It is a three degree-of-freedom robot and comes with a laboratory manual. This robot is unique in that it is direct drive and has an open architecture. This allows the implementation of control strategies which are not possible in any other existing commercial educational robot. Without such a robot, our abilities to demonstrate advanced control strategies in our courses will be severely hampered. We are proposing the purchase of 4 of these robots (2 this term and 2 in the next term). These robots can be used with a minimum of a 486 PC.

Benefits of the Proposal (including number of department(s) and students affected):

There are currently 2 robotics courses: one in E&CE (30-60 students/year in E&CE 486) and one in ME (30-60 students/year in ME 547). As well, there are 2 E&CE control systems courses (E&CE 485, E&CE 482), 1 ME control systems course (ME 360) and 1 Sys. Des. control systems course (SD 352) which may also use this equipment. All of these courses could use these robots. The instructors for these courses include Dr. G. Heppler (Sys.Des.), Dr. J. Huissoon (ME), Dr. J. McPhee(ME) as well as the applicants of this proposal.

Cost Breakdown of Proposal (including partial funding options if desired):

The cost per robot is $10,000. This represents a discount of approximately 33% per robot.

1/2 price [illegible]
price is 15000$ US.
electrical + mech dept
will provide [illegible]
$10000

Implementation Schedule for Project:

If 2 robots can be purchased for the F'96 term, then one can be distributed to each of the E&CE and ME departments. The remaining 2 robots will be purchased in W'97 term when the two robotics courses are offered.

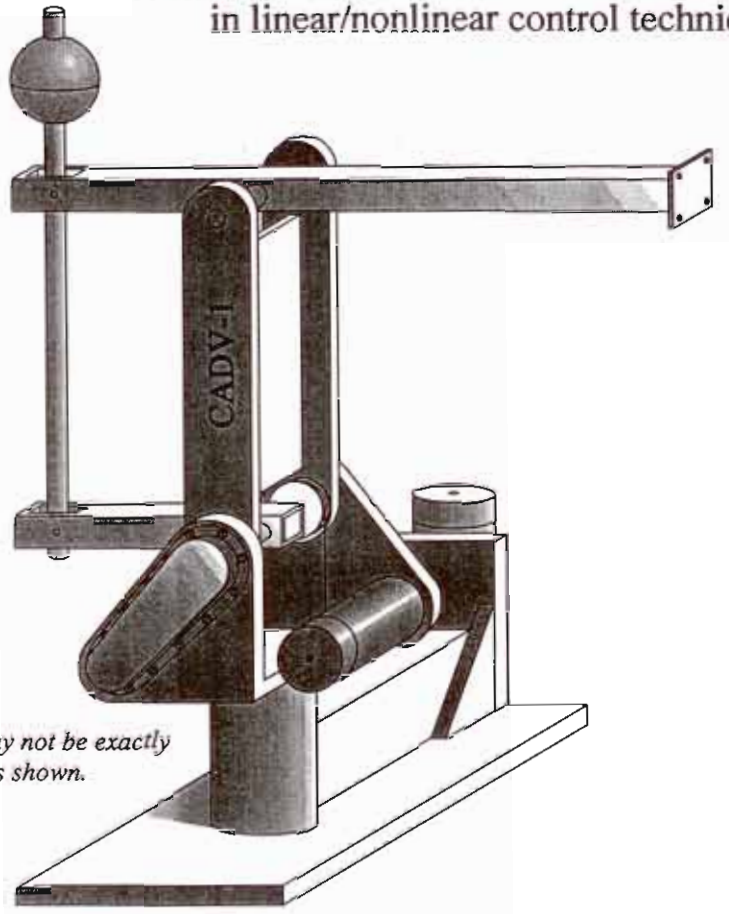
Additional Information:

The reason for the educational discount is that CAI is a Waterloo company founded by UW faculty members. This discount is not available to any other university. The robot was designed by Dr. D. Wang (E&CE) and Dr. J.P. Huissoon (ME). They receive a portion of the lab manual sales but receive no compensation for the robots sold as the design of the robots is now public domain.

Please submit to WEEF mailbox in the Orifice by July 3rd 96.

CADV-1 Educational Robot

The CADV-1 is a cost effective 3 degree-of-freedom planar manipulator that allows you to implement built-in linear/nonlinear control techniques or try out one of your own.



Robot may not be exactly as shown.

Standard Features

- Safe - Classroom Tested
- DC Servo Drives with Encoder Feedback
- Decoupled Dynamics & Passive Gravity Compensation
- Control Card Plugs into Your Computer's ISA Slot
- User Interface with Real-Time Plotting
- Lab Manual With Sample Linear/Nonlinear Controllers

Available for the 1996/97 school year

For more information, please contact:

Control Advancements Inc.

105 Lexington Road, Unit 17 • Waterloo, Ont. • N2J 4R7 Canada
(519) 885-2777 • fax: (519) 885-5510
info@controladv.com • http://www.controladv.com

CONTROL ADVANCEMENTS

WEEF Proposal Form

Summer 96

Proposal Title: **Watstar Computer Room Pentium Upgrades**

Submitted by: Roger Sanderson *Phone* Number: Ext 6184

Position (Student, Professor, Organization, etc.): E. & C. E. Department Lab Technologist

Description of Proposal:

Computer technology, and in particular MS-DOS based computers are improving at a rapid rate. Systems purchased a year or two ago are now outdated. New software applications are demanding more memory, more hard disk space, and more processor speed. The Electrical and Computer Engineering Department's Watstar rooms currently contain a mix of XT, 286, 386 and 486 computers. We see Watstar moving towards Windows 95 (and NT) in the next year or so. These software versions make more demands on the hardware than ever before. Many of our current machines cannot even run Windows 95 and the ones that can are just barely able to do it.

In the past, we've always bought a computer here and a computer there. This leads to our having a real hodgepodge of different machines, all in the same room. No one room has any consistency to it. This complicates maintenance and support, and makes things annoying for the students (since something which works well on one computer works badly on the computer right next to it in the same room).

In light of these problems, we have decided to look at a long term plan for upgrading our computer resources. We propose to upgrade a whole room at one time. We would start by upgrading one room, E2-2362. We would purchase ten pentiums, install them in that room, and re-distribute the ten computers that are in there now to other rooms. See the enclosed chart for a summary of these moves.

The net result is that E2-2356 would be entirely 386's, E2-2360 would be entirely 486's, and E2-2362 would be entirely new machines. Counting E2-3339 (or E2-3371) we would have improved four rooms altogether, created greater consistency within rooms, and taken the first step towards being able to support Windows 95 by upgrading one room to Pentiums.

Since each new machine will have to last for many years, we should make sure we get machines that are powerful enough (in terms of processor and memory) that they will meet our needs through the year 2000 and beyond. Currently, a Pentium-133, 16 meg ram with a 1 gig hard drive should be a minimum.

Benefits of the Proposal(including number of department(s) and students affected):

The proposal would improve the computers in four of E. & C. E.s Watstar rooms. The new computers and the displaced 486s will be in our 24 hour access public rooms, so all Engineering students would have access. The other two rooms that would be upgraded from 286s are used by second and third year E&CE students. These rooms would now have Windows capable computers, which could lessen the loading on the two 24 hour rooms. These would be used by about 200 students per term.

Cost Breakdown of Proposal(including partial funding options if desired):

A Pentium P-133 with 16 meg ram, a 1 gig hard drive, large monitor, and network interface would currently cost about $2900. We are proposing to buy 10 machines for room E2-2363. The department will supply funds for some of these machines, and we are asking WEEF to help out by supplying some as well. We are suggesting that WEEF buy 3 computers for a total of $8700. Partial funding for anything from one machine ($2900) up to ten ($29,000) would be welcome.

Implementation Schedule of Project:

If department funds can be found in time, we would like to implement the room upgrade in August, so that it will be ready for the Fall term. If that proves too early, then the installation would have to be done in December or next April. This is a major lab renovation, and can only be done between terms.

Additional Information:

WEEF Proposal Form

Summer 96

Proposal Title: **Laser Printer for third floor Undergrad Labs**

Submitted by: Roger Sanderson *Phone* Number: Ext 6184

Position (Student, Professor, Organization, etc.): E. & C. E. Department Lab Technologist

Description of Proposal:

The increased use of the rooms E2-3339, 3347, 3348, and 3371 requires more use of the second floor printers. The three current printers in these labs are older dot matrix units. The graphics are poor, they tend to jam, and they use tractor feed paper that has become expensive due to less usage. It is proposed that these printers be replaced with one laser printer to be centrally located on the third floor of E2. It would be installed in a room with a slot in the door for access, similar to the printer in E2-2360. The proposed printer is an HP Laserjet 5 SiMX, with 12 mb memory, postscript, 600 dpi, 24 ppm and a duplex unit.

Benefits of the Proposal(including number of department(s) and students affected):

The proposal would improve the printer capabilities for courses using the third floor of E2. Students will save time by not having to run up and down the stairs to the existing printer. Output will be better (especially graphics) and the printer jams should be eliminated. Laboratory work can proceed faster, because of less waiting time for printouts. The printer would be installed so that the output is accessible 24 hours a day. Therefore the printer would benefit all E&CE students. The primary use would be for the courses ECE 231, 318, 332, 342, 380, 438, 439, 463, 475, 481, 485, and 486.

Cost Breakdown of Proposal(including partial funding options if desired):

Hewlett Packard HP 5 SiMX printer:	$5663.00
Duplex option for above:	$ 668.00
Taxes:	$ 665.00
Total:	$6996.00

Partial funding would be acceptable, with the E&CE department supplying the difference.

Implementation Schedule of Project:

We would like to install the printer in August, so that it will be ready for the Fall term. If that proves too early, then the installation would have to be done in December or next April. This is a major installation, and can only be done between terms.

Additional Information:

W E E F Proposal Form
Spring 1996

Proposal Title. Laser Printer acquisition for Systems Design Undergraduate Computing Facility.

Submitted by: D. Walsh (Systems Design). Phone Number: 2234

Position (Student, Professor, Organization, etc.): Staff, Date of Submission: July 3,1996.

Description of Proposal:

The Dept. of Systems Design is continuing to update and enhance its undergraduate computing facility. Systems Design has provided a line printer for use by our students for a number of years now, and at the beginning of June this printer died. We are seeking an upgrade from a line printer to a postscript laser printer but require assistance from WEEF since we have no budget for this item.

Benefits of the Proposal (including number and department [s] of students affected) :

The aquisition of a laser printer for our Systems Design WATSTAR system would accentuate our existing facility and off load some printing traffic from other WATSTAR laser printers.

The requested equipment will be used for course work by SYDE undergrads. The laser printer will be centrally located in the Systems Design Undergraduate Computing Facility (DASL Lab) in CPH 1335.

Cost Breakdown of Proposal (including partial funding options if desired):

Lexmark Optra Lxn+ 1200 dpi 8MB 16 ppm Postscript 500 sheet cassette

Can. $ 3013.00

Partial funding for requested equipment is also acceptable.

Implementation Schedule for Project:

If funds are approved, the laser printer will be installed this term.

WEEF Proposal Form

Summer 96

Proposal Title: Acquisition of Computing Resources

Submitted by: Chris Slater Phone Number: 725-6827

Position (Student, Professor, Organization, etc.): Student - WEEF Rep - Geo. Eng.

Description of Proposal:

1 New Pentium Workstation: workstation, 15" monitor, keyboard mouse, CD-Rom, all cabling & network card, software

Repair / Upgrade existing workstations: Add 8mes RAM to 486
Repair P-100 workstation

Benefits of the Proposal (including number of department(s) and students affected):

The approvement of this request will directly result in the enhanced computing capabilities available to all of the Geological Engineering students at the U of W. Since the computers are located in the Geo. Eng. 4th year study room, all Geo. Eng. students will have access to them. The extra computing resources is needed in order to ensure adequate power for the complex programs being run by the students.

Cost Breakdown of Proposal (including partial funding options if desired):

$3000 - new workstation, includes tax

$350 - 8 mes RAM

$500 - repair to existing workstation

Implementation Schedule for Project:

Full implementation w 97

Additional Information:

Would not object if funding was spread out over two terms ie 1/2 of money from Spring 96 and other 1/2 from Fall 96

Please submit to WEEF mailbox in the Office by July 3rd 96.

WEEF Proposal Form

Summer 96

Proposal Title: EQUIPMENT STUDENT MACHINE SHOP

Submitted by: M. KAPTEIN Phone Number: 3026

Position (Student, Professor, Organization, etc.): MANAGER E.M.S.

Description of Proposal:
The Student Machine Shop provides essential handson services for all undergraduate students either for core class courses or special projects. The shop is in need for small tool replacements and project students like the Formula SAE and others have expressed a need for a small sheet metal cutting and bending equipment.

Benefits of the Proposal (including number of department(s) and students affected):
All faculty undergraduate students.

Cost Breakdown of Proposal (including partial funding options if desired):

COST -	4 dial verniers and 2 1" micrometers	$300.00
-	2 3/8 drills ($90 each)	$180.00
-	~~30" handbrakes used~~	~~$1500.00~~
-	~~36" handshear~~	~~$1500.00~~

Implementation Schedule for Project:

Fall 1996

Additional Information:

Please submit to WEEF mailbox in the Orifice by July 3rd 96.

WEEF Proposal Form

Summer 96

Proposal Title: CCD CAMERA ELECTRONIC CLASSROOM

Submitted by: M. KAPTEIN   Phone Number: 3026

Position (Student, Professor, Organization, etc.):

Description of Proposal:

Mechanical Engineering is in the process of creating an electronic classroom in Room 2536, E1. We are presently altering the seating arrangement to accommodate the desk computers. The electronic classroom will have a large impact and will enhance the instruction capabilities. We are requesting funds to purchase a CCD camera for electronic display of instruction material.

Benefits of the Proposal (including number of department(s) and students affected):

Mechanical Engineering students and special teaching projects by other departments.

2B + 3B

Cost Breakdown of Proposal (including partial funding options if desired):

Sony DXC 930 camera head remote control, lens x 12 power supply and cables. $12,000.00

Dept part of / to 1/3 rd to 1/2.

Implementation Schedule for Project:

Additional Information:

Please submit to WEEF mailbox in the Orifice by July 3rd 96.

WEEF Proposal Form

Summer 96

Proposal Title: WATSTAR UPGRADE

Submitted by: M. KAPTEIN Phone Number: 3026

Position (Student, Professor, Organization, etc.): Director of Laboratories

Description of Proposal:

With WEEF funding and ME teaching funds the WATSTAR computing facility has been improved over the last years. Watstar Room 2103G, E3 which is also used for ME 262 project computing should be upgraded with 100 Mhz Cpu's, additional memory and fast access hard drives.

Benefits of the Proposal (including number of department(s) and students affected):

All students of ME 262 and ME 548 and all WATSTAR users. → # usr

Cost Breakdown of Proposal (including partial funding options if desired):

Ten memory upgrades ($140)	1400.00
Eight CPU upgrades to 130 MHz ($248)	1984.00
Eight - 1 GB hard drive ($300)	2400.00 → # priority

Implementation Schedule for Project:

ASAP

Additional Information:

Please submit to WEEF mailbox in the Orifice by July 3rd 96.

WEEF Proposal Form

SUMMER 96

Proposal Title: MATERIALS TESTING MACHINE

Submitted by: M.KAPTEIN Phone Number: 3026

Position (Student, Professor, Organization, etc.):

Description of Proposal:

Mechanical Engineering students take two material science courses, ME 215 and ME 330. These courses have a significant laboratory component. The students use for one of their laboratory assignments, a Material Testing Machine, for evaluating strength and structure of metallic and non-metallic materials. We have to replace an Instrom (Materials Testing Machine) which is 31 years old and can no longer be effectively maintained.

1ST Year course now

Benefits of the Proposal (including number of department(s), students affected, and course numbers):

All ME students taking ME 215, ME 330 an equivalent workload of 4 terms, ME 482 student projects. In addition, Civil Engineering have been using the Mechanical facilities three terms a year for CIV 265.

Cost Breakdown of Proposal (including partial funding options if desired):

1400.00 for two

We are requesting funding support of $7000.00 for two terms and ME Department will match any WEEF donated to this essential undergraduate teaching function. The total cost of the Test Machine is $28,600.00.

Implementation Schedule for Project:

FALL 1996

Additional Information:

Please submit to WEEF mailbox in the Orifice by March 1, 96. Contact WEEF at CPH 1323C x4893, Endowment@Helix.uwaterloo.ca

WEEF Proposal Form

Summer 96

Proposal Title: ~~XXX~~ Additional Printers

Submitted by: IB Mechgyvers (rep: Kristine Martin) Phone Number: 664-3410.

Position (Student, Professor, Organization, etc.): WEEF rep.

Description of Proposal:

- additional laser printers in ENGINEERING and/or printer in Mech room.

Benefits of the Proposal (including number of department(s) and students affected):

- benefit for all engineering students (students finding printers (laser) often stacked up when working on assignments)
- as for printer for Mech room: benefit for Mech students in addition to all ENG. students.

Cost Breakdown of Proposal (including partial funding options if desired):

estimate ?? $5,000

Implementation Schedule for Project:

- when convenient

Additional Information:

Please submit to WEEF mailbox in the Office by July 3rd 96.

UNIVERSITY OF WATERLOO

MIDNIGHT SUN
SOLAR RACE TEAM

Proposal Title: Data logger for Midnight Sun Solar Race Car Project
Submitted by: Gregory Bridgett - Project Manager **Phone Number**: x2978

Description of Proposal:
The Fluke Hydra is a 20-channel data logger, equipped with two 9600 baud radio modems. It is a high-precision measurement device that can monitor up to 20 different signals. It stores these values internally for later retrieval, or it can be hooked up via serial cable to a PC. This particular unit is equipped with two radio modems that allows a PC to be constantly downloading information. It was used in Midnight Sun III to provide telemetry information to strategists in a chase vehicle about vehicle performance. This equipment allowed us to obtain successful standings in two races (in both cases beating Western). Without the Hydra unit, the team would not be able to know the information about vehicle performance that is necessary to solar car racing. The unit is reliable and accurate, and could not easily be replaced. The regular cost of the unit is US$10000

Fluke Canada graciously donated the use of a Hydra Data logger to the Midnight Sun project for three years. That period ended at the end of April of 1996, at which time the unit was expected to be returned or purchased. At the request of the Midnight Sun Project, Fluke extended the loan for three months in order for this proposal to be submitted to WEEF.

Benefits of the Proposal:
The Midnight Sun Solar Car Project involves over 100 students from all departments of Engineering, as well as from numerous other university faculties (Science, Math/CS, Arts). The unit is used in student-initiated solar car research, such as in lead-acid battery characterisation, vehicle dynamics, solar cell performance, etc. The Fluke Hydra is a precision measure device that is more accurate than most available university equipment. The unit has a very long lifetime, and will most likely be used in every Midnight Sun project to come.

Cost Breakdown of the Proposal:
As stated earlier, the Fluke Hydra normally retails for US $10000. However, due to an outstanding relationship with Fluke Canada, they are willing to sell the unit and the radio modems for only CDN$3500. This is a significant saving for the project on a much required purchase, and an incredible investment opportunity. The project will require radio modems, which are typically worth $2000.

Implementation Schedule for the Project:
When WEEF provides the commitment for funding the unit, it will be purchased from Fluke Canada. At that point, current solar car research and experiments will continue without the need to find alternate measuring and logging equipment. If it can not be purchased, then current experiments must stop until alternate equipment is secured.

University of Waterloo, Systems Design Engineering, Waterloo, Ontario, N2L 3G1 (519) 885-1211

WEEF Proposal Form

Summer 96

Proposal Title: 1997 CASI FREE FLIGHT GLIDER TEAM

Submitted by: ROB RIPLEY Phone Number: (519) 821-4082 (EVENING ONLY)

Position (Student, Professor, Organization, etc.): MECHANICAL ENGINEERING STUDENT

Description of Proposal:

THE GLIDER TEAM REQUIRES FUNDING TO BEGIN THEIR 1997 GLIDER. MORE DURABLE COMPOSITE MATERIALS ARE REQUIRED FOR A SUCCESSFUL GLIDER. A FREEZER IS NEEDED TO STORE SOME COMPOSITE MATERIALS. TOOLS AND A RADIO CONTROL ARE ALSO NECESSARY THIS YEAR. THE COMPETITION INCLUDES A WRITTEN TECHNICAL REPORT, A PRESENTATION AND A FLIGHT COMPETITION TO CARRY PAYLOAD IN AN UNCONTROLLED GLIDER FOR A COMPETITIVE TIME PERIOD.

Benefits of the Proposal (including number of department(s) and students affected):

CURRENTLY 15 UW STUDENTS ARE INVOLVED IN THE PROJECT FROM ENGINEERING, MATH, SCIENCE, PHYSICS AND ARTS. ENTERING THE COMPETITION WILL GET SCHOOL RECOGNITION AND POSSIBLY THE CHANCE TO HOST THE 1998 COMPETITION. WEEF WILL GET ADVERTIZING AND ACKNOWLEDGEMENT. THE TOOLS, RADIO AND FREEZER WILL BECOME ASSETS TO THE FREE FLIGHT ORGANIZATION FOR FUTURE UW STUDENTS.

Cost Breakdown of Proposal (including partial funding options if desired):

RADIO CONTROL	B	$450
COMPETITION TEAM ENTRANCE FEES	A	$140
PRACTISE GLIDER (INCLUDES GLUE & COVERING)	A	$200
FREEZER (FOR COMPOSITE MATERIAL STORAGE) (USED)		$150
TOOLS (DREMEL/COROLESS DRILL, GLUE GUN, ETC.)	C	$320
MATERIALS (FIBREGLASS, EPOXY, NYLON/MYLAR/KEVLAR, ETC.)	D	$750
TOTAL		$2010

Implementation Schedule for Project:

R&D CURRENTLY UNDERWAY, FIRST PROTOTYPE DESIGN TO BE COMPLETED BY AUGUST/96. COMPETITION IS MAY, 1997.

Additional Information:

THE ANNUAL COMPETITION IS A CANADA WIDE EVENT FOR CANADIAN UNIVERSITIES. UW ENTERED THE 1996 CONTEST AND PLACED THIRD. IMPROVED MATERIALS ARE A MUST TO BE SUCCESSFUL IN 1997.
WE HAVE AN ENGINEERING FACULTY ADVISOR, PROF. GLENN HEPPLER
FOR MORE INFO, PLEASE CONTACT RCRIPLEY@NOVICE

Please submit to WEEF mailbox in the Orifice by July 3rd 96.

WEEF Proposal Form

Summer 96

Proposal Title: SAE Competition (Aero Design) Entry, Team B

Submitted by: Michael Wonnacott Phone Number: 886-7776

Position (Student, Professor, Organization, etc.): Students (5). MME

Description of Proposal:

SAE organizes an annual competition of cargo remote control model airplanes. The competition is judged based on the design and the performance of the airplane. Financing is required to build the model as well as to learn to fly remote control airplanes.

Benefits of the Proposal (including number of department(s) and students affected):

The benefits of the project include the learning experience for the team (5 students), the availability of major components (radio, motor, trainer airplane and its motor) for groups in future years, representation of the University of Waterloo at the competition.

Cost Breakdown of Proposal (including partial funding options if desired):

Building materials (carbon fibre, foam, special tools, adhesives, off-shelf components)	$1000
Competition (entry fees, travel to competition)	$500
TOTAL REQUESTED	$1500

Travel

Total budget 3100

Implementation Schedule for Project:

The SAE competition takes place at the end of April 1997. The exact date or location has not been determined yet. The team began working on the project at the beginning of this term and will continue through to April 1997

Additional Information:

There was no SAE Aero Design Team last year and as a result there is no equipment from last year that our team can use. This means that the expenses incurred by this year's team will be greater than those of future teams who will have some equipment available from SAE Aero Team 97.

Please submit to WEEF mailbox in the Orifice by July 3rd 96.

WEEF Proposal Form

Summer 96

Proposal Title: *SNOW FEAR* Concrete toboggan B Stream
Submitted by: Michelle Stinson, Co-chair SNOW FEAR concrete toboggan team
Phone Number: 886-7952
Position: Student, 4A Civil Engineering

Description of Proposal:

The Great Northern Concrete Toboggan Race is one of the largest annual student Civil Engineering events in Canada. The 1997 race will be taking place in Ottawa, Ontario. Our team is planning on upholding the tradition of excellence that has been set over the past few years. *Waterluge* won the best overall toboggan award in 1995, and *Sharctic* toboggan won the 3rd overall toboggan award in 1996. The 4A Civil Engineering class of 1997 consists of many students that have been contributing to WEEF since 1A.

Benefits of the Proposal:

The *SNOW FEAR* concrete toboggan team consists of at least 30 students from 4A Civil Engineering 'B' stream. We will be attending the race with our off stream team "*SNOW WARRIOR*" and creating a large "Waterloo presence". In the past most of Waterloo's teams have competed against each other, and a there was a great deal of animosity between the classes upon their return to campus. This year we have been coordinating the teams with similar uniforms, and similar marketing strategies so that we will be known as the group from Waterloo with two toboggans.

It is also our goal to educate the engineering department on what the concrete toboggan is all about. Many people know that SAE is the race car, and Midnight Sun is the solar car, but few people know what the Concrete Toboggan is all about, other than the fact that we sell burgers every Thursday at lunch. *SNOW FEAR* will try to educate the engineering department as to how we design the toboggan, and what kinds of categories we are judged on. We hope that with greater knowledge of the race we will be able to get support from our peers. By making a presence at such events as the Midnight Sun race and the Canada Day parade, we will educate the university and the public on what this competition is all about.

Cost Breakdown of the proposal:

We have estimated a $12,000 budget including costs for transportation, accommodation, entry fee, construction of the sled, uniforms and promotional materials. The request for $3000 in this proposal will go towards the entry fee of $100 for each of the 30 people on our team attending the race. This entry fee allows the team to participate in events hosted throughout the race and permits our toboggan to be displayed at the technical exposition.

Implementation Schedule for Project:

The toboggan is currently under the final stages of design. We will be testing concrete mix designs for the rest of the term, and it is anticipated that the construction of the toboggan will begin soon. The uniforms are being supplied by Marks Work Warehouse at a reduced rate, and our team is currently being fitted. Exact transportation and accommodation plans will be made closer to the date of the race.

Additional Information:

With the funding cuts that seem to be rampant across campus, it is becoming increasingly difficult to raise the money needed to participate in this race. Each of the team members has already contributed an initial fee of $20, and we expect to ask for an additional amount when we return to campus next term. We have been hosting fundraising events throughout the summer term, and have approached corporate sponsors on our work terms. Unfortunately, the initial response has been negative. The funding from WEEF would significantly help our project team in our efforts to get to Ottawa. Thank you in advance for your support.

WEEF Proposal Form

Summer 96

Proposal Title: 1997 MINI BAJA

Submitted by: DEVIN WARREN Phone Number: 884-4573

Position (Student, Professor, Organization, etc.): STUDENT

Description of Proposal:

THE SAE MINI-BAJA IS A STUDENT DESIGN COMPETITION. THE GOAL IS TO DESIGN AND BUILD AN INEXPENSIVE AND COMPETITIVE SINGLE SEAT OFF ROAD VEHICLE. THIS PROPOSAL IS FOR COMPONENTS TO THE DRIVETRAIN OF THE 97 CAR. THESE COMPONENTS ARE NEEDED TO REPLACE DAMAGED COMPONENTS AND TO IMPROVE THE DRIVETRAIN.

Benefits of the Proposal (including number of department(s) and students affected):

THERE ARE CURRENTLY 13 STUDENTS FROM 2 DEPARTMENTS ON THE TEAM. THIS IS THE LARGEST UW MINI-BAJA TEAM TO DATE AND WE WILL CONTINUE TO ACTIVELY RECRUIT MORE MEMBERS. THE NEW EQUIPMENT WILL REPLACE SOME DAMAGED PARTS AND ALLOW MUCH MORE FREEDOM TO DESIGN AN EFFECTIVE DRIVETRAIN

Cost Breakdown of Proposal (including partial funding options if desired):

CVT (COMET TORQ-A-VERTER)	300.00	3	
CV JOINTS	400.00	2	
DIFFERENTIAL	600.00	1	
SPROCKETS	50.00	4	
SPUR GEARS	50.00	5	
TOTAL	1400.00		

PARTIAL FUNDING IS ALSO ACCEPTABLE

Implementation Schedule for Project:

DRIVETRAIN DESIGNED BY SEPT 1
COMPONENTS CONSTRUCTED BY DEC 1

Additional Information:

ANY QUESTIONS OR INFORMATION CAN BE DIRECTED TO MYSELF OR CHRIS MITCHELL AT 745-3720

Please submit to WEEF mailbox in the Orifice by July 3rd 96.

WEEF Proposal Form

Summer 96

Proposal Title: Formula SAE '97

Submitted by: Albert Tseng Phone Number: ext.5904

Position (Student, Professor, Organization, etc.): Formula SAE 97

Description of Proposal:

Formula SAE is an annual design competition contested by approximately 100 universities from around the world. U of Waterloo has competed since 1987 and has done as well as fourth overall. Although the 1996 Team was disappointed with their top third of field finish this May, they were very successful, setting the fastest lap time for the main event. Equipped with the knowledge gained from the 1996 team, the 1997 team has set a goal of a top five place overall finish in next year's competition.

Benefits of the Proposal (including number of department(s) and students affected):

In previous years, each car has been taken apart for parts for the new car. One of the objectives of the 1997 team is to gather enough funds to keep the 1996 car intact. This would be beneficial for both the Formula SAE Program and the Faculty of Engineering. For the Formula SAE program, students will be able to learn from the '96 car, test new ideas, perform driver training, and promote the vehicle for sponsorship. For the Faculty of Engineering, the Formula SAE car represents one of the best public awareness tools available. The fully intact car has already been displayed at many events including the Kitchener/Waterloo Canada Day Celebrations where many elementary and high school students have asked questions about the car and the Engineering Program at U of Waterloo. Most of the successful US schools at the competition have a very strong history at the competition because of their ability to keep each car and thus learn from them and also attract the brightest students to their university.

There are 40 undergraduate engineering students from most of the engineering disciplines involved with the 1997 Formula SAE Team. These include 2nd to 4th year Mechanical, Systems, Civil, and Chemical engineering students.

Cost Breakdown of Proposal (including partial funding options if desired):

The following items will be used on the 1997 car in order to keep the 1996 car intact;

Turbocharger	$ 750
Intercooler	$ 335
Calipers	$ 220
CV Joints	$ 620
Wheels	$ 600
Shocks	$ 600
TOTAL	$ 3,125

Implementation Schedule for Project:

All parts will be purchased immediately and will be used in fabrication of the vehicle in August.

Additional Information:

The ability to learn from past cars is a definite advantage at the competition as shown by the successful schools. Every effort should be made to keep previous cars intact to help the University of Waterloo excel even further at the competition and at the same time gain recognition for the Faculty of Engineering.

Please submit to WEEF mailbox in the Orifice by July 3rd 96.