

UPS CLUB

Section
Squash Section



Mr. Stephen M Edwards
Chairman: Ups Club Squash

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Tel: 01737 353 331
Tel: 07765 810 431

**Interim Version Begun
Updated**

23 October, 2009
08 May, 2011

Squash Section:

Business Plan Report for Consideration of New Air Conditioning System.

Summary

As part of our mission and constitution we are committed to provide the best possible facility to play squash in at the Ups Club (The Sports and Social Club of the Royal Marsden & Institute of Cancer Research).

Our current air conditioning system has been showing signs of its age for the last couple of years and is in need of replacement because it is becoming uneconomical to maintain.

This matter has been discussed at various Squash Section committee meetings and AGMs. Provision for a new air conditioner was mentioned specifically in our **Future Plans** section of our report to the Ups Committee in February 2009 which in turn was part of their overall business plan for the future of the Ups Club. Details at http://theupsclub.co.uk/upsdowns/_sq_vgm_060209.htm as a PDF.

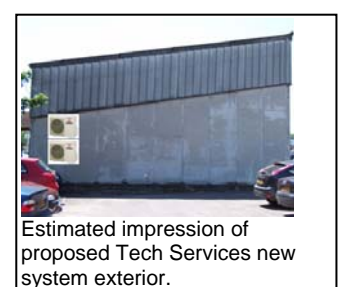
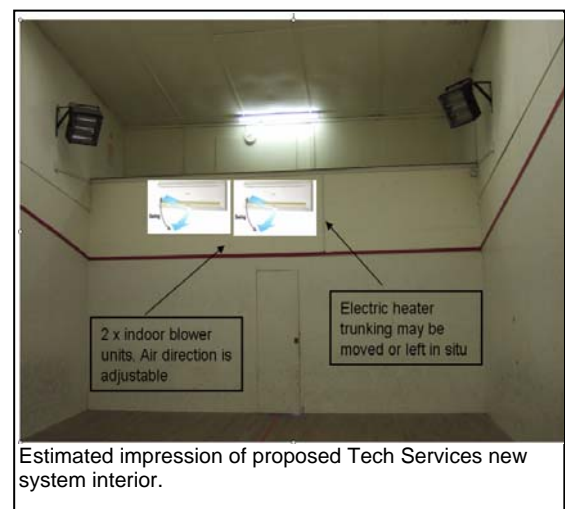
The air conditioning system is an **essential** item of equipment because it performs two **vital** roles for the squash court:

- Dehumidifier - removes water vapour from the air which comes from breath (increased due to exercise), perspiration and ambient weather.
- Heat & Cooling source - providing additional heat in the winter and cooling in the summer.

The current unit we have is a bespoke squash product and was bought in 1998 for approximately £3,300. The company that manufactured this units - Trembath, ceased trading many years ago.

We have sought quotes and have been in discussion with representatives from Tech Refrigeration Services Ltd., who have been taking care of our air con needs since around July 2006. We currently have a quote from them for **£6,000** to cover the cost of Mitsubishi units, installation and a protective steel grille for the internal blower units - see graphic opposite.

We have also been kindly provided with two other quotes. These were arranged by Don Taylor of the Royal Marsden maintenance department.



The first of these is from Orostream Air Conditioning Ltd., and is for **£2,300**. It is not exactly clear what is included in this Fujitsu split wall system.

The second quote is from Constant Cooling, and is a Daikin based system quoted at **£8,000**.

All prices for the 3 quotes have had VAT calculated as inclusive.

Jon Gear has kindly provided us with an up-to-date financial statement (Jan - Dec 2010).

Our total funds amount to around **£9,500**.

We are currently making around £1,700 a year from lights and stickers (light charges increased from £1 to £2 at the beginning of July 2009)

At the May 2009 AGM the committee also reserved the right to double the cost of stickers to £1.00 at anytime.

Other expenditure considerations:

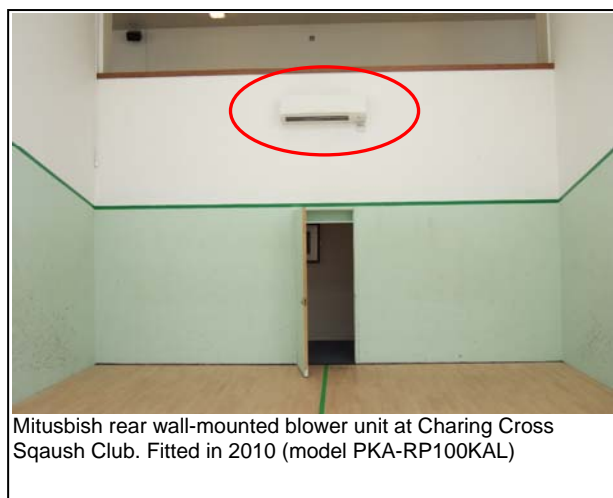
Light fittings: When this report was started (Oct 2009) we had reserves of around £10,100. At that time we needed to change the court lights to modern fluorescent tubes. This work was conducted in March 2010 at a cost of £1,900.

Roof considerations: The roof may need replacing in the future and we have quotes for between £5,000 - £10,000. The roof was patched up in Aug 2009, and hopefully we can forgo the need for a replacement for perhaps a few more years. This will give us time to save up for the required cost.

Just in support that a rear wall mounted unit is suitable for us, they are in use at Wimbledon and Charing Cross Sports Club (photo opposite).

This report goes on to give full details in the following areas:

Background
Requirement of System
Current Quote Details & Specifications.



Background

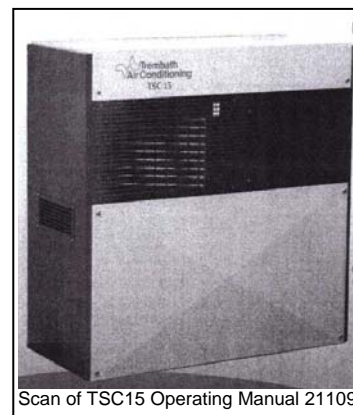
The Ups Club Squash Section was set up in around 1974. Ups Club members raised money to finance the purchase and erection of the current Banbury style squash court.



Records show that we've had around 513 playing members since 1994 (data as of 2007), maintaining on average, 70 members annually in recent years. The weekly average number of games played is 19.5 with around 40 people on average using the court weekly.

The first air con (dehumidifying) system installed by the Squash

Section was a TSC 15 from Trembath Ltd., Epsom. Trembath have since ceased trading. It is not clear exactly when the original unit was installed, but it was rumoured to have happened in the early to mid 1980's. It was needed because of the terrible problem of the ball skidding around on wet and slippery walls - particularly in the winter due to the coldness of the court. The unit became troublesome in around 1993 and cost us **£2,900** to maintain over the next 5 year period. It was decided in 1998 that it was uneconomical to maintain and so we investigated the provision of a new one.



Scan of TSC15 Operating Manual 21109

In 1995 we installed supplementary Quartzray Electric Heaters (FGS 2 x 2KW London Electric) at a cost of £1800 to help heat the court. As a consequence more power was needed in the court and so Peter Willmor kindly attended to this at an extra cost of £1500.

The Section decided to purchase another TSC15 and the replacement was fitted by Trembath on 23 April 1998. The full installation was not completed until August 1998. This unit also had the additional 2KW electric heater. Cost **£3325.25** (incl VAT and fitting).

Problems began to arise with this replacement unit in around 2005 - particularly with the thermostats, temperature control and wiring. Maskold were employed for the repairs and maintenance, but we eventually felt they were not up to the job of looking after this specialist unit. So we engaged Tech Refrigeration Services in around July 2006.

The problems with the unit were solved initially after the installation of a bespoke electronic control panel. The panel was installed in January 2007 at a cost of £1,947 (incl VAT and fitting). During the planning phase of the electronic panel we were told that all the control circuitry would be **solid state** with **electronic timing mechanisms and temperature control**. However it became evident in around early 2008 that the old style mechanical thermostats were still there and being used as well as a mechanical clock. This was a surprise to us as we had been led to believe that the electronic temperature control unit in the box would only need to be set **once** and would take care of the temperature electronically. The section has expressed its disappointment with this design omission, and this has subsequently been reflected in free repairs subsequently and a discounted quote for the proposed new system

In around 2008 we finally realised that the TSC15 unit itself had a limited serviceable life as it was rusting at a key structural place on the base chassis and the parts inside looked like they were coming to end of their useful life. Discussions began with Dave and Kevin of Tech Services about provision of a new unit. Dave and Kevin stressed that the provisional new unit could be **'greener'** (eco), and in the style of an internal blower and external compressor. Such a unit (as sited in many ICR labs) would actually only need to have a **single** temperature set - negating the need for Summer and Winter mode switching. In addition there would be energy savings as these modern units absorb more heat from the air in the winter and are hence much more eco-friendly. There were lots of further

discussions and visits to ensure the correct air volumes and heating/cooling requirements. These are documented in the **Quotes** section.

More information about the Squash Section is available via the web pages at <http://theupsclub.co.uk/upsdowns/squash.htm>.

Requirement of New Air Con / Dehumidifier System

Court specifications: Single shell concrete slab (tongue and groove) Banbury style exterior squash court. Roofing with non-insulated concrete/asbestos corrugated sheet. Wooden (maple) planking semi-sprung floor.

Court dimensions: 6m x 6.25 x 9.7 (h x w x d) - the height is an average based on the roof mid-point. Giving an approximate volume of **364m³** (height averaged).

Current Dehumidifying Unit - TSC15:

The TSC15 model had some key specifications and are listed below from the operation manual.

We used these as a basis for calculating what was needed in a new air con / dehumidifier system. A copy of the operating manual was given to Tech Refrigeration Services on 19 June 2006.

1. Electrical supply: 230V 50Hz 30 amps fuse with electric heater
2. Power 1.65KW basic plus 2KW electric element
3. Airflow: Courtside and outside airflow are **1050m³/hr** (620cfm)
4. Ingress Protection; Designed to fit on outside of court standard IP23
5. Refrigeration Circuit 1.25 HP system reversible with split indoor heat exchanger which always has a cold section to remove moisture from court air. Automatic defrost cycles. Refrigerant charge 1,150g of R22. Compressor S26UM61 CSR
6. Performance: 0-35C dry bulb, 30%-95% rel humidity. Winter mode recommended 10-13C (4KW). Summer recommended 22C (3KW).
7. Weight 100Kg
8. Two fans 75W each 900rpm.

Quotes

1. Tech Refrigeration Services Ltd.


Full details of all talks and correspondence with Tech in **Appendix 3**.

In July 2006 first discussions with Dave Douse and Kevin Ruggles on complete new unit - green and eco and efficient. This discussion was part of discussions on a new electronic control panel for the TSC 15 mentioned earlier. Dave thought we had quite a few more serviceable years from the mechanical bits in the TSC.

In April 2008 first request made by Steve for a formal quote for new system following meeting with Kevin. Specified that our preference was for a balcony wall mounting for the fan blower units. Kevin suggested stainless steel grill for protection of fans. **Air flow and power** requirements were discussed provisionally at this meeting. Steve was actioned to provide Kevin with details.

May 2008 - email to David Stewart informing him that we originally had a 30A supply, and that we were updated with additional 33A in 1996. Giving a total of **63A**.

Tech Refrigeration Services Limited

 TECH REFRIGERATION SERVICES LTD
7-8 Row Enterprise Park
Cranwell Close
Vale Road
London E2 9DZ
Tel: 020 7987 2477
Fax: 020 7987 4688
www.techservices.org

Institute Cancer Research
15 Cotswold road
Belmont
Sutton
Surrey
SM2 5NG

31st October 2008

For the attention of Mr S Edwards

Air-conditioning Squash Court

Dear Mr Edwards

Further to my recent visit, I have the pleasure in enclosing the quotation for the new air-conditioning heat pump systems in the squash court. These units are from the Mitsubishi Heavy range of equipment and have been selected to achieve 18°C.

We propose to install the out door unit at low or high level on the wall of the building below the asbestos section to the right of the entrance door with the pipe and interconnecting cabling rising internally to the indoor units. The indoor units will be located at high level at the rear of the court adjacent to the viewing area. The pipe and cable along with the drain lines will be inside a square PVC type trunking.

We have made no provision for new power supplies and will utilize the existing power supplies. The system will require a 1ph 25amp electrical supply and has a 23kw duty rating.

Wall mounted air throw **max 5 metres approx**

Exclusions
Power Supply to the unit other than existing
Redecoration
Scaffolding
All items not identified in the quotation
Connection to EMS system.

Price.
Mitsubishi Heavy Industries wall units
Our price to carry out the above will be **£5,765.65 plus vat**

The wall mounted units will require a grill to protect them from being hit by stray squash balls.
Our price to supply and fit two grills would be **£900.00 plus vat**

Should you have any questions regarding the above please do not hesitate to contact us. Yours faithfully,

Kevin Ruggles
For and on behalf of
Tech Refrigeration Services Limited.

First quote from Kevin 31.10.08

In July 2008 David Stewart sent details of air flow: "The wall mounted units you have requested have an air flow rate of **250 litres per second** I am not sur(e) how to turn this into cubic meters per hou(r), do you. Regards David"

Steve responded with an estimate: Dear David, $1\text{m}^3 = 1 \text{ metric tonne} = 1000 \text{ L (litres)}$. So $250 \text{ L/s} = 250/1000 \text{ m}^3/\text{s} = 0.25 \text{ m}^3/\text{s}$. $0.25 \text{ m}^3/\text{s} = 0.25 \text{ m}^3 \times 60/\text{min} = 0.25 \text{ m}^3 \times 60 \times 60/\text{hr} = \mathbf{900 \text{ m}^3/\text{hr}}$. I hope this helps, Cheers, Steve

Response from David "Thankyou very much I will keep the formula. So the **two wall mounted units** will be a better air flow than you have at the moment even when we cage them. The quote will be with you next week. Regards David".

In July 2008 told by Dave and Kevin that they were waiting for the price to come down (expected) before supplying the quote. Agreed to this and thanked them. We discussed our specifications which included stainless steel grille protectors for the internal blowers. Asked for photos of unit under consideration.

Received quote kindly from Kevin in October 2008 (see opposite). Price was £5,765 for the units and £500 for two stainless grilles that we had discussed previously to protect the blower units. Total = **£7,360** (inclusive of VAT).

In March 2009 we received the 'graphical' details of the proposed units. These Mitsubishi leaflets also included technical specifications. An 'artists' impression was made of how the new system would look. See Figure 1 below.



FIGURE 1a - Estimation of how inside blowers will look. Offset in this impression as we are not sure about moving the trunking (arrowed). No impression of protective grille available.



FIGURE 1b - One or two external units. Two units were confirmed (30.04.09) solution and initial proposed location.



FIGURE 2 - Suggested (21.05.09) and subsequently agreed location for revised quote of £6,000 (incl of VAT fitting and grille).

Mitsubishi Unit Specifications from Leaflets:

FDC125VN	[Outdoor Inverter Unit] x 2 1ph 25A (as shown on original quote) Cooling range 6.5 - 14.0 KW Heating range 6.2 - 16.0 KW
BLOWER	[Indoor Wall Mounted] possibly based on M2FDE60VN 2 x Units 900 m ³ /hr each (total 1800 m ³ /hr)
CONTROLS	As advised by Kevin by email 30.04.09

More details were needed so had a meeting with Kevin on 28 April 2009. List of questions and these were mostly addressed.

- The air flow matter was confirmed by Kevin as being more than adequate. With 2 units it would be nearly double the existing flow. Kevin thought that our new Ventaxia should be sufficient, and allow for 5-10% air change, but thought that it might need to be made **bi-directional**. Our new fan has bidirectional ability. **Check** on this further and ask for written confirmation.
- Kevin confirmed that having **2 independent units** was the best solution. So asked if they could be controlled centrally to give just one temperature. Kevin confirmed a **single controller** could run a **dual system**. It will need to be placed in a secure ventilated perspex container with a lock & very near to where the ambient temp is most consistent. It will need to be **tamper-proof** and we need **further** confirmation of the provision.
- Kevin assured me that the proposed system would be more than adequate for water vapour removal. Water will be drained from inside and outside units dependent on heating or cooling mode. Agreed that drain pipes would both emerge near siting of outside units. Kevin said it will be possible to have variable fan speeds for different requirements. E.g. wetter or dryer conditions. Kevin confirmed that the controller allowed for **3 variable fan speeds** for different conditions.
- The **air filters** will be accessible for cleaning by leaning over the balcony wall for access. **This needs confirmation**. We had a new discussion on making a single grille to fit both plastic blower units. It will need to be accessible from the balcony and be on adequate hinges. Holes in grille to be approx ½" square.
- I asked Kevin about a **Service Contract** and Preventative Maintenance (PM). He said that he didn't expect anything to go wrong. Kevin said he would **check** on warranty - 1 or 2 years. The normal PM consists of a summer and winter clean and operation check. Disinfectant step is routine as these units are re-circulating. Approx £75 per visit. **Need this in writing**. Was originally quoted verbally approx £250 per annum for SC.

A summary of the meeting and web link to associated files was sent to Squash Committee as [05 Debrief of Meeting with Kevin Ruggles about Mitsubishi Air Con 28.04.09.doc] on 29 April 2009 to update them on progress.

Received confirmation from Kevin by email on 30 April 2009 that "we can install **two systems**, in place of the **multi split** already quoted, for the **same price**. The systems will be of the same manufacturer and you will see no physical difference only you will have two outdoor systems. As for the controller, the controller has the facility to **disable the control buttons but still leave the on / off button functioning**. This will enable you to set the temp / fan speed and **lock the controller** but still be able to switch the system on and off when required manually. hope this clarifies the situation. best regards kevin "

On the 21st May 2009 Dave and Kevin attended on a separate matter. Took the opportunity to see if there was any room to negotiate on the price of **£7,360** quoted in October 2008. Said that we had recently been caught by surprise by VAT on the court refurbishments. So asked Dave and Kev if there was any way to avoid having to pay VAT. I said that I thought that the committee might be

willing to pay £6,000 in total for the units and grille. So the idea of a discount emerged and I added in the fact that we had paid a lot of money for the electronic panel - that in fact did NOT function as promised. I said I was obliged to get the best deal for our members as we only made a modest amount of money each year.

Dave said that he would think about ways to cut the costs and this might mean not such a high standard job. I voiced my worries about lowering the standard compared to the quote and agreement with Kevin on his visit (28.04.09).

Dave's suggestion was:

- maybe use mild steel instead of stainless steel for the protection grille
- maybe mount the external units on the exterior side wall instead of near the entrance.

We looked at the side wall mounting option (see Figure 2) and I said we had to be careful of vans or buses.

Dave thought the concrete panels would be strong enough for mounting.

Dave said to "leave it with me" - implying he would go away and think about the figures. We shook hands and I thanked them both for their kind visit.

Had some further chats with Dave and Kevin and was told that they had managed to get the whole quote **inclusive of VAT down to £6,000**. The quote arrived on June 24th, 2009 kindly from Kevin [**08b icr squash ct three 2009 updated quote 24.06.09.doc**] - see opposite. Thanked Kevin for this (24.06.09).

"Further to our recent negotiations, we have pleasure in enclosing the updated price for the proposed new air conditioning heat pump system. The system is from the Mitsubishi Heavy Industries range of equipment and as before has been selected to achieve a **temperature of 18°C**.

During our recent meeting on site we identified the location of the **outdoor unit** and the indoor units, which we agreed would be suitable. All other points identified in our previous quotes including the exclusions would remain the same except the updated price.

Price: Our price to supply and install the air conditioning system and the protection grills will be **£6,000.00** including the Vat

Should you have any questions please don't hesitate to contact us

Yours Faithfully

Kevin Ruggles

The proposed new location is the outside wall in the Sutton Hospital car park - this proposal will save money, see Figure 2 for artist impression.

Since this quote was received I have had many further discussions with Dave & Kev - with the most recent on 11 April 2011 confirming our wish to pursue their quote.

Just as an aside, in late 2009 I happened to mention to Don Taylor (RMH Maintenance Manager) that we were looking into a new air con system. He offered to discuss the matter with his engineer and get back to me. Details at time of writing below



2. OROSTREAM AIR CONDITIONING LTD: Crowborough

Don Taylor of the RMH kindly offered to discuss our requirements with his air con contacts. Spoke to Don on 13 October 2009 and he has kindly obtained some provisional quotes to discuss with us.

This is one of them, kindly received from Don 23.10.09 and has very few technical specifications.

Comfort Air Conditioning Systems

The proposed systems are of the wall mounted split type and are as manufactured by **Fujitsu Air Conditioning Industries**. Supply, delivery, installation and commissioning of 1 No. Fujitsu wall mounted Inverter type comfort air conditioning systems **£1,960.00 plus VAT**.

More details to follow in [Appendix 1](#).

3. Constant Cooling : Cambridge

Don Taylor of the RMH also kindly provided this quote on 23.10.09

Area	SQUASH COURT
No. Off	1
Model	Daikin Model UATYP180A/HPC
Cooling capacity range	nominal-18.0kw
Heating capacity range	nominal 19.0 kw
Condensate removal	Gravity
Controls	Wired remote
Indoor unit location	not applicable
Electrical requirement	TBA 3 phase
Outdoor Unit	Not applicable
Refrigerant	R410a refrigerant

Price: To Supply, deliver and install the above Daikin Packaged unit, all ductwork modifications and alterations will accrue at: **£6,825.00 excluding VAT**.

More details to follow in [Appendix 2](#).

I leave this report for your consideration,
Yours sincerely,



Mr. Steve Edwards.
Chairman: The Ups Club Squash Section
(On behalf of The Ups Club Squash Section Management Committee)
cc Ups Club Squash Section Management Committee

08 May 2011

Appendix 1

Reproduction of OROSTREAM AIR CONDITIONING LTD: Crowborough Quote

Aircon Works, Park Road, Crowborough
East Sussex TN6 2QT
Telephone: +44 (0) 1892 665888
Fax: +44 (0) 1892 663218
Email: info@oacservices.co.uk
www.oacservices.co.uk



RPT/JAD/E3030

2nd September 2009

Royal Marsden NHS Trust
Downs Road
Belmont
Sutton, Surrey
SM2 5PT
For the attention of Mr. D Taylor

Dear Sirs,

Re: Squash Court Heat Pump Inverter - Comfort Air Conditioning Systems

Thank you for your recent enquiry to provide air conditioning services to the above, with reference to our recent visit to site and subsequent survey please find detailed below our proposal for your consideration.

We understand that a comfort heat pump type system required to serve the Squash Court to supplement to existing air conditioning system.

The proposed systems are of the wall mounted split type and are of the wall mounted split type and are as manufactured by Fujitsu Air Conditioning Industries.

Please note we have allowed for carrying out works during normal hours.

Control of the proposed system will be via infrared remote controllers to provide the following functions-

- ON/Off operation
- Fan only operation
- De-humidification cycle
- Cooling operation and automatic control
- Heating operation and automatic control
- Fan Speed selection and automatic control
- Timer Facility
- Vertical auto swing function

We have allowed for gravity condensate removal to a suitably agreed location. The interconnecting refrigeration pipework, power and controls wiring will be installed surface mounted within a trunking system to the external condensing unit located at ground floor level.

Our prices would include for the following works:-

- Interconnecting refrigeration pipe work insulated with class 'O' Armaflex and anchored using suitable fixings as required.
- System to be pressure tested and evacuated as per OAC procedures for type B system.



Registered Trading Name



OROSTREAM AIR CONDITIONING LTD



Registered in Cardiff No.1869764



V.A.T. No. 423 1016 13

Reproduction of OROSTREAM AIR CONDITIONING LTD: Crowborough Quote Page 2

Re: Squash Court Heat Pump Inverter - Comfort Air Conditioning Systems

- Interconnecting control wiring installed to meet the requirements of the IEE Regulations 17th Edition.
- Gravity condensate discharge to a suitable location.
- Pressure testing, evacuation and charging of the system.
- Final commissioning and certification.
- Builders works holes, diamond core cutting and making good.

Please note we have not allowed for the mains electrical supplies a single phase fused and isolated weather proof supply would be required.

Our costings for the supply, delivery, installation and commissioning of the proposed systems can be seen detailed below: -

Supply, delivery, installation and commissioning of 1 No. Fujitsu wall mounted Inverter type comfort air conditioning systems	£ 1,960.00 plus VAT
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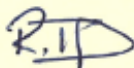
The systems quoted above operate on refrigerant R410A, an environmentally friendly refrigerant.

The above price is based on OAC Standard Terms and Conditions and open to acceptance for 30 days. Availability is currently 3 days at the time of this quotation.

We trust that you find the above satisfactory, however, should you have any queries or require further information please do not hesitate to contact myself.

Assuring you of our closest attention at all times we remain,

Yours faithfully
OROSTREAM AIR CONDITIONING LTD



R.P Taylor

Appendix 2

Reproduction of Constant Cooling : Cambridge Quote



Mr Don Taylor,
Estates Manager,
Estates & Works Dept,
The Royal Marsden NHS Foundation Trust Hospital,
Downs Road,
Sutton,
SM2 5PT.

Our ref: DGP/DT/SC/17007.

Dated: 8th October 2009

Dear Don,

Re: Squash Court ~ Replacement of the old ducted Trembath through the wall unit serving the Squash Court Area.

First of all, I would like to thank you for your time and courtesy shown following my recent site visit.

Apologies for not getting back to you sooner but it has been quite tricky finding a replacement system for this particular project, which is suitable.

Furthermore, having surveyed the site, we would propose to install a slimline ducted packaged unit all in one.

“As part of our total price, we will include for all the PPM visits on this system which will be added to the Hospital Service Contract “ Free of charge” for the duration of the contract.”

Please find detailed below our specification, design and quotation accordingly as requested.

Our specification and calculations are based upon the information supplied by you and my recent site visit. We also base our heat load calculation on CIBSE TM44 guide “rule of thumb” at calculated the heat load on 0.150 watts/m².

We have selected the equipment manufacturer as the **Japanese** made product **Dailin** range of UATY slim line packaged heat pump ducted system, of which is a **top quality product** available on the European & world-wide market today for the application of Comfort Cooling, High Sensible and Heat pump applications and are both our preferred equipment manufacturer’s.

The standard design parameters are based upon the following criteria, internal temperature of 22 C. with a differential of +/- 2C. Operating at a maximum outside Ambient temperature of 32 Degrees C. The total

E-mail: info@constantcooling.com

Website: www.constantcooling.com

1

Head Office: Unit 22, South Cambridge Business Park, Babraham Road, Sawston,
Cambridge, CB22 3JH

Company Registration: 2577782

Appendix 2 - continued

Reproduction of Constant Cooling : Cambridge Quote Page 2



required cooling duty for the areas is based upon taking into consideration Lighting, people, and total surface area and all other Heat Loads from miscellaneous items, such as medical equipment.

Equipment Details: DAIKIN "UATY" PACKAGED DUCTED HEAT PUMP UNIT ON OZONE FRIENDLY R410A REFRIGERANT GAS.

Area	SQUASH COURT
No. Off	1
Model	Daikin Model UATYP180A/HPC
Cooling capacity range	nominal-18.0kw
Heating capacity range	nominal 19.0 kw
Condensate removal	Gravity
Controls	Wired remote
Indoor unit location	not applicable
Electrical requirement	TBA 3 phase
Outdoor Unit	Not applicable
Refrigerant	R410a refrigerant

Installation:

The old packaged unit will have the old HCFCR22 refrigerant safely reclaimed and removed from the system prior to disposal of the old packaged unit.

To Supply, deliver and install all new interconnecting ductwork & interconnecting electrical services and control cabling between the packaged unit and indoor controller respectively. The condense water produced by the evaporator fan coil unit will be removed by means of a gravity drain to a suitable waste/drain. This unit comes pre charged and is all in one unit and all Refrigeration pipework and associated fans etc. is already manufactured and installed within the packaged unit.

We will require for a power supply to the outdoor unit only. We have excluded for the power supply within our quoted price and will advise on what is required in due course.

Commissioning:

Once gas charge has been released into the system and power supply has been provided we will run and test the plant and commission into full working order in accordance with the manufacturers' recommendations. Once the installation has been fully completed and all waste materials removed from site. We will provide the End User with the standard manufacturers' operation and maintenance manual.

E-mail: info@constantcooling.com Website: www.constantcooling.com

Head Office: Unit 22, South Cambridge Business Park, Babraham Road, Sawston,
Cambridge, CB22 3JH

Company Registration: 2577782

2

Reproduction of Constant Cooling : Cambridge Quote Page 3



Quote Ref: DGP/DT/SC/17007

Date of Quotation: 8th October 2009.

Client: The Royal Marsden NHS Foundation Trust Hospital

Project: Squash Court

Price:

To Supply, deliver and install the above Daikin Packaged unit, all ductwork modifications and alterations will accrue at: **£6,825.00 excluding VAT.**

Delivery & Installation Programme:

At the time of preparing this quotation the proposed equipment is available within 10 working days at Daikin and available for delivery. We have the necessary Labour & Associated Materials to commence the installation in 2 weeks from receiving your official confirmation purchase order or written instruction to proceed.

Terms & Conditions:

The quotation is valid for a period of 30 days from the above date stated. Our payment terms are 30 days after submission of invoice. However, we are aware of standard NHS payment schedules and are happy to accept the terms and conditions for this.

Warranty:

The Toshiba equipment comes with a standard 5 Years "Parts" Warranty. However, to validate the 5 Years Parts Warranty a service contract is required to be taken out on completion. **As already mentioned we will add to the Hospital Service Contract "free of charge"** The rest of the installation of course comes with a standard 12-months Parts & Labour warranty on completion.

Exclusions:

- Out of hours working.
- Builders' work and new concrete base if required.

E-mail: info@constantcooling.com

Website: www.constantcooling.com

3

Head Office: Unit 22, South Cambridge Business Park, Babraham Road, Sawston,
Cambridge, CB22 3JH

Company Registration: 2577782

Reproduction of Constant Cooling : Cambridge Quote Page 4



- Main Electrical power supply.
- Diamond drilling ~ (not required following site survey)
- As installed drawings or any other literature, other than that of the manufacturers' standard operating and maintenance manual.
- Painting and re-decoration thereafter
- Any increased costs due to Suppliers' price increases after 30 days from the above date of quotation.
- Any other item of works not already mentioned in the above quotation.

We do hope all is in order and hope that we have anticipated your requirements correctly.

However, should you require for any further information, or have any queries in relation to the above proposal and quotation or any other project on your site. Please do not hesitate to contact me. My mobile number once again is: **07703-100180** or email darren@dparker.uk.com

We look forward to receiving your further instructions in due course.

Kind regards,

Yours sincerely,
For and on behalf of Constant Cooling Ltd,

Darren G. Parker

Darren.G.Parker ~ Commercial Director.

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Appendix 3

Full details of communications with Tech Refrigeration Services Ltd., on new air con system.

- 19.07.06: First discussions with Dave and Kevin on complete **new** unit - green and eco and efficient. This discussion was part of discussion on a new electronic control panel for the TSC 15. Dave thought we had quite a few more serviceable years from the mechanical bits in the TSC.
- 05.01.07: Electronic control panel fitted to TSC 15 by Dave and Kevin.
- 10.04.08: First official request to David Stewart for quote for **new** unit by email
- 29.04.08: Pager message from David. Kevin from Tech Services had measured us up for a **new** Dehumidifier/Air Con. Kevin was onsite on 29.04.08 and we attended the court together. My preference was balcony wall mounting for the fan units. Kevin suggested stainless steel grill for protection of fans. See **handwritten notes filed by that date** in squash lever arch archives. Air flow and power requirements were discussed provisionally at this meeting. Steve to provide Kevin with details.
- 07.05.08 Email to David. Informed him that we originally had a 30A supply, and that we were uprated with additional 33A in 1996. Total now is 63A. Supported by letter to London Electric dated 26.02.1996 (lonelec6.doc & lonelec5.doc).
- 07.05.08 Same email to David asking if any news on promised quote.
- 12.05.08 Spoke to Kevin on a different matter, but informed him that power supply details had been emailed to David Stewart. Kevin unaware of this.
- 29.05.08 Email to David to ask if any news on quote for **new** air con unit. No reply. Filed by date.
- 12.06.08 Further email to David. Asking if caused offence. Asking if any news on quote promised by Kevin.
- 12.06.08 Pager message from David. Then called David. Told there was a '**price war**', and 'people were falling over backwards' to give better prices on a **new** air con unit. Maintenance contract in the region of £250 pa.
- 08.07.08 Email to David to ask about promised quote for **new** air con unit.
- 09.07.08 Called David in office but not there. Told by lady David would call me on 10.07.08
- 10.07.08 Spoke to David in office. David told me he was **still** waiting for air flow data. But no reason given for why no quotes and no answer to my emails despite 'air flow'.
- 10.07.08 Email to David to apologise for not sending air flow data.
Gave power ratings of TSC 15. 1650W + 2000W extra heating element
Airflow courtside and outside are 1050 m³/hr (620cfm)
- 10.07.08 Reply from David saying airflow on proposed new unit of 250 L/s. David not able to convert to m³/hr.
- 10.07.08 Email to David to say my calcs were 900m³/hr
- 10.07.08 Thank you email from David - saying we will get more air flow. Also saying quote would be with me "**next week**".
- 11.07.08 Reply to David cc Squash Committee saying that I look forward to the quote.
- 17.07.08 Met Dave and Kevin they confirmed that they were waiting for price to come down.
Told Dave and Kevin that I needed **photos** of the proposed unit so that I could show them to the committee.
- 22.07.08 Email to David to confirm my chat with Dave and Kevin. Asking about prices (as falling) and requesting **photos** of units for inside and outside court.
- 22.07.08 Reply from David on our TSC 15 problem - but nothing on new air con unit.
- 22.07.08 Archive file made in squash lever arch filing system for **NEW AIR CON UNIT** under Section 5 - Maintenance.
- 25.09.08 Email to David (cc Committee) to ask if any news on the quote for the **new** unit ?
- 31.10.08 Rang Dave on new number 0208 981 0000. He said he would chase Kevin on the quote and look into a 'feasibility visit'.
- 31.10.08 Email from Kevin (kevin@techservices.org) to apologise for delay and providing quote in WORD format (**icr sutton squash club 2nd quote.doc**). This implies a first version was sent, but this is the first quote I have received.
- 31.10.08 Thanked Kevin for the quote and asked if he had any **photos** I could the committee so that we can get a feel for how things will look.
- 05.11.08: During reporting fault to Dave asked if he would send photos through. He said he would talk to Kevin.
- 26.11.08 Dave and Kevin attended TSC 15 on coil problem Apologetic about **photos** and promised to look into providing a **PDF**.
- 01.12.08 Email to David and Dawn to request confirmation of this kind promise.

- 17.02.09 Email to David & Dawn to remind them of my 01.12.08 enquiry about photos of proposed air con system so that I can show committee. No reply to my email request
- 06.03.09 Rang David Stewart and spoke to him. He said he had sent the stuff I requested. I said I had not received anything. David suggested that perhaps it had to my old works address and somebody had confirmed receipt. He promised to send a new lot to my home address.
- 06.03.09 Emailed David Stewart to say thank you and to say I looked forward to receiving the Mitsubishi air con information. No reply
- 13.03.09 **Two leaflets** kindly including **photos** received from David (Tech Services) on Mitsubishi Ecolution Inverter Systems.
- 15.03.09 Thanked David by email and **cc'ed in the squash committee**. Asked if it would be possible to **convene a meeting** to discuss the intricacies of the proposed system.
No reply to my request
- 21.04.09 Email to Dawn and David to remind them of my request for a meeting
- 22.04.09 Rang Dawn and she said that she had not time to respond to my email. She kindly scheduled a meeting with Kevin for 08:00 hrs 28 April 2009. Kevin would also change TSC 15 to summer mode.
- 27.04.09 Scanned the two PDF's.
[03a Mitsubishi Ecolution FDC Inverter Multi Systems Rec 130309 Scanned 270409.pdf]
[03b Mitsubishi Ecolution Wall Mounted Inverter System Rec 130309 Scanned 270409.pdf]
- 28.04.09 Kevin kindly attended for meeting about potential installation.
Questions prepared in [04 Questions for Kevin Re New Air Con System Meeting Scheduled 280409.doc]. Notes in \11 Ongoing Maintenance\04 New Air Con Mitsubishi Quote Oct 2008 on [05 **Debrief of Meeting with Kevin Ruggles about Mitsubishi Air Con 28.04.09.doc**]
- 29.04.09 Email to Kevin to say thank you for coming in to discuss new system. Also asking for a few specs and confirmation.
- 29.04.09 Email to committee to update them on the meeting. Sent the debrief file mentioned earlier.
- 29.04.09 Another email to committee to say accompanying files in a ZIP on theupsclub.co.uk.
- 30.04.09 Email from Kevin to say thanks for my email. Can install 2 systems for the same price. Details on controller - disable buttons, but still leave ON OFF function. I.e. ON OFF manual over-ride.
- 11.05.09 Email to thank Kevin for his specs and to say that committee need a report. Asking Kevin if he is willing to chip in with info as needed. No reply.
- 21.05.09 Dave and Kevin kindly attended at 14:30hrs for the 'summer mode' problem (see Note 3). We had a long discussion on the proposed new Mitsubishi system. I attempted to sow the seed of the idea of a **discount** on the new system - particularly as we had so much trouble with the electronic panel fitted in Jan 2007 (see Note 3 entry for 21.05.09) - i.e. unit wasn't '**fit for purpose**'.
I said that we had to factor in that the electronic control box wasn't doing what it was supposed to - this meant that Tech Services were constantly having to come out (all winter/summer switch overs) plus it was very time consuming for me. Basically we were all wasting a lot of time on this matter.
However I told Dave and Kevin that we needed the current TSC15 to work this summer and next winter as this would give us time to raise the money for the new Mitsubishi system. I said that Kevin had kindly quoted £5800 for the units (now 2 inside and 2 outside for the same price - verbal agreement) and £500 for the stainless steel blower grille. This price of approx £6300 was exclusive of VAT (£945). I said it was the VAT that was 'crucifying' us. I said that we had recently had a surprise with the court painting and the VAT had not been mentioned and was a shock. I said that the committee was aware of the current quote and that we were about to raise our charges from £1.50 to £2.50 in order to generate more money for our reserves as the £7245 would deplete the current resources considerably. **So repeated that we were being crippled by VAT and that I would like to be able to tell the committee that we could get the whole system for £6000 all in.** I said I thought the committee might sanction the system for this price. Dave and Kevin thought that we might not have to pay VAT. I said I didn't think this was correct. So there followed a discussion on 'cash' and ways of avoid paying VAT - e.g. large job and cream off units for us.
I said I had to keep things legal but was open to any ideas that could save us money. I said it was my **duty** to try to get the **best deal for our members** as we only made a very modest amount of money every year (approx £1000 per annum).
Dave said that he would think about ways to cut the costs if we didn't need such a high standard job. I was a bit worried about lowering the standard compared to the quote and agreement with Kevin on his visit (28.04.09). But the suggestion wasn't too bad and was two fold:
- maybe use steel instead of stainless steel for the protection grille
- maybe mount the external units on the side wall instead of in the corner near the entrance.
This would mean that less plumbing and fitting cost would be less.
We looked at the side wall mounting option (Photo taken 02.06.09) and I said we had to be careful of vans or buses. Dave thought the concrete panels would be strong enough for mounting.

Dave said to “**leave it with me**” - implying he would go away and think about the figures. We shook hands and I thanked them both for their kind visit.

- 17.06.09 Dave and Kevin attended for a ‘reversing’ thermostat problem (first noted 22.05.09 and reported by email to HQ 26.05.09). After they had dealt with the problem, Dave asked if I had received the **quote**. I said no. He said they had managed to get the cost to **£6000** as discussed on 21.05.09 visit. I thanked them and suggested it had possibly gone to the wrong address (as had happened for original quote). They suggested I speak to Dawn. I agreed and thanked them again (said I was thinking of pestering them in about a week’s time as I had heard nothing !!). I suggested they emailed info as PDFs in the future, this seemed acceptable.
- 23.06.09 As nothing received from Dave and Kevin, called Dawn in head office. Dawn said she would look into the quote mentioned by both on 17.06.09 - said she would call me back. No call back.
- 24.06.09 As there was no call back, decided to email Dawn address for correspondence and suggestion to email quote if possible.
- 24.06.09 Email quote from Kevin [icr squash ct three 2009.doc] - total cost of job is now **£6000 incl of VAT** as discussed on 17.06.09. Renamed and saved as **[04 New Air Con Mitsubishi Quote Oct 2008 on] [08b icr squash ct three 2009 updated quote 24.06.09.doc]**. Thanked Kevin by email (24.06.09) and said would await views from committee after circulating the new quote.
- 2009 - 11 Continued discussions - details to be added
- 11.04.11 Phone call and email to Dave Douse confirming our wish to continue discussions (Steve)

Document History:

- 08.05.11 Updating for AGM scheduled on 12 May 2001 (Steve)
Added in Charing Cross Mitsubishi details
- 23.10.09 Updating with 2 quotes kindly received from Don Taylor
- 21.10.09 Document started (Steve Edwards)
Based on template of
[09d Squash Section Business Plan Report for Committee Final Version 170209.doc]

Document was promised in Newsletter of 28.07.09 and is the basis of a business plan for consideration of buying a new air conditioning system for the squash court

Information sources:

- TSC15 Operations Manual: Copy to Tech Services June 2006. Also copy filed in archive by July 2006 date
- Squash Section Business Plan [09d Squash Section Business Plan Report for Committee Final Version 170209.pdf]. Available at:
http://theupsclub.co.uk/upsdowns/sq_vgm_060209.htm.
- Most Mitsubishi Tech Refrigeration Services related files in folder
[Freecom 320Gb Ext Disk]
[03 Squash Files]
[04 Squash Documents]
[11 Ongoing Maintenance]
[04 New Air Con Mitsubishi Quote Oct 2008 on]
- Specific timetable of new unit discussion with Dave and Kevin in
[16c Things To Do and Prizes Vouchers 2005-06-07-08-09.doc]
These details reproduced in **Appendix 1**.
- [00b Formula for Mitsubishi Airflow Data 10.07.08.doc]
Air flow correspondence and calculations with David Stewart
- Artist impression of how things would look based on October 2008 Tech quote
[05 Debrief of Meeting with Kevin Ruggles about Mitsubishi Air Con 28.04.09.doc]
&
[99 Temporary Artist Impression of Mitsubishi System in Court 290409.ppt]