MASTER COPY

WEEF Proposals - Winter 1996

Item	Presented by	Department/Organization	Amount
Ergonomic Keyboards for LEVER room	Mark Waschkowski	Engineering Computing	$2,400
Student LCD Projector	Stephen Kingsley-Jones	Engineering Society	$7,740
Environmental Engineering Lab	G.E. Schnieder	Env E	$5,000
2 PC Pentium-150's	Guenther Metzker	Systems	$7,547
Chem Lab Upgrade	P. Silveston	Chemical	$9,400
Flowsensors and meters	R. Frankle	Chemical	$2,224
Magnetic Flowmeter	R. Frankle	Chemical	$4,502
Microbiological Incubator	Scharer & Legge	Chemical	$2,000
Material Testing Machine	M. Kaptein	Mechanical	$7,000
18 local bus video cards	M. Kaptein	Mechanical	$1,350
10 memory upgrades	M. Kaptein	Mechanical	$2,550
8 CPU upgrades to 100MHz	M. Kaptein	Mechanical	$1,984
10 1 GB hard drives	M. Kaptein	Mechanical	$3,140
Memory upgrade	Ralph Korchesky	Civil	$7,920
Monitor upgrade	Ralph Korchesky	Civil	$8,250
Fluids Lab	Terry Ridgway	Civil	$3,100
Incubator	Bruce Stickney	Civil	$4,725
UV/VIS Spectrophotometer	Bruce Stickney	Civil	$3,202
Drying Oven	Bruce Stickney	Civil	$4,489
Sparc server 20/50	Bernie Roehl	E & CE	$5,949
Memory Upgrade	Bernie Roehl	E & CE	$3,017
Oscilloscope	Bill Ott	E & CE	$3,400
Signal Generators	Bill Ott	E & CE	$1,160
1 GB Harddrive	Paul McKone/Eric Engelke	Engineering Computing	$6,240
16 Meg RAM	Paul McKone/Eric Engelke	Engineering Computing	$16,000
17" colour monitors	Paul McKone/Eric Engelke	Engineering Computing	$16,480
LEGO DATA TECHNIC	Bill Baer	ESQ	$4,691
Upgrade to Chem Eng Watstar rooms	David Ludberg	Chem Eng student	$16,000
Computer Usage & Data Storage	Ali Esmaili/Jim Sollen	XRCC/Chem. Eng.	$790
Entrance Fee, Design, Construction	Cory Zurell	Concrete Toboggan '97	$2,500
Computer OR rims & tires OR manuals	Dave Walsh	Midnight Sun	~~$6~~,000
Conference entry fee + costs	~~Leonard Damiani~~	NASTT	$500
Travel & Accommodations cost	Howard Chan	CSME/ASME/SAE	$1,300
Parts for aircraft	Kyle Schmidt	SAE Aero Project	$1,784
Debating Competition Entry Fees	Tim Burns	Debating/Public Speak.	$500
Parts for car	Steven Peplinski	SAE Mini Baja	$2,000
Parts for car	Todd Malloy	Formula SAE '96	$3,365
Free Flight glider	CASI Free Flight Team	Free Flight Glider	3105
		TOTAL	$178,199

$181,304

WEEF Proposal Form

Winter 96

Proposal Title: Ergonomic keyboards for Lever

Submitted by: Mark Waschkowski Phone Number: 747-9026

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

Description of Proposal:

12 ergonomic keyboards with integrated trackpad. Used to help prevent carpal tunnel syndrome + improve cursor control.

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

Any people using the lever room.

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

$200 x 12 = $2400

Partial → 6 keyboards

Implementation Schedule for Project:

Immediatly

Additional Information:

Current keyboards can be transferred to older systems.

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

Winter 96

Proposal Title: Student LCD Projector
Submitted by: Stephen Kingsley-Jones **Phone Number:** 886-3137
Position: Student

Description of Proposal:
An LCD projector would be made available for student use and administered by the Engineering Society. It would be loaned in conjunction with the Notebook computer, previously purchased by WEEF (Summer '95), as a complete presentation package. Students would book this package with the Engineering Society ahead of time and utilize it for class presentations, competitions and WEEF proposals. This would be a service provided by the Engineering Society to Engineering Students.

Benefits of Proposal:
All Engineering students would be able to take advantage of this service. Its specific uses would be for **4th year presentations** (all disciplines), **work report presentations** (fast becoming mandatory in many departments), **Engineering Competitions** (Ontario Engineering Competition, Canadian Engineering Competition, etc.). Some courses require presentations earlier than 4th year in both Systems Design and Civil Engineering, as well as many elective courses taken by Engineers across campus.
Fundamentally, it is vital that Engineering students develop presentation skills and this projector is a critical tool in preparing students for the workforce.

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

Sharp Model XG-E650UB:	$6729.90
PST & GST	$1009.49
Total	**$7739.39**

Ideally the WEEF Would provide total funding.
In the case that the WEEF is unable to provide total funding, the two Engineering Societies have been solicited to provide $1500 each. Thus, if WEEF cannot provide $7739.39, if it could provide **$4739.39 or more**, this project would still be feasible.
It should be noted that the Engineering Society will be responsible for all maintenance of this service and its administration, regardless of how it is purchased.

(Note: Of the many quotes solicited, EDCOM Multimedia provided the best price at a special educational rate, the nearest competitor for a similar product was $11,000+tax).

Implementation Schedule for Project:
Purchase Projector as soon as possible. Potentially made available for presentations in late March, but early May at the latest (depending upon delivery times).

Additional Information:
Sharp XG-E650UB specifications: 16 Million Colour Computer/Video LCD, Portable, Built in Audio Amplifier and Speaker, 150" max Screen Size.

University of Waterloo

Office of the Associate Dean
Undergraduate Studies
Faculty of Engineering

Waterloo, Ontario, Canada
N2L 3G1

519/888-4761
Telex 069-55259
Fax 519/725-9970

Memorandum

To: Waterloo Engineering Endowment Foundation
c/o Engineering Society

From: G.E. Schneider
Associate Dean of Engineering, Undergraduate Studies
Chair, Environmental Engineering Board

Date: February 20, 1996

Subject: Proposal to WEEF for the Winter 1996 competition - Environmental Engineering

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The Environmental Engineering programs (Chemical and Civil branches) are new programs with classes currently progressing through their studies. In order to mount these new programs, funds are required for the purchase of laboratory equipment which is not available from existing sources. Both the Civil and Chemical branch Environmental Engineering programs will use this equipment in a laboratory-intensive course, ENV E 330 - Lab Analysis and Field Sampling Techniques (Civil branch), and ENV E 331 - Instrumentation and Analysis methods (Chemical branch). There is a strong element of commonality between these two courses.

The equipment requirements have been prioritized into a high priority "A" list, and a lower priority "B" list; the A list is attached to this proposal and totals $247,000 while the B list, not attached, totals $207,000. The A list is a list of equipment deemed absolutely necessary to mount the program and its associated laboratory experiments.

The Faculty has been actively attempting to collect the necessary funds. To date, we have accumulated $210,000, leaving a shortfall of $37,000 for the A list equipment. The sources of funds collected thus far is presented below:

Chemical Engineering Department	$25,000
Civil Engineering Department	$25,000
Dean of Engineering	$58,613
Allocated Donations from Parents	$60,000
Academic Development Fund	$16,387
Teaching Equipment Fund	$25,000
WEEF Fall 1995	$ 5,000
Total	$215,000

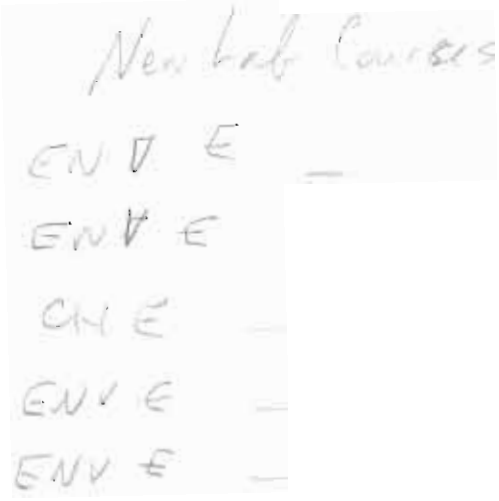
The support of the Environmental Engineering program initiative, I believe, is an excellent project to be supported by WEEF: it is a new initiative; it and its graduates are needed by society; through both branches, both the treatment of environmental problems and their prevention is addressed; the request is of a capital equipment nature for which the equipment will be used extensively into the future; and the request is of a 'one off' nature, in the spirit of *establishing* the program.

I appreciate your consideration of this request and would appreciate any contributions you might be able to make to the remaining $32,000 required to complete the funding of the list A equipment.

If you have any questions concerning this request, please do not hesitate to contact me.

G.E. Schneider

G.E. Schneider
Associate Dean of Engineering
Undergraduate Studies
GES:1142



Environmental Engineering
Equipment List

Item		Cost
ICP Plasma Emission Analyzer (this item was added back on to the list)		$ 75,000
Hach water quality analyzer (3 @ $5,000)		$ 15,000
Total Organic Carbon Analyzer (It was suggested that this item be given priority over the T.O.X. at this time)		$ 35,000
Gas Chromatograph (FID and ECD detectors)		$ 35,000
UV Visible Spectrometer		$ 20,000
	Sub-total	$180,000
Other small items		$ 52,000
EnvE 275 requirements		$ 15,000
	Total	**$247,000**

W E E F Proposal Form
Winter 1996

Proposal Title. Improvements of the Dept. of Systems Design teaching Laboratories.

Submitted by: G. Metzker (representant of Systems Design). Phone Number: 5760

Position (Student, Professor, Organization, etc.): Staff, Date of Submission: Feb.28,1996.

Description of Proposal:

The Dept. of Systems Design is continuing to update and enhance the teaching Laboratory and its various components as the relate to the specific laboratory courses.

SYDE 192, Digital Logic:
SYDE 292, Analog Signals and Systems:
SYDE 351, Control Systems

The Department is in the process of upgrading the computing resources for the "Workstations" (see Addendum) and have received a personal gift from one of our Systems Design Engineering graduate, (Year of 1984) towards this goal.
We are in need of additional funds to fully furnish all eight (8) Workstations and are hereby asking for the funding of two Workstation Platform (Pentium 150 Mhz). The upgrading of the computers is necessary for the upcoming SYDE 192 laboratory course.
We are also negotiating for free CAD software for the SYDE 192 Digital logic course,which will require as a minimum, a Pentium 150 Mhz with a large HD, CD-Rom and 32 MB of memory. The value of the CAD software is estimated to be in the tens of thousands in US dollars, a substantial sum not to be dismissed.

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

The requested equipment will be used in the Systems Design undergraduate Laboratory for all SYDE lab courses (SYDE 192, SYDE 292, SYDE 352) and workshops (SYDE 161, SYDE 361, SYDE 461, 462,).

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

2 (two) PC- Pentium 150 Mhz Platform, 1GbHD, CD-Rom and 32 MB of memory with data acquisition and networking capabilities.
(Data acquisition modules to be purchased by the department.)
Cost for both Can. $ 7546.80

Partial funding for requested equipment is also acceptable.

Implementation Schedule for Project:

If funds are approved, some or all of these components must be put in place for theSpring term.

Department of Systems Design Engineering
Teaching laboratory
Laboratory Infrastructure, (Workstation).

The Department of Systems Design Engineering uses a common "Workstation" concept for all three undergraduate laboratories courses, which are part of the core curriculum; (SD192 - Digital Logic; SD292 - Signals and Systems; and SD352 - Control Systems).
"A workstation encompasses all the various electronic instruments, a computer workstation and the relevant experimental apparatus and components".

These workstations and the associated peripherals form the backbone for the three laboratory courses. The represent a major part of the hands-on learning experience and are designed to stimulate learning by first hand experience for our undergraduate students.
There are eight (8) workstations which can accommodate up to a maximum of 96 students each term and laboratory sessions are run five days a week (one day is normally used to accommodate holidays or lecture conflicts and make-up time).

These workstations were originally assembled in 1978 and have been upgraded, expanded and new experiments integrated into the course contents on a continuing basis.
A prime example are the new experiments described below, for which WEEF has generously contributed in the previous term.
"New experiments for the fall term,(SD 292)."
The new experiments to be integrated into the course contents this term consist of EPAC (Electrically Programmable Analog Circuit) elements, electro-mechanical and electrical transducers and the appropriate software.(Windows based)
These new experiments embody the concepts of analog multiplexing; amplification; signal conditioning; sampling and filtering using the new EPAC devices.

In late 1989 the department purchased NeXT computers for the laboratory workstation. Although these workstation have performed venerable and are well received by our students, a lack of suitably interfaces as well as software has made these workstation arduous to use. Maintenance and spare parts have also become a problem with NeXT platforms. These workstation are now into their 6th year.
With the advent of windows operating systems , ie (Microsoft Windows) and a proliferation of more suitable application software specifically for laboratories and teaching, ie (EPAC), we have a tremendous opportunity to put us into the forefront of technology.
Since major upgrading of hardware is only possible ever five to seven years, the selection of up to date components is ever so critical.
We are very greatfull for the support that WEEF has given the Dept. in the past and hope that WEEF will consider any future requests positively.

The improvement in the quality of the laboratory activities is a longer-term commitment by the Department of Systems Design.

Weef Proposal Form

Winter 96

Proposal Title: ChE 524 Lab Upgrade

Submitted by: Prof. P. Silveston (x2154), Prof. R.R. Hudgins, Prof. H. Budman, Jeff Dyck (Graduate Student x3824)

Description of Proposal:

Upgrade ChE 040 Lab, Periodic Operation Experiment equipment currently under construction to allow for use in the ChE 524 - Process Control Lab course. This will be done through the addition of mass flowmeters and a data acquisition/control system.

Benefits of Proposal:

This upgrade will enhance the educational value of the ChE 524 - Process Control Lab course. These upgrades will allow students to experiment with multivariant control on a complex autonomously oscillating catalyzed chemical system.

Cost Breakdown:

3 Mass Flowmeters	$3200
Flowmeter Controller	$2500
Data Acquisition and Controller Boards (for 5 thermocouples/0-5V output)	$ 800
Labtech Notebook Software	$ 200
Designing, Building, Testing and Documentation	$2700
Total:	**$9400**

Implementation Schedule:

Built and tested by December 1996, ready for use in the W97 term.

Proposal Title: Flowmeters

Submitted by: R. Frankle (Dr. R. Huang) Phone Number: 6161

Position (Student, Professor, Organization, etc.): Dr. R. Huang Ext 3409 R.H.

Description of Proposal:

Install Flwsensors with digital readouts into existing Tubular Flow Experiment in the Unit operation Lab CHEM ENG 040

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

More accurate Flowmeasurements of two liquid streams is needed to produce good results, which can be obtained with flowsensors.

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

Omega Engineering Flowsensors and meters

1 pc FTB 601		$650.-
1 pc FTB 602		$650.-
2 pcs DPF 78	$462 each	$924.-

TOTAL: $2224 -

MARCH 1, '96

R.H.

Implementation Schedule for Project:

A.S.A.P. upon receipt of sensors

Additional Information:

Please submit to WEEF mailbox in the Orifice by March 1, 96. Contact WEEF at CPH 1322C x4893, Endowment@Helix.uwaterloo.ca

WEEF Proposal Form

Winter 96

Proposal Title: Magnetic Flowmeter

Submitted by: R. Frankle Phone Number: 6161

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

Description of Proposal:

Install a Flowmeter into existing Non-Newtonian Flow Behavior experiment in the Fluids Lab for CHEM ENG 025 - E1.

Presently the Flwo is measured by collecting in a beaker, weighing and timing.

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

Simplified operation of the experiment by direct Flow measurement.

Approximately 40 students per term would benefit.

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

See attached quotation from Omega Engineering

1 pc FMG 705, 1 pc DPF 64 needed $450Z

$4,132 $370

Implementation Schedule for Project:

To be installed during Winter-Spring term 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

>>>>>>>> QUOTATION <<<<<<<<

OMEGA CANADA ,INC.
976 Bergar Street, Laval, Quebec H7L 5A1
(514)856-6928 FAX (514)856-6886

UNIV OF WATERLOO
FACULTY OF ENGINEERING
DEPARTMENT OF CHEM ENGR
WATERLOO, ONTARIO
CANADA CD N2L 3G1
FAX To R FRANKLE
FAX No. (519)746-4979

Date 10/13/95
Quote No. Q510979074
Your No. R FRANKLE

In response to your inquiry we are pleased to submit the following:
(Terms) NET 30 Pending credit approval (F.O.B.) LAVAL

Item No.	Qty	Description	Est. Ship Date A.R.O.	Net Unit Price	Total Amount
1)	1	FMG-705 WAFER MAG FLOWMETER	8 Week	4,132.00 EA	4,132.00
2)	1	FMG-710 WAFER MAG FLOWMETER	8 Week	4,132.00 EA	4,132.00
3)	2	DPF64 METER W/2 SEP. 10A SPDT RELAYS	5 Week	370.00 EA	740.00

4,132. –

370. –

THIS QUOTATION IS VALID FOR 30 DAYS

TOTAL AMT 9,004.00 $ 4.502

Please refer to the QUOTE# Q510979074
when placing this on order.

FAX From FRANK ROSSI

Omega Canada, Inc. offers this quotation in accordance with published terms, conditions, limited liability, and warranty statements as reflected in our handbooks. Omega Canada cannot be held responsible for customer imposed requirements unless agreed to in writing in the body of this quotation.

WEEF Proposal Form

Winter 96

Proposal Title: MICROBIOLOGICAL INCUBATOR FOR ChE032

Submitted by: Scharer and Legge Phone Number: X 6728/2703

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

Description of Proposal:

Funding for a microbiological incubator is requested for the laboratory component of ChE 032 (Introductory Biotechnology). Incubators which were constructed by the Laboratory Technician over 15 years ago are presently employed. These incubators are fabricated out of wood and Plexiglas and are not ideal for the cultivation of microorganisms used in this laboratory. Problems with these incubators include 1) a flow through heating system is used which dries out the media; 2) the incubators have limited capacity and this poses a problem for accommodating the larger laboratory sections; 3) incubators are not uniformly heated and 4) the incubators offer limited containment. An ideal replacement would be a standard microbiological incubator with a capacity of around 0.16 m^3, a stainless-steel chamber and an operating temperature range between 30 - 60° C.

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

The laboratory technician for ChE 032 has been living with this problem for the past 9 years. Data collected by past students has been affected due to the quality of the incubators. The scale and number of replicates possible in this laboratory has been limited due to the quality of the available incubators. These incubators will be even less suited to the new labs being developed for the Chemical Branch of the new Environmental Engineering program. When single streaming is in place labs will run in the winter and summer terms and will consist of approximately 60 students.

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

$2000 is requested for the purchase of a microbiological incubator. Units suitable for this purpose are described in the attachments from Fisher Scientific and Canlab. (Model 655D @ $1676 or Model J1635-5 @ $2075).

Implementation Schedule for Project:

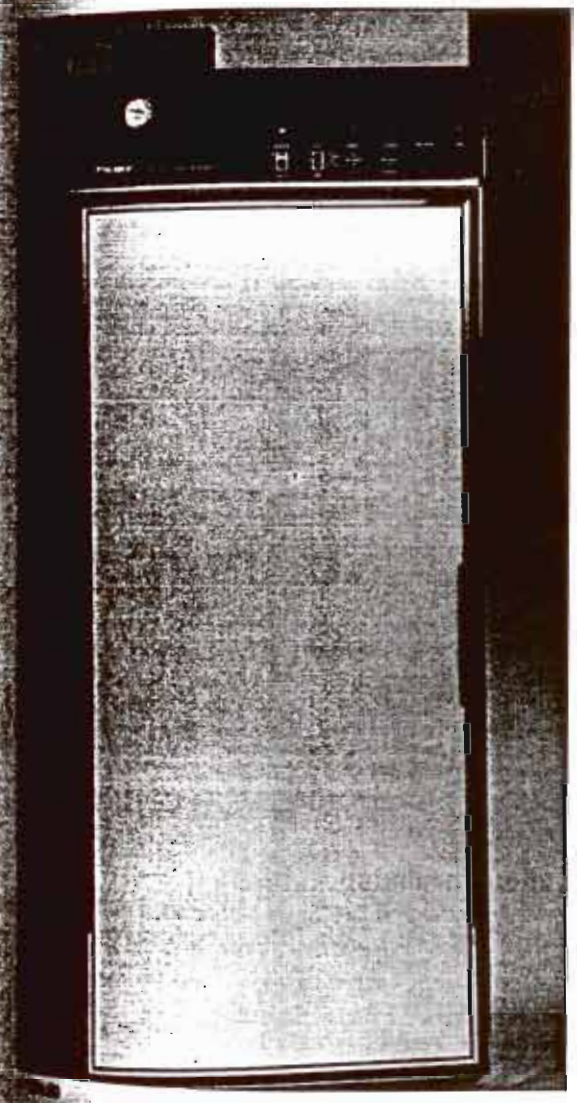
Laboratories are in place which would use this incubator immediately.

Additional Information:

Please submit to WEEF mailbox in the Orifice by March 1, 96. Contact WEEF at CPH 1323C x 4893, Endowment@Helix.uwaterloo.ca

	±0.2°C
at 20°C	10 min.
(W x H x D)	584 x 1346 x 673 mm
	813 x 1854 x 711 mm
ements	115V, 60 Hz, 1058 W, 9.2 A
	148 kg

.....Each **$5816.27**



...ersion™ Large Capacity Extended ...perature Incubator

...capacity
...taining 4-position heat control
...Scientific 31034) Solid door unit has mechanical convection ...temperature uniformity. Fan-cooled turbo blower air circula... ...optimum temperature uniformity throughout the interior. Temperature setting via reliable hydraulic thermostat can be verified on the built-in dial thermometer. Protection of incubated materials is provided by the back-up hi-limit hydraulic thermostat. Switch turns off compressor if above ambient temperatures are required. Internal duplex electrical outlet. Six shelves with a total area of 30 sq. ft. and adjustable on ½" centres are supplied. Complete with dial thermometer, 0°C to 100°C.

Specifications

Capacity	30 cu. ft.
Temperature	
Range	5°C to 70°C
Uniformity	±0.4° at 5°C, ±0.5° at 25°C, ±0.5° at 37°C
Sensitivity	±0.2°C
Recovery time in minutes	10 at 5°C, 7 at 10°C, 11 at 37°C
Dimensions (W x D x H)	
Chamber	762 x 610 x 1829 mm
Exterior	914 x 762 x 2362 mm
Power requirements	120V, 60 Hz, 2150 W, 17.9 A
Ship. wt.	345 kg

J1790-30 .....Each **$7945.58**

Imperial III Standard Incubators

- Excellent temperature uniformity and control

J1635-2

(Lab-Line) Enjoy the advantages of radiant warm wall heat with convenience of LED temperature display. Temperature is controlled by hydraulic thermostat. Independent hi-limit thermostat provides overtemperature protection. Recovery time is less than 5 min. to reach 95% of 37°C. Heating elements are fastened directly to outside of work chamber eliminating hazards associated with exposed wire heaters. Valuable work space in chamber is not taken up by heating elements and heat distribution is superior to conventional gravity convected incubators.

Easy-to-read LED continuously displays chamber temperature. All controls and display are at eye level. Electrical outlet is provided on J1635-5. Two outlets are on J1635-10 to allow use of accessory equipment in incubator. Interior is fabricated of corrosion-resistant aluminum. Chrome-plated, no-tip shelves are adjustable on ½" centres. Fibreglass insulated body and outer door prevent heat loss. Tempered glass inner door allows visual inspection of samples without affecting chamber environment. Complete with resettable circuit breaker. 120V units are supplied with line cord and moulded plug.

Cat. No.	J1635-2	J1635-5	J1635-10
Mfr. No.	302	305	311
Capacity	2.6 cu. ft.	5.2 cu. ft.	10.5 cu. ft.
Temperature			
Range	35°-65°C	35°-65°C	35°-65°C
Control	±0.5°C	0.5°C	±0.5°C
Uniformity	±0.9°C	0.9°C	±0.9°C
Shelves			
No. supplied	2	3	6
Total area	2.8 sq. ft	6.9 sq. ft.	13.8 cu. ft.

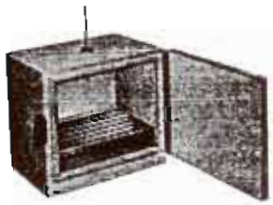
— continued

Imperial III Standard Incubators continued

Dimensions (W x D x H)			
Chamber (mm)	330 x 431 x 508	431 x 533 x 635	940 x 533 x 635
Exterior (mm)	406 x 533 x 749	508 x 635 x 876	1016 x 635 x 876
Power requirements	120V, 50/60 Hz 250 W	120V, 50/60 Hz 400 W	120V, 50/60 Hz 600 W
Ship. wt.	62.5 kg	84 kg	97.5 kg
Each	**$1808.62**	**$2074.80**	**$3427.20**

Small Imperial Incubator

- Compact size
- Economically priced



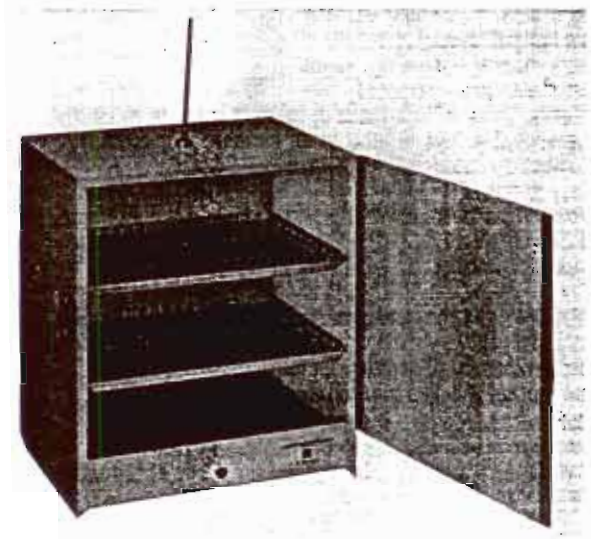
J1600

(Lab-Line 100) For applications in biochemistry, bacteriology, hematology, etc. May be used in multiple or small numbers of incubations. Thermo-wall heating eliminates hazards of exposed elements. An adjustable, bimetallic thermostat controls temperature. Fibreglass insulation throughout cabinet. Aluminum interior resists rust and corrosion. Complete with solid door and enamelled exterior.

Specifications

Capacity	0.3 cu. ft.
Temperature range	Ambient to 40°C
Sensitivity	±1.0°C
Dimensions (W x D x H)	
Chamber	254 x 178 x 203 mm
Overall	305 x 228 x 292 mm
Bottom shelf (W x D)	254 x 178 mm
Power requirements	120V, 50/60 Hz, 60 W
Ship. wt.	6.8 kg

J1600.....Each **$399.00**



J1612

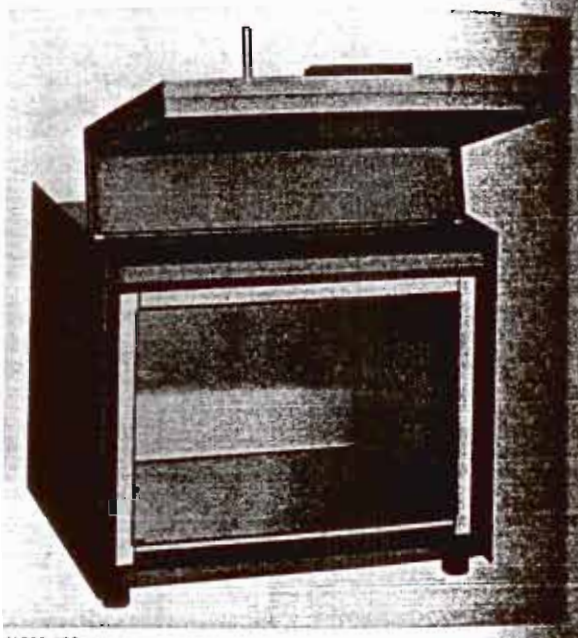
Classroom Incubator

(Lab-Line 150) Ideally suited for the educational market—not recommended for clinical applications. Economical, compact incubator provides a controlled environment for the study of microorganisms, [illegible] tebrates and chick embryos. Metal sheathed heaters eliminate hazards of open-wire internal heaters while providing uniform [illegible] throughout the chamber. Adjustable, bimetallic thermostat [illegible] temperature to 45°C. Unit has enamel steel housing. Perforated [illegible] num shelves provide ample storage space. Supplied with thermometer and three wire line cord with moulded plug.

Specifications

Temperature range	Ambient to 45°C
Dimensions (W x D x H)	
Chamber	406 x 330 x 381 mm
Overall	413 x 343 x 457 mm
Shelf (W x D)	381 x 305 mm (2 inches)
Power requirements	120V, 50/60 Hz
Ship. wt.	15.4 kg

J1612.....Each $[illegible]



J1600-100

Culture Incubator

(Barnstead/Thermolyne I37925) For bacteriological cultures, [illegible] some cultures, drying of stained microscope slides, incubation of [illegible] samples, tissue culturing, blood cultures and egg incubation. Requires minimal space. Unloaded uniformity of ±0.4°C at 30°C. Adjustable operating range of 30°C to 65°C. Heating element is located on [illegible] wall which allows petri dishes to be placed directly on the [illegible] without overheating. Load capacity of 132 60 x 15 mm Petri dishes. Aluminum chamber with one removable shelf. Swing-up door provides full chamber access. Partial immersion thermometer is supplied and can be inserted through a port on the top of the incubator.

Specifications

Dimensions (W x H x D)	
Chamber	254 x 171 x [illegible]
Overall	315 x 273 x [illegible]
Power requirements	120V, 0.4 A, 50 W
Weight	7.7 kg

J1600-100.....Each $[illegible]

Fisher Isotemp* 600 Series Standard Lab Incubators

- *Digital readout*
- *Gravity convection*
- *Big-capacity models with low price tags*

Choice of 0.09 and 0.16m³ (3.1 and 5.5 cu. ft.) capacities. Both with steady, unobstructed airflow and efficient heating. The perfect choices for reliable day-to-day operation in a variety of uses. Drying and staining of slides, paraffin embedding, tissue culture work, incubation of antibody tests. Excellent for microbiological determinations, crystallization studies and incubation of hydroxysteroids.

Heat from 30° to 60°C. Sensitive hydraulic thermostat control. Responds to less than ±0.5°C change. With uniformity better than ±0.7°C. Just set the 20-division selector and observe the digital display, then fine-tune to set the operating temperature.

Below-the-chamber control panel. Means these models need less bench space. Illuminated POWER indicator tells when power's on, HEAT cycle lamp indicates heater's in operation. Built-in Safety-Sentinel* light indicates when back-up system is working.

Double-door design. Tight-fitting, transparent tempered glass inner door lets you view specimens without disturbing chamber temperature. A neoprene gasket and positive latch ensure a tight seal.

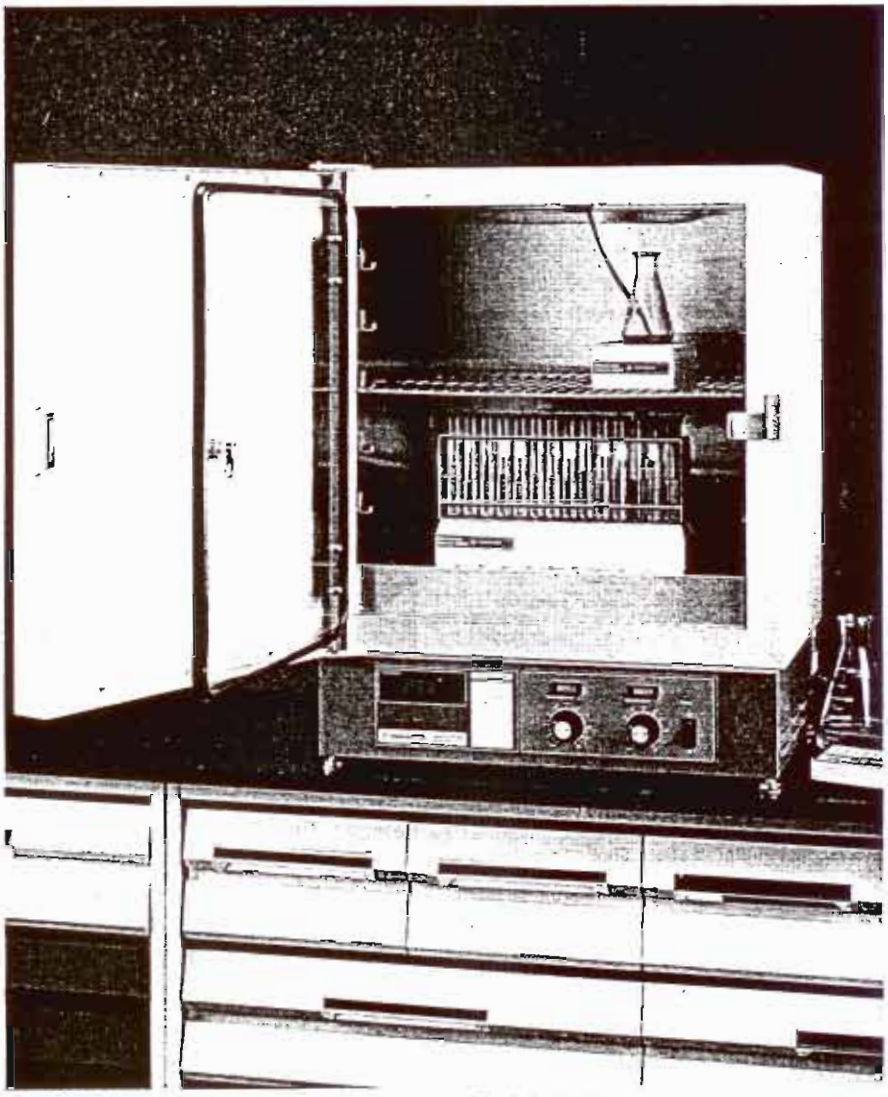
Outer door has magnetic latch for fingertip handling. Both doors open 180° for unhindered access. The inner door recesses into the outer door for full-width loading.

Stainless-steel chamber. Easy to clean. Resists corrosion and contamination.

Efficient Insulation. Thick blanket of high-efficiency insulation completely surrounds entire chamber. Improves system equilibrium — lowers energy costs.

Low watt-density heating elements. Open-coil elements operate at low power for longer life.

Sturdy, chrome-plated steel shelf. Shelf load capacity: 13.6kg (30 lb.). Five sets of brackets let you divide the chamber into compartments. Incubator comes with one no-tip shelf. (Order additional shelves separately.)



Specifications:

Model No.	630D	655D
Range	30° to 60°C	30° to 60°C
Uniformity	±1.0°C	±1.5°C
Ventilation Rate (per ASTM E145)	20 exchanges per hour	12 exchanges per hour
Capacity	0.09m³ (3.1 cu. ft.)	0.16m³ (5.5 cu. ft.)
Chamber D x W x H	41x48x46cm (16x19x18")	51x61x51cm (20x24x20")
Shelf Area	1931cm² (299 sq. in.)	3058cm² (474 sq. in.)
Cabinet L x W x H	50x57x72cm (20x23x28")	60x70x77cm (24x28x30½")
Shp. Wt.	34kg (75 lb.)	46kg (101 lb.)

Ordering Information:

Isotemp 600 Series Incubators. Heavy-gauge steel cabinet with tough, baked-on enamel finish. One shelf, line cord and plug. With adjustable leveling legs. All models 50/60Hz.

Model 630D

0.09m³ (3.1 cu. ft.) capacity.

Elec. Requirements	Cat. No.	Each
115V, 2.3A	11-683-630D	1497.30

Model 655D

0.16m³ (5.5 cu. ft.) capacity.

Elec. Requirements	Cat. No.	Each
115V, 2.3A	11-683-655D	1676.32

Extra Shelves

For Incubator Model No.	Cat. No.	Each
630D	13-245-30S	30.00
655D	13-245-55S	51.21

Red Catalogue numbers offer best delivery — see page 1 for details.

WEEF Proposal Form

Winter 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.

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):

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

Winter 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 1 1/2 years. However the 17" monitors are driven by 512 K memory boards, thus restricting their capabilities.

Watstar Rm 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), students affected, and course numbers):

All students ME 262 and ME 548 and all WATSTAR users.

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

Priority

Eighteen local bus video cards	($75)	$ 1350.00
Ten memory upgrades	($255)	$ 2550.00
Eight CPU upgrades to 100 Mhz	($248)	$ 1984.00
Ten 1 GB hard drive	($314)	$ 3140.00

Implementation Schedule for Project:

ASAP

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 FUNDING PROPOSALS WINTER 1996
DEPARTMENT OF CIVIL ENGINEERING
SUMMARY (Usage/Cost)

Area	Equipment	Amount	Course(s)	Students P.A.
WATSTAR Computing Facility	Memory Upgrades	$7,920	All Civil Undergraduates and students from other Departments taking Civil courses	750
	Monitor Upgrades	$8,250	All Civil Undergraduates and students from other Departments taking Civil courses	750
Fluids Lab	Fluids Experiment (Civ.E. 280/Chem.Eng. 025)	$3,100	Civ.E. 280/Chem Eng. 025 (Fluid Mechanics and Thermal Sciences)	200
Water Resources/ Environmental Engineering Labs	Incubator	$4,725	Civ.E. 375 (Water Quality Engineering);Civ.E. 472 (Wastewater Treatment);Civ.E. 300 (Project 1); Civ.E. 400 (Project 2); Env.E. Courses	325
	UV/VIS Spectrophotometer	$3,202	Civ.E. 375 (Water Quality Engineering); Civ.E. 472 (Wastewater Treatment); Civ.E. 300 (Project 1); Civ.E. 400 (Project 2); Env.E. Courses	325
	Drying Oven	$4,489	Civ.E. 375 (Water Quality Engineering) Civ.E. 472 (Wastewater Treatment); CivE 300 (Projefct 1); Civ.E. 400 (Project 2); Env.E. Courses	325
TOTAL:		$31,686		

(In order of priority)

General Note: The Department of Civil Engineering is willing to contribute partial support depending on the WEEF contribution.

Partial funding available

WEEF Proposal Form
Winter 1996
DEPARTMENT OF CIVIL ENGINEERING

Proposal Title: Upgrades to WATSTAR Lab (Computing Lab) - E2-2340

Submitted by: Ralph Korchensky **Phone Number:** 5045

Position: Technologist, Computing Hardware **Date of Submission:** February 25, 1996

Description of Proposal: Upgrade balance of WATSTAR Computers to 16 MB RAM. Upgrade balance of monitors in WATSTAR Lab.

Benefits of the Proposal: Will benefit all Civil undergraduate users (750 per annum). System response speed will be increased; new monitors will improve video quality.

Cost Breakdown of Proposal: 132 MB RAM @ $60 = $7,920 incl taxes; 15 monitors @ $550 each = $8,250 plus taxes.

Implementation Schedule: Immediately.

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

36

Memory : 3 from 8 MB → 16 MB
3 from 4 MB → 16 MB

Monitors: 15 to be replaced

46 P/ADI

WEEF Proposal Form
Winter 1996
DEPARTMENT OF CIVIL ENGINEERING

Proposal Title: Civ.E. 280 Experiment (Flow Measurement)

Submitted by: Terry Ridgway **Phone Number:** 3042

Position: Technologist, Fluids Lab **Date of Submission:** February 25, 1996

Description of Proposal: Re-building of Part 3 Experiment of Civ.E. 280/Chem.Eng. 025 (Fluid Mechanics and Thermal Sciences) - see attached for description of Experiment.

Benefits of the Proposal: To replace defective components and to update existing equipment. Civ.E. 280 and Chem. Eng. 025 (Fluid Mechanics and Thermal Sciences) - 200 each course per annum.

Cost Breakdown of Proposal: Valve Replacements - $1,400; Table and Back Board - $250; Piping and Painting - $250. Optional paddle flow meter (new) - $1,200.

Implementation Schedule: Immediately.

↳ would permit data-logging

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

~ 15yrs old

- frequent maintenance & repair

WEEF Proposal Form

Winter 1996

Proposal Title: INCUBATOR

Submitted by: Bruce Stickney **Phone Number:** 2908

Position: Water Resources Group, Civil Engineering **Date of Submission:** 96.02.12

Description of Proposal: Replacement Incubator for a 33 year-old unit which has stopped functioning this term. This unit must be replaced for the Spring term for classes in Civ. E. 375 and 472. The proposed unit has a temperature range from -20 to 55 deg. C.

Benefits of the Proposal: This unit is used every term to support Civ.E. 375, 472 and/or Env.E. 275 (approx. 325 students p.a.) Laboratories and would have the capability of operating over a wide range of temperatures making it particularly useful for the changing needs of different courses and projects.

Cost Breakdown of Proposal: The propsed unit is an SP Model BOD-50 available from our Systems Contractor @ $ 4725.00

Implementation Schedule for Project: The unit would be installed immediately.

Additional Information: This unit must be ordered by mid March for delivery in time for Spring Term Labs.

WEEF Proposal Form

Winter 1996

Proposal Title: UV/VIS SPECTROPHOTOMETER

Submitted by: Bruce Stickney **Phone Number:** 2908

Position: Environmental Group, Civil Engineering **Date of Submission:** 96.02.12

Description of Proposal:

The proposed replacement would have a multifunction digital display with an analog output compatible with existing data aquisition equipment for continuous monitoring. These instruments are widely used for Colourimetric Analyses and in our courses for visible tracer studies in reactor characterization.

Benefits of the Proposal:

Several of these units are used and this would be the same as two others in the laboratory, simplifying instruction in the operation and results retrieval. The unit would be used in Civ.E. 375 and 472 (approx. 240 students p.a.). The continuous monitoring capability would be especially useful in Civ.E. 472 because of the great length of experiments (ie. 7 days). This aquisition would bring all our Spectrophotometers up to current standards.

Cost Breakdown of Proposal:

Milton-Roy Spectronic 20D $ 3202.
Complete with Flow-thru Cell HACH # 45215

Implementation Schedule for Project:

This unit would be placed in service immediately upon receipt, presumably for the Spring term 1995.

Additional Information:

WEEF Proposal Form

Winter 1996

Proposal Title: DRYING OVEN

Submitted by: Bruce Stickney **Phone Number:** 2908

Position: Water Resources Group, Civil Engineering **Date of Submission:** 96.02.12

Description of Proposal: Equipment essential to Water Resources/Environmental Laboratory for drying of Reagents, Solids Determination, Moisture Determination, etc. This unit would replace one of three 32-34 yr. old units. New ovens are more energy efficient and have many safety features that are not present on the existing equipment.

Benefits of the Proposal: This would replace one of three aging units that are used daily in preparation of reagents and analytical procedures carried out in every course using these labs (approx. 325 students p.a.)

Cost Breakdown of Proposal: $ 4489.00

Implementation Schedule for Project: Immediate.

Additional Information:

WEEF Proposal Form

Winter 96

Priority #1

Proposal Title: SUNEE UPGRADE

Submitted by: BERNIE ROEHL Phone Number: x2607

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

Description of Proposal:

OUR CURRENT UNIX SERVER IS A SPARC WORKSTATION. DURING PEAK PERIODS OF THE TERM, IT IS VERY HEAVILY LOADED. WE ARE PROPOSING TO REPLACE THE WORKSTATION WITH A SPARCSERVER 20/50, AND PUT THE CURRENT SERVER TO USE AS AN ADDITIONAL STUDENT WORKSTATION.

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

ALL USERS OF SUNEE SHOULD SEE IMPROVED PERFORMANCE. AN ADDITIONAL UNIX WORKSTATION IS MADE AVAILABLE. ALL FOURTH-YEAR E&CE STUDENTS AND MANY THIRD-YEAR WOULD BENEFIT.

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

SPARCSERVER 20/50 $11,899

E&CE IS PREPARED TO COVER HALF THE COST, SO THE WEEF CONTRIBUTION WOULD BE $5949

3 core courses
+5 elective courses over 150 students per term
E&CE 35%

Implementation Schedule for Project:

IMMEDIATE.

Additional Information:

Ray Nash

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

Winter 96

1

Proposal Title: UPGRADE MEMORY ON 10 WATSTAR STATIONS

Submitted by: ROGER SANDERSON Phone Number: 6184

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

Description of Proposal:

UPGRADE THE MEMORY ON 10 WATSTAR STATIONS FROM 8 MB TO 16 MB.
THIS IS RECOMMENDED TO IMPROVE THE PERFOMANCE OF WINDOWS APPLICATION SOFTWARE.

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

SEVEN OF THE UPGRADED STATIONS WILL BE LOCATED IN THE E+CE 24 HOUR ACCESS ROOMS. THUS ALL STUDENTS WOULD BENEFIT. THE REMAINDER WILL BE LOCATED IN THE 4th YEAR 24 HOUR ACCESS ROOM.

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

COST OF 10 8MB SIMM MODULES INCLUDING TAX IS $3017.00

Implementation Schedule for Project:

IMMEDIATE ON DELIVERY OF DEVICES

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

~~Fall 1995~~ Winter 96

Proposal Title: Upgrade of the E&CE Circuits Lab

Submitted by: Eric Praetzel Phone number: ext. 5249

On Campus Address (if available): E2-3343 (staff) 2nd yr lab equip

Description of Proposal:

- replace ageing equipment on half of the 38 benches in E2-3344

- the E&CE dept. has allready purchased an oscilloscope + generator for 14 benches (Feb. 1996). Another 4 sets are required to complete the upgrade of half of the benches.

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

- replace 7|5 year old equipment that is expensive to maintain
- ≈250 students/yr (E&CE 100, E&CE 241) use this equipment ie all first & second year E&CE students

Cost Breakdown of Proposal (please include partial funding option if desired):

Kenwood oscilloscope $850 each ×4 = $3400
Instek signal generators $290 each ×4 = $1160
$4560

partial is (850 +290) $1140 (×4) $4560

Funding a larger or smaller number of units is acceptable

Implementation Schedule for Project:

immediate upon recieving equipment (<6 weeks)

Additional Information:

Please submit to the WEEF mailbox in the Orifice by Monday October 23.

WEEF Winter 1996 Proposal - Continuing Watstar Upgrades

Submitted by: Paul McKone (x2757) & Erick Engelke (x5893) Engineering Computing

Background: Engineering Computing is in the midst of upgrading all of its public Watstar rooms (EL-108, E2-1302, E2-1308, CPH-2367, CPH-3390A) to a minimum platform configuration of: **486/pc, 16MB RAM, 1GB hard disk, 17" colour monitor.** This represents a minimum that may be exceeded when funds permit.

Progress To Date: The old machinery in EL-108 has been replaced by Pentium class machines fitted with one gigabyte hard disks. While all parts of the minimum configuration are necessary to improve the speed, reliability, and versatility of the Watstar network, we believe that the local hard disks make the most noticeable – and immediate – improvement.

Description of the Proposal: We are seeking WEEF support to continue the Watstar upgrades, targetting E2 1302 (Wedge & Shim). We believe that the installation of local hard disks provides the most improvement for the money, but would be pleased to accept funding for any of the proposed options. Shaded areas represent choices that we feel may best fit within the WEEF funding mandate.

Benefits of the Proposal: ***Local Hard Disks*** improve the speed of the Watstar systems, providing a local resource for swapping, paging, and application storage. These functions are currently handled by remote disks accessed through the network, which – owing to the size of newer applications – cause slowdowns, and much frustration. ***Increased Memory*** improves the reliability of the machine, and also increases the speed, although not as dramatically as a local hard disk. ***Larger Monitors*** allow users to take greater advantage of the graphics-oriented software available to them. The benefits of these changes would be felt across the undergraduate population, in all departments, affecting both course and non-course usage.

Proposed Options	**Number of Machines** *Hardware Upgrade*	1 One Machine	4 One side of one row in E2-1302	8 Two sides, One full row	12 Three sides	16 Two full rows
A	*1 Gigabyte Hard Disk*	$390	$1,560	$3,120	$4,680	$6,240
B	*16 Megabytes RAM*	$1,000	$4,000	$8,000	$12,000	$16,000
C	*17" Colour Monitor*	$1,030	$4,120	$8,240	$12,360	$16,480
A+B	*Disk & Memory*	$1,390	$5,560	$11,120	$16,680	$22,240
A+C	*Disk & Monitor*	$1,420	$5,680	$11,360	$17,040	$22,720
B+C	*Memory & Monitor*	$2,030	$8,120	$16,240	$24,360	$32,480
A+B+C	*Disk, RAM & Monitor*	$2,420	$9,680	$19,360	$29,040	$38,720

Implementation Schedule: As with all of our major changes, we will try to perform the installation between the end of classes and the start of the Spring term.

Additional Information: Engineering Computing has no regular budget for the upgrade of its facilities. Changes are funded through internal cost-recovery, and on a per-project basis from groups such as WEEF, the Academic Development Fund, Development and Alumni Affairs, and the Dean of Engineering.

Proposal Title: Engineering Science Quest (ESQ) 1996 - LEGO DACTA ™ Control Lab
Submitted by: Director of Administration; Bill Baer **Phone Number:** X. 5239
Position (Student, Professor, Organization, etc.): Student Project

Description of Proposal:

Engineering Science Quest (ESQ) is an ongoing student run program (entering its sixth year of operation) who's goal is to create an awareness and appreciation of science and engineering in a fun setting for children. ESQ provides three camp programs; the Junior Newton for grades 5 & 6, Junior Edison for grades 7 & 8, and an ALL NEW CAMP for grades 9 & 10. The aim of each camp is to explore new horizons in engineering and science by giving the campers an opportunity to see, touch, invent, design, create and experiment. ESQ runs weekly camps each summer in the months of July and August. ESQ also provides similar experiences through workshops, offered during the months of May and June, at local elementary schools.

The LEGO DACTA ™ Control Lab would be used to as the key component of the NEW CAMP for children in grades 9 & 10. This will provide the students the opportunity to build working models, such as a "pick & place robot arm", "motorized vertical lift bridge", "coin operated vending machine" and control the models using a computer.

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

ESQ provides numerous local community events, such as Science Open House, Day with a Difference, introductions to Science Fairs and Engineering's Explorations. In addition, workshops offered at the local elementary schools alone has reached over 20,000 children, whereas the summer camp at the university, has reached over 1500 campers in the past five years.

During the brief history of the program, ESQ has employed co-op students from both the Engineering and Science faculties, starting with three employees in 1991 and increasing to a high of eleven staff members on the ESQ 1996 team.

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

Engineering Science Quest is requesting WEEF assistance in the capital purchase of six complete LEGO DATA ™ Control Labs, exactly enough working sets for the campers attending each week of the grade 9 & 10 camp. These six complete Control Labs can be purchased at a cost of $4,690.88 (see attached break-down spread-sheet). I have also included several other options which would utilize existing LEGO DATA TECHNIC ™ building components.

Implementation Schedule for Project:

Engineering Science Quest is a growing outreach program, which has proven to be a strong member of the YES Camps of Canada. ESQ is a program that will continue to grow, and provide increased opportunities for employment and personal growth as part of the ESQ Team. ESQ will continue to develop an appreciation of all aspects Engineering and Science.

Additional Information:

See attached information sheets.

doesn't fit into WEEF mandate

ITEM	Cost	#	Option #1	#	Option #2	#	Option #3	#	Option #4	#	Option #5	#	Option #6	#	Option #7
Control Lab Starter Pack (944)	$ 953.25	1	$ 953.25	1	$ 953.25	1	$ 953.25	1	$ 953.25	1	$ 953.25	1	$ 953.25	1	$ 953.25
Technology Set (9701)	$ 335.00	5	$ 1,675.00	4	$ 1,340.00	3	$ 1,005.00	2	$ 670.00	1	$ 335.00	0	$ -	0	$ -
Serial Interface Box & Transformer (9751)	$ 337.00	5	$ 1,685.00	2	$ 674.00	2	$ 674.00	2	$ 674.00	2	$ 674.00	2	$ 674.00	1	$ 337.00
Serial cable (9769)	$ 35.00	5	$ 175.00	2	$ 70.00	2	$ 70.00	2	$ 70.00	2	$ 70.00	2	$ 70.00	1	$ 35.00
Pnuematic Set (9604)	$ 44.00	1	$ 44.00	1	$ 44.00	1	$ 44.00	1	$ 44.00	1	$ 44.00	1	$ 44.00	1	$ 44.00
Control Centre (9753)	$ 120.00	0	$ -	1	$ 120.00	1	$ 120.00	1	$ 120.00	1	$ 120.00	1	$ 120.00	1	$ 120.00
Pick & Place Robot Arm with Conveyor	$ 193.00	0	$ -	1	$ 193.00	1	$ 193.00	2	$ 386.00	2	$ 386.00	2	$ 386.00	2	$ 386.00
Coin Operated Vending Machine	$ 204.50	0	$ -	0	$ -	1	$ 204.50	1	$ 204.50	2	$ 409.00	2	$ 409.00	2	$ 409.00
Motorized Wheel Chair with Joy Stick	$ 137.50	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1	$ 137.50	1	$ 137.50
SUB-TOTAL			$ 4,532.25		$ 3,394.25		$ 3,263.75		$ 3,121.75		$ 2,991.25		$ 2,793.75		$ 2,421.75
Discount (5%, 8% or 10%)			$ (453.23)		$ (271.54)		$ (261.10)		$ (249.74)		$ (149.56)		$ (139.69)		$ (121.09)
TOTAL			$ 4,690.88		$ 3,591.12		$ 3,453.05		$ 3,302.81		$ 3,267.94		$ 3,052.17		$ 2,645.76

Pick & Place Robot Arm with Conveyor			
3 Motors - 9 Volt	$ 22.00	3	$ 66.00
2 Angle sensors - 9 Volt	$ 33.50	2	$ 67.00
1 Light sensor - 9 volt	$ 33.50	1	$ 33.50
Additional connecting leads	$ 26.50	1	$ 26.50
TOTAL			$ 193.00

Coin Operated Vending Machine			
2 Motors - 9 Volt	$ 22.00	2	$ 44.00
2 Angle sensors - 9 Volt	$ 33.50	2	$ 67.00
1 Touch sensor - 9 Volt	$ 33.50	1	$ 33.50
1 Light sensor - 9 Volt	$ 33.50	1	$ 33.50
Additional connecting leads	$ 26.50	1	$ 26.50
TOTAL			$ 204.50

Motorized Wheel Chair with Joy Stick			
2 Motors - 9 Volt	$ 22.00	2	$ 44.00
2 Angle sensors - 9 Volt	$ 33.50	2	$ 67.00
Additional connecting leads	$ 26.50	1	$ 26.50
TOTAL			$ 137.50

Introduction to Engineering Science Quest (ESQ) 1996

History of the Camp

- Sixth year of operation as a non-profit student run organization which began in 1991.
- Started by a fourth year science student, in the teaching option.
- Has grown to almost three times the original size in these past five years.
- Emphasize to children, both the tools that Engineers and Scientist use and the ideas and concepts behind the Engineering and Science.
- Is now a member of YES Camps, a national recognized group to promote science and engineering to young people across Canada.
- Fully supported by both the Engineering and Science Faculties.

Engineering Science Quest (ESQ) Objectives

1) To offer a program that will stimulate and encourage children in Engineering and Science.
2) To offer a hands-on program to develop an appreciation in young students for Engineering and Science.
3) To provide positive role models in Engineering and Science for young students.
4) To introduce children to the university as a friendly, non-threatening, learning environment.
5) To give high school aged girls an opportunity to be role models in Engineering and Science for elementary school students.
6) To develop an appreciation of the many aspects of Engineering, Science, and technology is a part of our every day lives.
7) To promote the profile of the Engineering and Science faculties.
8) To provide the university with the opportunity to form a better relationship with the surrounding community and the local school boards.

Aspects of the camp

Phase one: Elementary school workshops

- Two Directors and three Head Instructors present elementary workshops.
- Two Engineering students to work with Professors from Faculty of Engineering.
- Two Science students to work with Grade 9 girls camp, "Experience Science".

Phase two: Summer Day Camp at University of Waterloo

- All eleven ESQ staff including two additional Secondary School instructors provide fun with engineering and science activities.
- Big emphasis is the Invention Convention, where each child designs his/her own invention.
- Involves 3 Counsellors in Training (CIT's) each week.
- Two activities designed by each member of ESQ.
- Three camps offered, grades 5 & 6, grades 7 & 8 and grades 9 & 10.

WEEF Proposal Form

Winter 96

Proposal Title: Upgrade to 2nd & 3rd Year Chem. Eng. Wastar Room

Submitted by: DAVID LUDBERG Phone Number: 886-4912

Position (Student, Professor, Organization, etc.): Class Rep, 3B Chem. Eng. (Wailing Moosehead)

Description of Proposal:

- Replacement of outdated 286 terminals in 2nd & 3rd Yr. Rm.
  - terminals are inoperative 75% of the time, and have very limited use when operative
- Addition of new terminals to 2nd & 3rd Yr. Rm.
- Upgrade of 386 terminals in 2nd & 3rd Yr. Rm.

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

Chemical Engineering students in terms 2A → 3B will have greater access to terminals in order to complete lab reports, assignments & tutorials.

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

Dennis Herman (x2196) says each 486DX4/100MHz terminal ("the best bang for your buck") will cost $1600.

Breakdown (in order of preference):

Replace 286 terminals:	3 x $1600	= $4800
Add new terminals:	5 x $1600	= $8000
Upgrade 386 terminals:	2 x $1600	= $3200
		$16000 XX

Implementation Schedule for Project:

Immediately upon receipt of funding, plus delivery time.

Additional Information:

Please note that Chemical Engineering students have no access to the "ChemCat" lab without a Prof's supervision. The equipment in this room was fully funded by Profs donating a portion of their research budgets, and received no WEEF funding. In essence, the Profs have "bought" the room and maintain it for class instruction purposes only.

Please submit to WEEF mailbox in the Orifice by March 1, 96.

Contact WEEF at CPH 1323C x4893, Endowment@Helix.uwaterloo.ca

The *watsci* Facility

The Faculty of Science operates the *watsci* facility to serve the large scale/high performance computing needs of research groups within the Faculty and University. At present the facility consists of two computers, *watsci* - a new (summer 1995) Digital Equipment AlphaServer 2100 5/250, and *oldsci* - a Silicon Graphics 4D/380 GTX-B (circa 1990; note name change - for an interim period *oldsci* was known as *watsci2*). With four CPU's, one gigabyte of memory and 34 GB of disk (16 GB of scratch space), the new *watsci* is capable of handling calculations requiring large amounts of memory or temporary disk space. *oldsci*, with eight R3000 CPU's, a GTX-B graphics head, 128 MB of memory and approximately 9.5 GB of disk space provides an environment for visualization, Silicon Graphics specific application programs and smaller calculations. Depending on the application, the CPU speed of *watsci* is approximately 10-20 times greater than that of *oldsci*.

Accounts

Accounts will be set up at the request of any faculty member willing to accept responsibility for the resulting charges. Please contact system manager Ernie Hanson (ESC 330B, ext. 4099, email hanson@watsci.uwaterloo.ca) to arrange an account. System policy is that all individual users should have their own accounts, rather than share a single group account. Whenever possible, the assigned userid will be the official uwuserid of the individual using the account; otherwise it will be some reasonable approximation to the user's name. Users will be issued accounts on both machines.

Charging Scheme

The real dollar charging rates associated with use of the *watsci* facility are listed in the table below. The "Regular" rate applies to the first $2500 of combined charges from *watsci* and *oldsci* for any individual research group in a given year. After the first $2500 of charges, the rates are reduced to the "Discount 1" level until $3500 of charges when rates are further reduced to the "Discount 2" level . A list of the monthly charges is sent as electronic mail to the main (usually Faculty member's) userid for each research group at the end of each month, and charges are deducted from that user's designated account on a quarterly basis. When considering these charges, note that the *watsci* CPU's are at least 10 times faster than those of *oldsci*. Questions regarding charging or any other aspects of facility policy should be addressed to the *watsci* Facility Director, R.J. Le Roy (Department of Chemistry, ESC-332, ext. 4051, email leroy@watsci.uwaterloo.ca).

Billing Rates for *watsci* Facilities

Resource	*watsci*			*oldsci*		
	Regular	Discount 1	Discount 2	Regular	Discount 1	Discount 2
CPU /hour	$5.000	$0.500	$0.100	$1.000	$0.000	$0.000
Disk /MB/day	$0.020	$0.005	$0.001	$0.020	$0.005	$0.001
Connect /hour	$0.200	$0.000	$0.000	$0.200	$0.000	$0.000

Usage Rules

There are no limitations on job run times or temporary disk storage use, other than that the total scratch disk filespace available to all users is 16 Gb on *watsci* and 3 Gb on *oldsci*. Preliminary rules regarding the number of concurrent jobs which may be run by a single usergroup are summarized below; these will be updated periodically, and the current version may be found in the *watsci* /www/ page.

On each machine, a single usergroup is allowed to concurrently run up to two large/long background jobs at normal priority, and up to two others at lower priority (niceness +10 or greater). If members of a single usergroup already have two large (> 15 min) "normal" priority jobs running, additional large jobs should be submitted with "niceness">= +10 , or should be "reniced" to that level. The commands "man nice" or "man renice" will yield summaries of the properties of those commands, while the command "sys" will provide a summary of the jobs currently active on the system, large jobs being those with large numbers in the "TIME" column.

Accessing *watsci* Facilities

While the *watsci* facility does not provide any terminals for accessing its systems directly, users can connect to either computer from their own terminals or computers using the campus networks. The facility is accessible from Sytek through *CALL 8100* (for *watsci* only) or via the campus network using either telnet or rlogin (for *watsci* or *oldsci*). For users trying to logon to *watsci* from remote sites which do not have reliable domain name service, the IP addresses of *watsci* and *oldsci* are 129.97.62.115 and 129.97.62.138 respectively. Off-site modem access to *watsci* is available via the Campus Computer Network terminal servers. Such terminal server accounts can be arranged in the Department of Computer Services Customer Support Centre (MC 1052).

The *oldsci* graphics head located in ESC-330C is available for use by any account holder.

For file transfer over ethernet from any of these types of machines one may use "ftp watsci". From another UNIX machine the "rcp" (remote copy) command may be used. These commands are available for MS-DOS computers through public domain software from the National Center for Supercomputing Applications (NCSA). Similar free programs are available for Apple Macintosh computers. "Kermit", "ymodem," and "zmodem" are free or site-licensed software packages running on MS-DOS (and many other) computers and are most suitable for users connecting and transferring files over SYTEK.

Assistance

The system manager is Ernie Hanson (ESC 330B, ext. 4099). Problems with the system may be reported via electronic mail to hanson@watsci.uwaterloo.ca or hanson@theochem.uwaterloo.ca if *watsci* is down. In addition, a DCS consultant is available from 1:30 until 4:30 Monday, Tuesday, Thursday and Friday in ESC-254F (ext. 2194, email: consult@sciborg.uwaterloo.ca).

Software and Documentation

New UNIX users may wish to obtain a copy of the Beginning UNIX manual available for a nominal charge in the DCS Customer Support Centre (MC 1052). Most commands are documented in the online reference manuals accessed using the command "man *comm*" where *comm* is the command for which you require additional information. A keyword lookup is also available using the command "man -k *keyword*". More detailed manuals are also available online. The entire set of Digital Unix Manuals can be accessed using the "dxbook" command from an X-terminal on watsci. A similar set of manuals from Silicon

Graphics is available on *oldsci* by using the command "iiv" from a colour X-terminal or from SGI's WWW server.

Manuals for the following application software packages are available online:

- Elm 2.4
- Pine
- LaTeX
- Molscat Version 14
- GAMESS
- Gaussian 92
- NAG Library
- Cambridge Structural Database System

A number of other application software packages including MAPLE, MATLAB, SAS and GAUSSIAN-92DFT are also supported on the system, although online manuals are not yet available.

Last updated: 11 September 1995.

WEEF Proposal Form

Winter 96

Proposal Title: Computational Fluid Dynamics and Applications

Submitted by: Ali Esmaili, Jim Sollen Phone Number: 886-7440, 884-1165

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

Description of Proposal:

This proposal is a 4th year chemical engineering student project that is being completed in Winter '96 in association with Xerox Research Centre of Canada (XRCC). Xerox scientists have written a program in Fortran that simulates 2 phase particle flow. The objectives of this project are to simulate particle flow in a nozzle and to simulate blood flow by upgrading Xerox's program and running multiple simulations for analysis.

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

This project will develop a stronger liaison between XRCC and the Chemical Engineering Dept. at Waterloo. It may encourage XRCC to help fund undergraduate research at Waterloo that is related to XRCC's research. This would enrich the department's research and provide more opportunities and learnings for students in chemical engineering. Also, XRCC employs about 15 co-op students per term, and this project could improve opportunities for Waterloo co-op students.

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

Computer Usage @ $5/hr	...	$500
Data storage	...	$100
Transportation to XRCC (Mississauga)	...	$100
Telephone	...	$ 70
Photocopying / laserprinting	...	$ 20

(1) (2) (3) (4)

Funding options

Implementation Schedule for Project:

Winter 1996

Additional Information:

We are currently attempting to run our simulations on CHIPE, but with limited success due to system restrictions. For this reason it is necessary for us to use a more powerful system to run our simulations. There is a system at Waterloo that we could use for about $5/hr. plus data storage (~$100). Our only other option is to make several trips to XRCC to run simulations which is too expensive in terms of both time and money.

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

Winter 96

Proposal Title: Snow Warrior (Concrete Toboggan '97)

Submitted by: Cory Zurell (3B Civil) Phone Number: 884-9397

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

Description of Proposal:

The Great Northern Concrete Toboggan Race is an annual design competition attracting teams of engineering students from Canada, Europe and the United States. In 1997, the race is to be held in Ottawa, hosted by Carlton University. Our team is asking WEEF for a contribution towards covering construction costs and entrance fee.

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

The competition will benefit the 45 members of the Snow Warrior team, providing an opportunity to gain valuable experience in the design and management aspects of this large scale project. The competition also allows the exposure and promotion of the University of Waterloo and its Engineering faculty as being the best.

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

	Cost	Request from WEEF
Entrance Fee 40 @ $60.00	$2400.00	$1500
Design and Construction (1 sled)	$1500.00	$1000
(2 sleds)	$3000.00	
		$2,500

Any partial funding options would be greatly appreciated

Implementation Schedule for Project:

Design, fund raising and promotion are currently underway. The race is in February 1997.

Additional Information:

Further details will be provided and any questions answered by a representative of the Snow Warrior team during the presentation of our project.
We anticipated a total project cost of ~ $18,000.00

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

W E E F Proposal Form

Winter 1996

Proposal Title. Midnight Sun Solar Race Car Project
Submitted by: Dr. G. Savage, Dave Walsh, **Phone Number:** x2234
Position (Student, Professor, Organization, etc.): Student Project

Description of Proposal:

The Midnight Sun Project is an ongoing project dedicated to educating the public on the environment, alternative energy sources, mathematics, science, and engineering. It is through this education and through SUNRAYCE, that the University of Waterloo will ultimately succeed in solar car design.

The purpose of the Midnight Sun Project is to enable undergraduates, graduates, staff, and faculty to work on a large scale project. From the criteria and constraints established, the team must then develop designs that could satisfy these limitations. Ultimately, the proposed designs must be critiqued and a final optimal design chosen. SUNRAYCE allows for all these stages to be explored. The final design will then be compared to other universitys' in the SUNRAYCE competition to determine the best overall design and team.

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

In order to promote both SUNRAYCE and the Midnight Sun, the project team has performed lectures, talks, and demonstrations to the community and local educational system. As well, Midnight Sun has been in the media, local, national, and international, in both print and electronic form. Promoting education, engineering, and the environment is a strong concern for the project, thus making Midnight Sun the ambassadors of engineering more often than any other engineering project.

Within the project team, members can receive academic credit for conducting research, design, and construction of the vehicle. These project courses are Mech 482, Elec 499, SyDe 362, 461, & 462, as well as independent projects through General Engineering. To this date, there have been approximately 40 project courses spanning Engineering and Physics, as well as over 120 students involved at different levels of the project.

The benefit to engineering of a project this size is the fact that it is multi- disciplinary. Engineers from all areas have been involved in the project. In fact, the project should be called a University of Waterloo Project based in Engineering. With this scope, engineering begins to integrate into society.

Cost Breakdown of Proposal (in order of preference):

The Midnight Sun Team is requesting WEEF to assist in the purchase of one of the following.

HP X-Windows Terminal for design work.	$3000
~~Rims and tires for the solar car.~~	~~$3000~~
Technical and reference manuals.	$1000

These items would be used in the present project and would benefit future projects.
The Midnight Sun Project would accept partial funding for any of the above items.

Implementation Schedule for Project:

The Midnight Sun Project is an on-going project that is in the process of finalizing design concepts for Midnight Sun IV. The workshops and project courses are a continuing aspect to the project enabling students to work in the field of their interest.

NASTT
University of Waterloo
Student Chapter

February 27, 1996

Mr. Paul Cesana
Director, WEEF
University of Waterloo
Waterloo, Ontario
N2L 3G1

Dear: Mr. Cesana

From March 31 to April 3, 1996, New Orleans will host the combined annual International and North American No-Dig conference and exhibition. This event covers all aspects of the trenchless technology industry, from equipment innovations to research advancements.

The student chapter of the NASTT, North American Society for Trenchless Technology, at the University of Waterloo was established in 1994, and has been attempting to foster interest in the trenchless technology industry amongst Engineering students. In 1995, the student chapter participated in the North American No-Dig conference which took place in Toronto. Participation in the combined annual International and North American No-Dig conference in New Orleans represents a unique and exciting learning opportunity for the students and affirms the University's commitment to the advancement of trenchless technology.

Fundraising and sponsorship are a vital component in assisting those students interested in representing the University of Waterloo at the upcoming conference. Funds are required to help cover the travel and accommodation costs as well as the entry fee. The costs associated with attending the conference have been estimated at $1,500 for seven students. Students who have demonstrated an interest in attending the conference have each pledged $100.00. On behalf of our school's chapter, I am requesting a contribution from your office to aid our fundraising efforts. A contribution of $250-$500 would help to ensure that students will be able to attend this event. Any contribution would be greatly appreciated.

If you have any questions or require further information please do not hesitate to call. I can be contacted at (519) 746-6345 or at ldamiani@bridge.

Sincerely,

L Damiani

Leonard Damiani

NASTT STUDENT CHAPTER

The North American Society for Trenchless Technology

Established: The University of Waterloo Student Chapter was established in 1994.
Director: Victor Lewis, Civil Engineering Student

Mission: To foster interest in the Trenchless Technology Industry amongst Engineering students.

Participation and Accomplishments:

Participated in the No-Dig'95 conference and exhibition in Toronto

The first university in North America with a home page on the World Wide Web; http:\\sunburn.uwaterloo.ca\nasttsc.

The donation of a directional drilling rig by Ditch Witch in 1995. This piece of heavy equipment will be used in undergraduate studies in Civil Engineering.

Will be participating in Engineering Exploration Day, 1996, and Campus Day, 1996.

Background Information:

The Trenchless Technology Industry is a relatively young industry in Canada, however it is well established in Europe and is a rapidly growing in the United States.

The Trenchless Technology Industry makes use of directional drilling and microtunneling equipment for the maintenance and upgrading of underground services, such as sewers, water and gas mains, and communication duct banks.

The University of Waterloo is home of CATT, the Center for the Advancement of Trenchless Technology. CATT is striving to become the Center for the advancement of trenchless technology in Canada. Their goal is to develop a strong partnership amongst the research and academic community, the public sector and private industry, and to address new challenges in trenchless technology.

From March 31 to April 3, 1996, New Orleans is hosting the combined annual and international No-Dig conference and exhibition. This event covers all aspects of the trenchless technology industry, from equipment innovations to research advancements. This event represents an unique and exciting learning opportunity. Students attending the conference will gain exposure to the industry on an international level.

Through participation in the No-Dig'96 conference and other events the University of Waterloo will affirm its commitment to the advancement of trenchless technology. The University of Waterloo has an unique opportunity to become the leader in trenchless technology research, giving University of Waterloo students an advantage in workterm placement and professional development.

UW Research
News Bureau
University of Waterloo
Waterloo, Ontario, Canada
N2L 3G1
(519) 885-1211, Ext. 2004, 4444, 2488, 2220
Direct Line: (519) 888-4444
University of Waterloo

-- For immediate release

UW engineers to break new ground with Ditch Witch

WATERLOO, Ont. -- Students and faculty in the University of Waterloo's civil engineering department will be pushing the borders of construction technology with the help of a portable Ditch Witch, a horizontal directional drill system.

The $50,000, two-year-old machine, designed to place service lines in the ground without disturbing above-ground structures, has been donated to the Centre for Trenchless Technology by the manufacturer, Charles Machine Works Inc. of Perry, Okla. The donation was coordinated by Boyd Acheson, of Ditch Witch of Ontario.

The machine, which weighs about 1,300 kilograms, is equipped with an angled bit that drives a drill rod through the ground on a curved or straight path. It also has sensors to detect hydro wires, gas lines and other dangerous obstacles. Once the drill rod is in place, a "back-reaming" head is attached to the far end. The head whirls as it is pulled back, creating a tunnel, and at the same time it pulls a new pipe into place.

The Ditch Witch system came to UW partly through the efforts of a second-year civil engineering student, Victor Lewis, who spotted the unused machine while on a training course in Perry. Prof. Robert McKim also learned to operate the Ditch Witch and will demonstrate its use to students in two of his fourth-year and graduate-level courses. He will also conduct research on how the machine operates in the Canadian climate and in local soil.

Sophisticated machines such as the Ditch Witch were developed in the mid-1980s as part of industry's response to a widespread urban problem. The underpinnings of cities everywhere were crumbling, and still are. McKim says the problem dates back to the postwar building boom, when miles of sewer lines, water mains, gas mains, hydro cables and other services went underground. Meanwhile buildings, highways and airports rose above them.

"Now the sins of the past are catching up with us," McKim says. After 50 years, underground structures are wearing out, or lack the capacity to serve increased populations, and old design and construction mistakes are becoming critical. Repairing systems below ground often means costly repairs to pavements and buildings above. Trenchless technologies have developed within the last decade to deal with this situation.

Damage can be detected by sending tiny robots into pipes with cameras and other sensors. Robots can also do spot repairs. Badly damaged pipes can be lined with soft epoxy "socks" that harden in place. When replacement becomes inevitable, one method is a process called pipe bursting, in which a "bursting head" is winched through old pipe, shattering it, while pulling a new pipe into place behind.

- more -

Much of the North American development of the pipe bursting process took place in Waterloo, the result of a partnership between the city, a private contractor, a manufacturer and the university, McKim said. Pipe bursting methods and equipment developed and tested in Waterloo are now being used in Boston and other large US centres.

That partnership also helped nudge the Centre for Trenchless Technology into being. In January 1994, Waterloo city officials approached UW for advice. Thousands of bituminous fibre pipes had been installed in the early 1970s to carry sewage from homes to the sewer mains, and were now collapsing at the rate of 60 to 70 a year. At a cost of $7,000 to dig up and replace each pipe, the city faced a potential bill of $35 million.

McKim and other faculty members began investigating new methods of pipe repair and replacement. As a start, they took a German system that was designed to push pipe through the ground, but would not work in Canadian conditions, and are developing it to pull pipe into place. The Waterloo method, as it is called, is still being developed, but McKim estimates potential savings of $2,000 to $3,000 per pipe. "We hope to be able to export it all over Canada and the world," he says.

Similar problems were cropping up in cities all over, and McKim observed that "everyone was re-inventing the wheel." He saw a lack of basic research in trenchless technology and no efficient way to pool and share what knowledge was accumulating.

The Centre for Trenchless Technology was set up to fill the void. It conducts research with a Canadian flavor, because "a lot of systems that look good in other parts of the world just won't work here," McKim says. It has also become an information source for cities across North America. The only other such centre, at Louisiana Tech University, is oriented primarily to the needs of manufacturers.

The City of Waterloo has been a strong supporter from the start. "They've basically given us the city to experiment on, and they're seeing some real savings," McKim says. Using the new technology to line damaged pipes has saved a quarter million dollars in water treatment costs alone.

Other projects still in the testing stage promise further savings. McKim is supervising an experiment in sealing off abandoned sewer laterals with foam epoxy plugs to protect the water treatment system. For an estimated cost of less than $100, a "tag line" is flushed down the pipes, then drawn back, pulling the plug into place, where it hardens. By contrast, to send a robot down to seal the pipes can cost $1,000 to $3,000.

- 30 -

Contact: Robert McKim, (519) 888-4567, ext. 3350
Written by Patricia Bow
From Jim Fox, UW News Bureau, (519) 888-4444
E-mail: jfox@rh3adm.uwaterloo.ca
Homepage: http://www.adm.uwaterloo.ca/infoipa/release.html
Release no. 16 -- January 31, 1996

WEEF Proposal Form
Winter 1996

Proposal Title: CSME/ASME/SAE Skills development
Submitted by: Howard Chan **Phone Number:** 746-4796
Position: Treasurer CSME/ASME/SAE UW Student Chapter
Undergraduate Student

Description of Student Chapter:

The Canadian Society of Mechanical Engineers/ American Society of Mechanical Engineers/ Society of Automotive Engineering UW Student Chapter's mission :

- To offers resources for students to broaden educational experience.
- To bring students and industry together
- To organize guest speakers
- To organize industrial tours
- To organize symposiums on topics of interest

Description of Proposal:

At this moment, we would like to request funding for students to attend two different conferences, one held by the SAE and one held by ASME. The money would help fund the partial cost of transportation and accommodation during these events.

Benefits of The Proposal:

These conferences will help the future executives develop leadership and organizational skills as well as being a liaison with other student groups and industry leaders. The prime objective is to gain new ideas for future symposiums and design competitions.

We would like to send two people to the SAE conference and ten to the ASME conference. These representatives would be responsible for submitting articles to the Iron Warrior and to prepare a presentation to highlight the events at the respective conferences. As well, we believe that it is important for the University of Waterloo to have a strong presence at these conferences to improve relations with industry and other student groups.

Conference:	Expense:	Cost:
SAE Conference (2 students)	Admission	free
	Transportation	100
	Accommodations	300
	Food	200
	Total	600
ASME Conference (10 Students)	Admission	free
	Transportation	500
	Accommodations	600
	Food	300
	Total	1400
All Conferences		2000
WEEF Contribution		1300

WEEF Proposal Form
Winter 96

Proposal Title: SAE Aero Project
Submitted by: R. Kyle Schmidt Phone Number: (519) 725-6984
Position: Student (Aero Project Manager)

Description of Proposal:

The SAE Aero project has been revived after a three year hiatus. The University of Waterloo has performed with distinction in its earlier attempts in this contest. From the previous efforts, the current team has a small amount of equipment available for the upcoming competition. Through fund-raising efforts and corporate sponsorship, the team intends to field a winning entry. WEEF's assistance is requested in preparing a successful entry by purchasing capital equipment that will be of use to both this team and subsequent entries.

Benefits of the Proposal:

The acquisition of this equipment will allow Waterloo to field a competitive team in the forthcoming SAE Aero competition. As well, it will establish a comprehensive suite of equipment for future teams. The current Aero team involves four core team members, two ancillary members, and is recruiting members for future teams. In total, the team will include up to 20 people per term in various roles. The restructuring of the SAE Aero team at the University of Waterloo will attempt to improve continuity between teams, and to cultivate a body of knowledge and experience that will benefit future teams.

Cost Breakdown of Proposal:

Ambrosia Flight Simulator (R/C Aerochopper)	$300.00
Battery Charger and battery	$79.00
Covering Iron and Heat Shrink Gun	$69.00
JR622 Radio (includes batteries, servos)	$429.00
PT60 Aircraft	$229.00
Dremel Tool	$139.00
Delta Scroll Saw (variable speed)	$239.00
Expendables (Fuel, props)	$300.00
Total	$1784.00

While all items are required, if partial funding is to be considered, these items are listed in order of decreasing necessity to the team.

Implementation Schedule for Project:

The SAE Aero team is currently active, with a training programme implemented, and design beginning on the competition aircraft. The team will compete at the 1997 Aero competition in April, 1997. Funds are desired to have test aircraft flying by the end of our flying season (around October, 1996).

Additional Information:

The SAE Aero '97 team is endeavouring to prepare a winning entry for the 1997 Aero competition. A detailed analysis of previous University of Waterloo entries has been performed. Waterloo has never been deficient in its engineering, but has not won the contest due to inexperience flying the aircraft. The Aero '97 team is placing a large emphasis on training and testing of pilots and aircraft.

WEEF Proposal Form

Winter 96

Proposal Title: Debating + Public Speaking

Submitted by: Tim Burns Phone Number: 725-7013

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

Description of Proposal:

- Money to subsidize participation of engineers at for debating and public speaking over the summer term

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

- It would serve engineering students wanting to get involved in debating gives public speaking + exp with communication skills
- lacking in curriculum — one of the only ways to participate in debating

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

Up to $100 per team per tournament to cover registration.

Up to at a total of $500 - specific tournaments + dates are not yet known.

Implementation Schedule for Project:

- based on interest and performance at related events (SFU, etc, other debating)
- allocated through communication director

Additional Information:

There are few engineers participating on the university debating circuit. This funding would help encourage engineers who otherwise find the cost prohibitive.

Orifice by March 1, 96. Contact WEEF at CPH 1323C x4893, Endowment@Helix.uwaterloo.ca

WEEF Proposal Form

Winter 96

Proposal Title: 1996 SAE Mini Baja

Submitted by: Steven Peplinski Phone Number: 885-2639 (home)

sppeplin@mechanical

Position (Student, Professor, Organization, etc.): student co-chair

Description of Proposal:

The SAE Mini Baja involves designing and constructing an off-road vehicle from the ground up. Funds acquired from WEEF will be used to complete various items on the car. These include pedal assembly, brakes differential mounting and engine modifications. Any remaining funds will be used to cover transportation costs for team members attending the competition in Milwaukee.

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

The Mini Baja project provides design and construction experience for approximately 10 mechanical engineering students. The project is a source of projects for Me 4BZ and helps promote the university.

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

$2000 is desired. This will allow the purchase of many items required to complete the 1996 entry. Funds will used to buy the following items: a new CVT, new aluminum rims, tires, tube cutter, a new helmet and a variety of hand tools. In addition spare parts are required to re-furbish the motor.

Implementation Schedule for Project:

Work is ongoing on the car. A rolling chassis is now complete and the car is expected to be running by April 30.

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

Winter 96

Proposal Title: FORMULA SAE 1996

Submitted by: TODD MALLOY Phone Number: X5904

Position (Student, Professor, Organization, etc.): PROJECT LEADER - 4B MECH

Description of Proposal:

FORMULA SAE IS AN ANNUAL DESIGN COMPETITION HELD IN MAY @ THE PONTIAC SILVERDOME. 85 UNIVERSITIES FROM AROUND THE WORLD BUILD A SMALL RACE CAR TO CONTEST THE EVENT. U OF W HAS FINISHED AS WELL AS FOURTH OVERALL, & WE PLAN ON RETURNING TO THIS LEVEL OF COMPETITIVENESS FOR 1996. THE ITEMS REQUESTED HEREIN WILL REPRESENT A MAJOR STEP FORWARD IN VEHICLE PERFORMANCE FOR MANY YEARS TO COME.

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

THERE ARE CURRENTLY OVER 30 PEOPLE WORKING ON THE 1996 FORMULA SAE PROJECT. APPROXIMATELY HALF OF THESE ARE IN 4B MECH, AND THE OTHERS INCLUDE 1st to 3rd YEAR STUDENTS FROM MECH, SD, CIV, & ELEC. ET IS AN ANNUAL COMPETITION ∴ WORK IS DONE 12 MTHS A YEAR. ALL OF THE REQUESTED ITEMS HAVE AN INDEFINITE SERVICE LIFE.

over 40 people

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

TDI LEGHTENED CV JOINTS x4	$433.00 USD	(w. 12% disc)
IHI RHB5 TURBOCHARGER x1	$550.00 USD	(mfg cost)
REB-CO EXACTO WEIGH 11600 SCALE SET x1	$1420.25 USD	(w. 5% disc)
EXCHANGE	$961.30	
TOTAL	$3 364.55 CND	

Implementation Schedule for Project:

ALL OF THESE ITEMS WILL BE PURCHASED IMMEDIATELY & USED FOR THE 1996 COMPETITION & EVERY YEAR THEREAFTER.

Additional Information:

THE 1996 FOCUS FOR FSAE IS TO IMPROVE OVERALL VEHICLE HANDLING & POWER TRANSMITTED TO THE ROAD. THE ELECTRONIC SCALES WILL ALLOW THE TEAM TO OPTIMIZE WEIGHT DIST'N FOR EACH EVENT & DRIVER. THE RHB5 TURBO WILL ELIMINATE OIL LEAKAGE INTO THE INTAKE & INCREASE BOOST, & THE NEW CV JOINTS WILL RESULT IN MUCH LESS INERTIAL LOSSES IN THE DRIVETRAIN.

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

WEEF Proposal

Winter 1996 KJUDGE@steam

Proposal Title: **Free Flight Glider**

Submitted by: CASI Free Flight Team Phone Number: 885-1211 ext.6836
Position: Students Date: Mar 1, 1996

Description of Proposal:

Each year the Canadian Aeronautics and Space Institute holds a free flight competition. The competition is usually held at the school of the previous years winner, in 1996 it is being hosted by Southern Alberta Institute of Technology (SAIT). There are cash prizes for the top three teams and the winner gets there name engraved on the Free Flight trophy which they get to take back to the University for a year. Having developed a Free Flight Glider We would like to ask for funding from WEEF so that we may represent the University of Waterloo at this competition.

Benefits of Proposal:

This proposal has the potential to effect all current and potential future University of Waterloo Students. A showing at the upcoming competition (May '96) will not only strengthen the reputation of Engineering at the University of Waterloo, but it will also enhance the value of a U of W engineering degree to students and employers as well.

More importantly, this competition allows current University of Waterloo Engineering students the opportunity to make practical use of their Engineering skills (remember those fun courses in MODS, Dynamics, Fluids, Materials, etc ..., that you never thought you would get to use in the real world) in the design and development of a hands on aerospace project. The experience gained from taking a project from design to completion is especially valuable for students vying for work term positions. As well, the free flight competition is the only student project of it's kind, it is also recognized by the Canadian Aeronautics and Space Institute, at this University that allows students to gain valuable project oriented experience in the aerospace field without doing a work term in an aerospace company.

Cost Breakdown: see next page
Implementation Schedule: project is currently underway - see next page for details

Additional Information:

There are 12 students involved with the design, manufacture and report aspects of the Free Flight Glider project. Up until now we have spent a total of $425.00 dollars. Although we may be able to finish the final design without WEEF funding (by maxing out my VISA, etc...), we will absolutely not be able to attend the competition without at least $2524.95 from WEEF to cover the flight and shipping costs. However, please fund our project for at least $3104.95 (as this will allow us to complete the glider without having to dip into my ever decreasing OSAP funding to pay the $580.00 VISA bill I'll run up so that we can finish the GLIDER)

This is the first time a team from the University of Waterloo will be able to enter this competition. Since this is a yearly competition, in the future we will spread out our WEEF funding throughout the whole year.

Glider Cost and Schedule - Winter 96

Description	Unit Cost	Priority	Cumlative Cost	Date
begin beta design & building of glider	$50.00	3	$50.00	18-Jan
finished testing beta design			$50.00	2-Feb
begin design & building of prototype glider	$375.00	3	$425.00	5-Feb
finished testing prototype gilder			$425.00	26-Feb
begin construction of final prototype	$200.00	2	$625.00	1-Mar
finish testing of final prototype			$625.00	23-Mar
finish final glider design			$625.00	26-Mar
finish final glider	$380.00	2	$1,005.00	23-Apr
finish glider report	$75.00	4	$1,080.00	26-Apr
ship glider to SAIT	$213.50	1	$1,293.50	3-May
fly to SAIT (return trip @$337.29 /person)	$1,686.45	1	$2,979.95	9-May
entrance fee = $150+$35/person at competition	$325.00	1	$3,304.95	10-May
stay at SAIT ($15/person/night)	$300.00	1	$3,604.95	9-12-May
ship glider to University of Waterloo	$213.50	2	$3,818.45	13-May

Total By Priority		
		$0.00
Priority 1	$2,524.95	$2,524.95
Priority 2	$580.00	$3,104.95
Priority 3	$425.00	$3,529.95
Priority 4	$75.00	$3,604.95