

THE *trend*

THE OFFICIAL QUARTERLY NEWSLETTER OF RELIABLE CONTROLS® CORPORATION



Controlling The Cup



CONTROLLING THE 2010 FIFA WORLD CUP

At one time in the not too distant past, FNB Stadium was a somewhat bland stadium lost in the Soweto sprawl and known only to the rest of the world as the site of Nelson Mandela's first speech in Johannesburg after his historic release from prison.

In all likelihood, the dusty stadium would have remained on the fringe of memory for most, except the frenzied fans of the Orlando Pirates, the local soccer club. But when South Africa was awarded the 2010 FIFA World Cup, an extensive make-over was in order. Indeed, even the name would change as the outdated FNB Stadium received a complete make-over to the tune of 1.5 billion rand.

For the lion's share of June and July, the 97,000 seats of the newly-named Soccer City Stadium were a vibrant flood of patriotic colors amid the hum of swirling vuvuzela horns. At the center of the action was the striking exterior of the refurbished stadium – designed to have the appearance of an African pot; the cladding on the outside is a mosaic of fire and earthen colors with a ring of lights running around the bottom of the structure, simulating fire underneath the pot. An important component of the ground-breaking make-over included the installation of a Reliable Controls® MACH-System by our South African Authorized Dealer, Redbase Systems.

2 MACH1™	10 SPACE-Sensor Temperature
2 MACH-Global™	14 MACH-Zone™
6 MACH-Global™ Output Expansion Cards	21 MACH2™
8 MACH-Global™ Input Expansion Cards	34 MACH2™ Expansion Cards

With a mixture of environments and large-scale needs, Soccer City Stadium was loaded with an impressive list of conditioning equipment that included 347 water source heat pumps, 134 fans, 14 air handler units, and four computer room units. The main plant room was populated with four cooling towers, and four secondary condenser water pumps controlled on differential pressure.

Desmond Cory, a member of Redbase Systems, describes the MACH-Global™ as the workhorse of the installation, "We have two fully-loaded MACH-Global™ controllers. We are using the two subnetworks on the one MACH-Global™ controller to pick up the MACH2™, MACH1™, and MACH-Zone™ controllers."

The entire installation is BACnet® which allows for integration into a third-party's electrical power controls system.

Congratulations to Desmond Cory and his team for a winning job on the world stage.



PARADISE BY THE DASHBOARD LIGHT

On Wednesday June 16, 2010, Reliable Controls® posted a significant update to the GrafxSet 2.0 online subscription service. Most important in the update is the folder labelled [Dashboard]. Within the folder are three subfolders containing [Industrial], [Modern], and [Vintage] themed dashboard components and a [Charts] subfolder containing components for 2-D and 3-D bar charts. Valid subscription holders can download the new updates free of charge and begin building informative and professional looking dashboards.



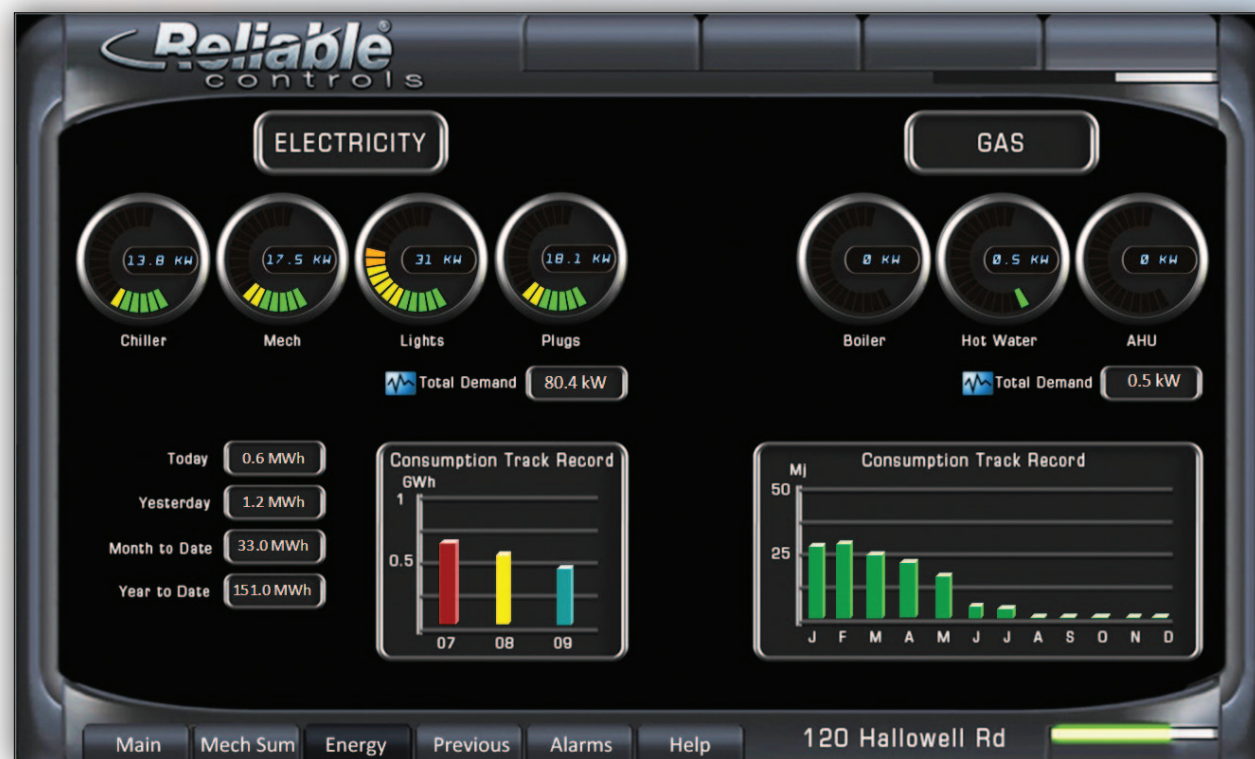
Visit...

<http://www.reliablecontrols.com/products/software/GFX/feature.html>

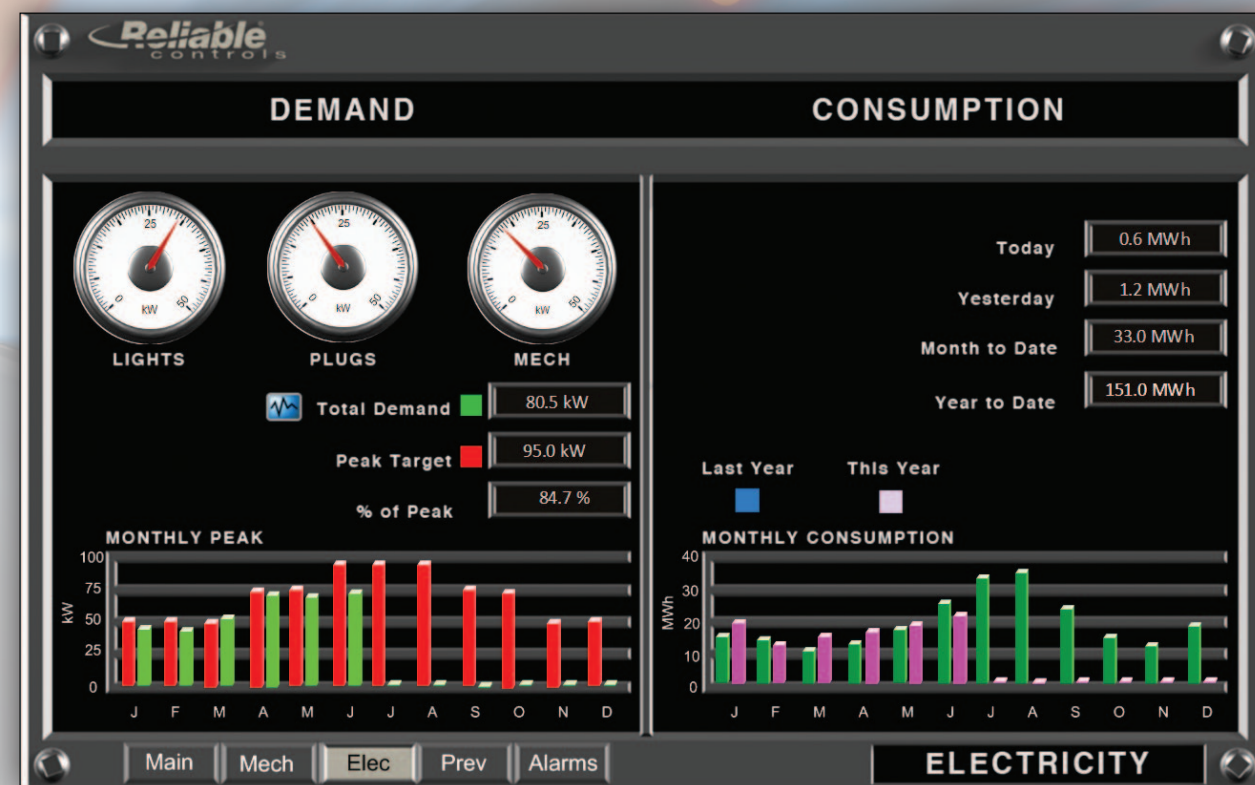
...to find out more.



Vintage



Modern



Industrial

New Dealers

Weatherite Corporation

Los Angeles, CA, USA



BJ Fu Chang Hang

Beijing, China



Beaumont, TX, USA



Auckland, New Zealand



Riyadh, Saudi Arabia



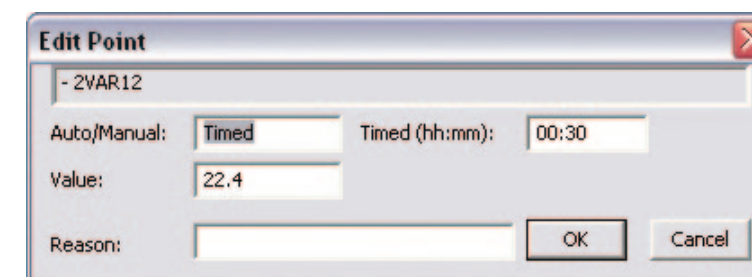
Swift Current, SK, Canada

RC-WebView Update Release

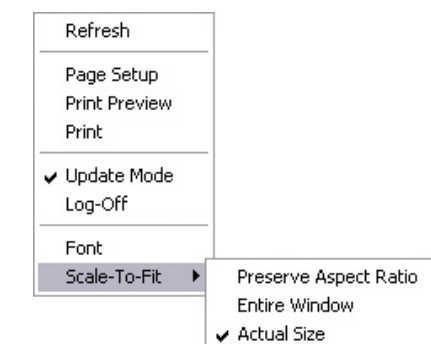
A new update for RC-WebView™ 2.0 has been released. If you need SMART-Space Controller™ and BACnet Trend Log support, Update 1.52 is for you.

The big ticket items added in this release are:

- SSC System Group support,
- BACnet® Multipoint Trend Logs can be linked to System Groups and opened in the same manner as regular RCP Trend Logs,
- Support for setting the Auto/Manual value to Timed on MACHProCom™ controllers and SSCs (The Auto/Manual value is set by clicking the Auto/Manual field in the Edit Point dialog box.),



- Better support for systems using dynamic hosting,
- Users can make a font selection and declare a font default,
- Users can edit hyperlinked text files and all users see the same text file, and
- New scale-to-fit options that include: Preserve Aspect Ratio, Entire Window, and Actual Size.



Log into the Customer Support Centre to download your free update, or contact your local Authorized Dealer for support.



THE BIG CHILL OUT @ THE HOLIDAY INN



Perched on the edge of a rainforest, Cairns, Australia is a bustling city of 160,000 located 1,700 km north of Brisbane. Thriving in a tropical monsoon climate is no easy feat, especially in the face of a tourist boom that demands flawless air conditioning from systems that harken back to a construction flurry that ran between the 80s and 90s. Today, most of the town's mechanical equipment is either at the end of its useful life or the technology is of an age where the operating costs are high compared to modern equipment. But in a climate where cool is king, if the air conditioning equipment is not working properly, business simply walks out the door, whether it be a supermarket, a small corner store, or a big hotel.

Recently, the Cairns-area Reliable Controls® Authorized Dealer, Environment & Energy Systems has benefited from a dramatic increase in chiller control replacements, in particular, a challenging screw chiller upgrade at the Holiday Inn overlooking the city's harbour-side promenade.

According to Richard Kowalski of Environment & Energy Systems, the Holiday Inn screw chiller upgrade came about as a result of an inability on the part of the client to obtain cost effective repairs to the existing chiller controls. Several air conditioning companies had examined the chiller's operation and after consultation with the manufacturer had determined that the main chiller controller had "checked out of the hotel".

An analysis of replacement costs for the controller revealed a comparable replacement cost with a Reliable Controls® MACH-ProCom™ coupled to 3 MACH-ProPoint™ expansion modules and 2 MACH-Stat™ controllers for front panel display and settings. The big advantage in the Reliable Controls® equipment was the enormous increase in cost-effective data available for managing the machine.

Interfacing into the McQuay Frame 3200 screw compressors required taking control of the slide valve to control capacity. There are two solenoids on each compressor driven by Pulse Width Modulated (PWM) signals to position the slide. One solenoid drives the slide shut and the other solenoid drives the slide open. Programming this involved creating a PWM signal from a 0–100% controller output signal, then using code to determine which direction the signal was trending and directing the result to the appropriate solenoid.

To keep the programming overhead to a minimum, actual control and monitoring of the chiller and compressors was accomplished in a couple of small programs; one for the system and one for each of the compressors. These programs used doubling series calculations and allowed complex conditions to be modeled and evaluated by simply assigning a number to any system state or any I/O state. The numbers are added and the result is used in decision making. The important part is that each number assigned must be double the previous number. As an example, if the Front Panel Switch is ON, then it has a value of 1. Adding a low pressure control assigns a value of 2 when it is on. Then if a water flow switch is enabled, it is given a value of 4, and so on. The next device is 8, then 16 – each number is double the previous. If the devices are OFF, they are given a value of 0. By adding these values a single equation can be used to determine what is ON and what is OFF and the result can be used to decide how to respond. In the case of a three device system, $1 + 2 + 4 = 7$. If the result is 5, we know that the Panel Switch is ON and the Waterflow Switch is ON ($1 + 4$) because the value of the pressure control is 0, and thus we can respond appropriately. When we use a Doubling Series, each result is unique and none are duplicated. In addition to control, the resulting numbers are also useful for generating alarms based on simultaneous, multiple states with minimal code penalty.

Thanks to Environment & Energy System's installation of the Reliable Controls® MACH-System, the client has access to an enormous amount of information from a large capital cost machine. In addition, the system's operating performance can be closely scrutinized and adjustments made. Kowalski sums up the project – "Chiller manufacturers are notorious for closely guarding their software and usually lock it up to prevent others from accessing it. The penalty is, that a lot of useful information is also locked up in the process. The cost of running a plant of this nature can be substantial and it doesn't take much for the large number of complex interacting systems to get out of shape and drive those operating and maintenance costs up. The more information that is available – the better the management of the system."

Kowalski continues saying, "The other big advantage of the Reliable Controls® installation lies in the addition of interoperability. The controllers installed on the project were programmed with BACnet® objects and as a result are freely available to other peripheral equipment for control and management. Taken as a whole, the choices available to the client after the installation have been increased immeasurably. With more choices comes the ability to maximize the function of any solution and keep its cost to a minimum. The bottom line – that's what it's all about."

www.enviroenergysys.com



Holiday Inn

NEW BUILDING UPDATE



The new Reliable Controls® head office annex is progressing steadily. Final design reviews are being completed and the LEED design team is preparing to release tender documents for the end of September, 2010. If all goes as expected, excavation will begin in November 2010. The new wing will house the research and development, marketing, and administration departments, as well as provide space for future growth.

The project scope centers around the construction of an annex to the existing research and production facility as well as mechanical and electrical alterations to the existing building to accommodate the connection between the two structures. The addition includes two levels of below grade parking (2,465 square metres) that will accommodate vehicles, service rooms, bicycle storage, and refuse/recycling. The two floors of new office/production space cover a combined 1,500 square metres.

The primary goal of the project is to obtain a LEED-NC Platinum-level certification, the highest Green Building Program category of the Canadian Green Building Council. To help make the LEED grade, the new addition will employ extensive low vegetation, tree planting, trellis-mounted vines, and green roofs that will work in conjunction with existing street trees and south shading trees. These optimized natural areas will also become a crucial component of the structure's storm-water and grey-water management. In addition to using rainwater to flush toilets, energy efficient LEDs, sensor-controlled lighting and ventilation, and hydronic heating will be cornerstones of the structure.

A central atrium is the focal point of the new addition's interior. The two storeys of open space will allow the building to naturally circulate outside air through the building by means of a wind tower on the roof, all without the need for mechanical air conditioning.



Global warming is one of the top social, political, and commercial issues of our time.

Let the Reliable Controls® MACH-System put you at the helm of sustainability and maximize the LEED-BD and C points on your next construction project.



Category	Item	Points	Benefits of the Reliable Controls® MACH-System
Sustainable Sites			
Credit 8	Light Pollution Reduction	1	Automatically turn off all non-emergency lighting during non-business hours.
Water Efficiency			
Credit 1.1	Water Efficient Landscaping	1	Reduce or eliminate irrigation requirement with climate-based control.
Credit 3.1	Water Use Reduction	1	Use occupant sensors to reduce potable water demand by 20%.
Credit 3.2	Water Use Reduction	1	Use occupant sensors to reduce potable water demand by 30%.
Energy & Atmosphere			
Prereq 1	Fundamental Commissioning	Y	Verify energy related systems are calibrated and performing to requirements.
Prereq 2	Minimum Energy Performance	Y	Establish a minimum level of energy efficiency for HVAC, lighting and other systems.
Credit 1	Optimize Energy Performance	3	Use BAS to implement prescriptive compliance path.
Credit 3	Enhanced Commissioning	1	Provide operating staff the information needed to optimally operate the systems.
Credit 4	Enhanced Refrigeration Management	1	Maintain equipment to prevent leakage of refrigerant to the atmosphere.
Credit 5	Measurement & Verification	1	Monitor and trend energy systems to provide energy performance accountability.
Indoor Environmental Quality			
Prereq 1	Minimum IAQ Performance	Y	Balance ventilation rates on energy use to optimize efficiency and occupant health.
Prereq 2	Environmental Tobacco Smoke Control	Y	Effectively control the ventilation air in smoking rooms.
Credit 1	Outdoor Air Delivery Monitoring	1	Monitor carbon dioxide and airflow and use BAS to trigger corrective action.
Credit 2	Increase Ventilation	1	Use heat recovery to minimize energy consumption associated with higher ventilation.
Credit 3.2	Construction IAQ Management Plan	1	Prior to occupancy, perform a building flush-out or test air contaminant levels.
Credit 5	Indoor Chemical & Pollutant Source Control	1	Exhaust spaces with hazardous gases to create negative pressure for adjacent spaces.
Credit 6.1	Controllability of Systems	1	Integrate lighting controllability while managing overall energy use in building.
Credit 6.2	Controllability of Systems	1	Evaluate interaction between thermal comfort and acceptable indoor air quality.
Credit 7.1	Thermal Comfort	1	Evaluate air temperature, radiant temperature, air speed, and relative humidity.
Credit 7.2	Thermal Comfort	1	Provide for the assessment of building thermal comfort over time.
Credit 8.1	Daylight & Views	1	Maximize interior day lighting with automatic photocell-based controls to 75% of spaces.
Credit 8.2	Daylight & Views	1	Maximize interior day lighting with automatic photocell-based controls to 90% of spaces.
Innovation & Design Process			
Credits 1.1 – 1.4	Innovation in Design	4	Demonstrate quantifiable environment/health benefits for substantially exceeding credit.

UNIVERSITY OF TECHNOLOGY SYDNEY

SYDNEY, NSW, AUSTRALIA

EDUCATION

HIGHER EDUCATION

The University of Technology, Sydney (UTS), located in Sydney, New South Wales, Australia, was founded in its current form in 1988. The school is part of the Australian Technology Network of universities, and is the third largest university in Sydney in terms of enrollment.

PROJECT DETAILS

Recognizing that buildings of various ages on different networks would require unique controller arrangements, Reliable Controls® Authorized Dealer, Rega Controls, rose to the challenge of increasing comfort while reducing energy consumption for the three UTS campuses.

Beyond controlling a bevy of mechanical equipment across the city, Rega Controls installed the Reliable Controls® MACH-System to control the campus-wide centralized chilled water and hot water systems. To maintain additional tenant comfort, high velocity AHUs with new dual duct VAVs were installed. The dual duct VAV boxes each required two MACH-Air™ VAV controllers to ensure that the heating duct was closed while the cooling duct was on.

Conservative calculations have indicated a savings of 2,168.85 Tons of CO₂ over the past year, for just the UTS tower alone. According to Nabil Faysal, Manager of Engineering Services, Facility Management Unit UTS, the system has “exceeded our expectations in flexibility, and provided energy savings without compromising comfort.”

To learn more about projects using Reliable Controls®, visit www.reliablecontrols.com/projects/overview.



PROJECT TYPE:

Retrofit

INSTALLATION TYPE:

Boiler, Chiller, Fan Coil Unit, Fume Hood, Heat Pump, HVAC, Laboratory, Lighting, Power Monitoring, VAV, Water Monitoring

TOTAL AREA:

225,095 m² (2,422,902 ft²)

EQUIPMENT INSTALLED:

**3 MACH-ProCom™
8 MACH-Global™
13 Ether-Link™
40 MACH-Stat™
48 MACH-Zone™
68 MACH1™
125 MACH2™
350 MACH-Air™**

NETWORK:

EIA-485, Ethernet, LAN, WAN

INTEGRATION:

BACnet®, Modbus

TOTAL SYSTEM POINTS:

15,000 points

ENGINEERING CONSULTANT:

Engtec, Connell Wagner

RELIABLE CONTROLS® DEALER:

Rega Controls