

ARC Controlled Environment Users Group:
Minutes of meeting held at GCRI on Thursday 1st October 1981.

The Minutes of the 1980 Meeting were approved, there were no matters arising.

1. General Management problems

There was no discussion on this topic.

2. Maintenance problems

P. H. Knapp (GCRI) stated that as microprocessors are increasingly being introduced into the field of environmental control, a level of specialized knowledge is required both to locate and correct any faults. Card changing can be used to locate and rectify faults, faulty cards can in most cases be returned to the manufacturer for repair.

D. Dickenson (Reading) has a stock of chips (cost \cong £50) which are changed to correct faults and also has support for system development work from their micro-electronics laboratory.

G. Moorby (ARC HQ) wondered whether the micro-electronics expertise present on several sites should be pooled.

3. Lamps, lighting and disposal of lamps

D. Dickenson (Reading) is having trouble obtaining Saxcil type chokes. Thorn Pluslux 5' 1" diam tubes have a rating of 58 W and output of 4700 lumens @ 2000 hrs, these show a power saving of 11% for a 1% loss of output compared to standard 1½" white tubes (rating 65 W output 4750 lumens). These could be considered for use in Saxcil cabinets on energy saving grounds but cost \cong £350 per cabinet for chokes and tubes.

J. Casely (W.R.O.) has used the cool white version of these tubes and obtained 120 W m⁻² in cabinets.

G. Weaving (N.I.A.E.) explained power factor correction and suggested that proper correction on plant can produce considerable economies.

D. Strachen (ARC HQ) stated that the ARC has a fund for power factor correction, that some German equipment is poorly corrected and that 8% of total budget is for energy.

(J.I. Inst.) has 50 off 6' Sylvania 160 W tubes + control gear which are surplus to requirements - any offers.

L. Heathcote (Sutton Bonington) disposes of tubes in normal waste but was concerned whether this practice was correct.

R. B. Austin (PBI) has a disposal machine which contains dust.

A. C. Mountifield (GCRI) has contacted G. Powell (ARC HQ) who suggests that either the Local Authority or lamp manufacturer be contacted for advice on lamp disposal as there are no universal disposal regulations.

4. Reports relating to pollutants or phytotoxic effects

J. Casely (WRO) reported that the CEGB have experienced phytotoxic effects in a Fisons cabinet.

(MAFF Cambridge) have had complaints of noise pollution from nearby residents, caused by refrigeration plant and vent fans.

F. Sandwell (MAFF Harpenden) reported that high air speed and low humidity can produce symptoms very similar to phytotoxicity.

5. Temperature and Humidity

F. Sandwell (MAFF Harpenden) - has used an Assman psychrometer until recently but has been using a RH and temperature meter (Jenway Servis 5500) costing £250 and also a Swiss Rotronic device costing £330. (For further details contact F. Sandwell).

He has also written a Pascal program for obtaining cabinet RH from Wet and Dry reading. (For further details contact F. Sandwell).

6. Irrigation control

D. Dickenson (Reading) - had on display a HR 6000 solid state irrigation controller manufactured by Hydrorain in USA - marketed in UK by R.I.S. Cameron Irrigation Ltd., Sussex, costing £78. Copies of a report and tandem wiring diagram were available at the meeting.

7. Report on the performance to date of the three new Weiss cabinets at GCRI

C. Holbourn (GCRI) summarised the report which was circulated at the meeting. B. Thomas (GCRI) reported on plant growth trials and concluded that the Weiss cabinets produced growth, development and flowering responses that were essentially the same as those obtained in Saxcil cabinets. Several cabinet malfunctions however occurred during these trials, as described in the report by C. Holbourn.

8. Report on the performance of the Rothamsted rooms and cabinets

I. Pearman (RES) - Three rooms are in use but there were some problems with dehumidification. Air flow rates were typically 0.4 m sec^{-1} . (For further details of these contact I. Pearman).

(NVRS) were generally disappointed with their experience with obtaining a standard growing room.

G. Weaving (NIAE) stated that in the field of air conditioning the engineering technology is known and that if problems are encountered then these are usually due to incorrect application.

9. Report on the performance of the Fisons cabinets

C. Walter (Letcombe) reported on the Fisons "replacement Saxcil" cabinet sold as a package at £15,000. Temperature control was stable but there were several faults:-

1. Temperature control was lost as a result of opening doors.
2. There were problems with humidity control and spray humidification.
3. Condensation on the ceiling has been experienced at low temperatures.
4. Relay contact failures were occurring after 1 year's use which if Fisons testing time is included gives these components a working life of only 2 years. This problem could be a serious limitation and is being investigated.
5. The accuracy of some of Fisons light output data is in some doubt.
6. G. Moorby (ARC HQ) has received a report of fan blades coming off on a Fisons cabinet.

10. Replacement for Saxcil cabinets

G. Moorby (ARC HQ) asked the meeting if there was a need to replace existing Saxcil cabinets. It was generally thought that with periodical treatment of the sub-floor sections the fabric of the cabinets should be serviceable for at least another ten years.

There was some discussion as to whether a standard specification could be drawn up for new cabinets which would satisfy most users needs and could then be put out to tender. This would avoid many of the problems associated with modifying manufacturers standard units and manufacturers production capacity. Most users were generally satisfied with the performance of Saxcil cabinets.

A questionnaire will be circulated to determine whether a standard specification could be drawn up.

Emphasis was given to the restricted spending available to controlled environment capital projects.

11. User experience of dew point control and refrigeration

There was no discussion on this item.

12. Any other business

A need for standardisation of units became apparent particularly in the fields of photometric and radiometric measurements.

A. P. Gay (WPBS) stated that photon flux density meters do not measure photons and therefore can only be used for specific light sources.

G. Thorne (RES) - measurements using a Lambda meter should be acceptable to most plant research institutes.

(NIAE) are able to calibrate Kipp solarimeters but are not able to calibrate other sensors.

P. H. Knapp (GCRI) hoped to set up a calibration facility using an Optronics spectroradiometer and standard lamp sources.

Next Meeting

An invitation was kindly given by C. Guttridge to hold the next meeting at Long Ashton Research Station. The date will be advised later.

CONTROLLED ENVIRONMENT USERS GROUP MEETING 1981

| Name | Station | Name | Station |
|----------------------|-----------|--------------------|------------------|
| Dr. D. Prue | G.C.R.I. | Mr. E.G. Johnson | P.B.I. |
| Dr. G.W. Winsor | " | Dr. P.B. Austin | " |
| Dr. K.E. Cockshull | " | Dr. P.R. Scott | " |
| Mr. R.E. Randall | " | Mr. T.C. Clark | MAFF (Cambridge) |
| Dr. P.H. Knapp | " | Mr. R. Coulter | MAFF (Reading) |
| Dr. B. Thomas | " | Mr. F. Sandwell | MAFF (Harpenden) |
| Mr. R. Frost | " | Mr. B.J. Wilson | Wye |
| Mr. A.C. Mountifield | " | Mr. L. Heathcote | Sutton Bonington |
| Mr. C. Holbourn | " | Mr. J. Hughes | " |
| Dr. J. Moorby | A.R.C. HQ | Mr. D. Edwards | U.C.W. |
| Mr. D.E. Strachan | " | Mr. R.F. Hughes | Long Ashton |
| Mr. S.M. Lawrie | " | Dr. C.G. Guttridge | " |
| Dr. D.J. Avery | E.M.R.S. | Or. E.A. Baker | " |
| Dr. P.M. Fulford | " | Dr. T. Johnstone | " |
| Dr. J.L. Brewster | N.V.R.S. | Mr. C.H.S. Walter | Letcombe |
| Dr. C.C. Hole | " | Mr. V. Prince | " |
| Dr. D.M. Harvey | J.I.I. | Mr. R. Le Feuvre | " |
| Dr. C.L. Hedley | " | Mr. D. Dickinson | Reading |
| Mr. P. Roberts | " | Dr. P. Hadley | " |
| Mr. J.R. Aldous | " | Dr. J. Caseley | W.R.O. |
| Mr. G.S. Weaving | N.I.A.E. | Dr. C.F. Eagles | W.P.B.S. |
| Dr. G.N. Thorne | R.E.S. | Mr. A.P. Gay | " |
| Mr. I. Pearman | " | Mr. A. Tester | " |
| Mr. D.V. Hubbard | " | Mr. T.E. Williams | " |