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Industrial Solar Power

Altair Energy offers remote industrial solar electric power solutions.

Through membership in The Alpha Group, Altair Energy now offers a full complement of solar electric power solutions that span a wide variety of industrial applications and sales opportunities.

Altair has traditionally provided solar and emerging distributed generation (DG) technologies to residential, commercial, and institutional markets, and recently has been collaborating with Alpha to design and construct a new range of standard solar electric and hybrid power systems.

These new products — Solar Power Supply (SPS) and Hybrid Power Supply (HPS) — are fully integrated power systems designed to operate in full range of remote, stand-alone applications far from available utility service.

The photovoltaic (PV) array provides charging to a bank of industrial, maintenance-free, deep cycle (MTI) batteries. The controls, power processors, and circuit protection are all pre-wired and integrated into a rugged outdoor aluminum enclosure.

The enclosure and aluminum supports provide a lightweight and durable foundation for solar cell mounting.

System hardware can be pole, ground, roof, or skid mounted to

"In addition... Altair and Alpha are teaming together to bring new DG technologies to the market."

enable easy installations regardless of the customer's site requirements.

SPS systems are designed with maximum stand-alone operation using 100% solar energy as the charging source.



Hybrid Power System (HPS)

SPS systems offer reliable power with very low operation and maintenance costs.

For applications requiring larger loads or greater availability, an HPS may be more suitable.

HPS systems incorporate an auxiliary gas powered generator sized to provide 25-75% of the load energy.

One recent HPS system sale (an MTI lead . . . come on Argus and Com10!) is being applied to

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Going Mainstream:

Richard Eidlin
Altair Energy



Altair Energy and a leading San Diego homebuilder are working together to bring solar electric PV systems to hundreds of residential customers in California.

This homebuilder constructs hundreds of homes (single- and multi-family) each year and is one of the top home building companies in San Diego.

Altair is the builder's exclusive

PV partner and expects to install over 400kW for them next year.

Presently, Altair is managing two significant projects for this builder.

The first project — known as The Trails Complex — involves installing a total of 210kW on seven different buildings (six apartment units and a community clubhouse).

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A Message from the Boardroom



More than ever, we need to embrace opportunities that exist for us in new markets around the world, and build on our successes in North America.

The Alpha Group is poised to take advantage of its ability, through its member companies, to provide solutions for our customers, to virtually every powering need — AC or DC in communication, alternative energy, industrial, commercial

or government markets. With these opportunities, our competitors are not going to sit by and allow us to gain market share without a challenge.

This is why we must continue to thoroughly investigate new ideas, and develop innovative products and services that keep us ahead of the pack.

A key component in our future success is a persistent need to

communicate as a group.

We need to share information on successes, new products, applications — anything that will assist our various operating companies grow their business.

This is why the *Power Connection* was created. We look forward to your participation as we move ahead.

Fred Kaiser and Warren Johnson



AC ground mounted SPS system

125W pole mounted SPS and 300W DC

From the Executive Editor

Welcome to the *Power Connection*



Welcome to the inaugural issue of The Alpha Group *Power Connection*.

It was created for many reasons — most importantly to spread the word on what's happening within the *powerful* world of The Alpha Group.

On a regular basis, the *Power Connection* will be highlighting innovative products, and equally innovative product applications.

We will be profiling recent successes, and the people who have contributed to them.

At the same time, we will be constantly looking for your input on story ideas, features, and general articles you think would be of interest to our readership.

In this first issue, we are highlighting some successes from The Alpha Group's solar specialists — **Altair Energy**.

Solar electricity, or photovoltaic (PV) as it is more commonly being referred to these days, is fast becoming an everyday reality in Europe, North America, and the rest of the world.

The growing interest in PV as an "alternative energy" to traditional oil and gas sources, reflects both an interest in "greening" power generation, but also the improving economics of PV technology — making it more affordable and attainable for general use.

PV debuted in the 1950's with the early space programs, as the only viable means of generating sustainable power onboard the first satellites to orbit the earth.

Fifty years later, we now use PV technology in our homes, businesses, and even our schools. What's next — solar powered garden lights?

At this point, I would like to acknowledge the efforts of everyone who contributed articles in putting together this first issue of the *Power Connection*.

I would also like to recognize both the Alpha and Argus marketing teams, especially Tamara Shewchuk, for getting this project off the ground.

We hope you find the *Power Connection* informative, relevant, and above all — enjoyable.

Please email any and all comments to editor@argus.ca.

Paul Humphreys
Alpha Technologies

Going Mainstream

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Each of the 3-story apartment buildings will receive a total of 34kW of PV, with each individual apartment unit receiving its own 900W grid-tied PV system.

Every apartment's PV system will be individually metered and supported by its own inverter.

Another 5kW will be installed atop the clubhouse building.

The second project involves installing upwards of 100 grid-tied PV systems on modest sized new homes in the Pacific Beach area of San Diego.

Each system will provide 75% to 80% of a home's total monthly electrical usage.

The solar electric systems installed at The Trails project will allow homeowners to rely on the sun for about 80% of their electric needs.



The Trails Complex, San Diego, CA

Altair Factoid:

- > **Established 1998**
- > **Markets include:**
 - Residential
 - Commercial
 - OEM
 - Remote Industrial
 - Institutional
- > **Installed over 1 Megawatt of PV**
- > **One of the largest school solar providers in the US**

Did You Know?

15% of the PV market is the telecommunications industry.

Fiber-to-the-Home



Rob Anderson,
Alpha Technologies

Alpha has been actively involved in the FTTP marketplace for several years and has recently introduced a new suite of fiber powering products.

Powering FTTP networks is similar to powering other broadband networks with a few exceptions.

Content is injected into the fiber network in a facility similar to a cable headend or telephony central

PON networks terminate at a premise where a Network Interface Device (NID) converts optical signals to video, data, and voice.

Alpha's FlexPoint™ product family provides NID powering solutions with multiple installation and backup-time options.

The NID is powered with a small UPS (12VDC, 18W to 30W typical) that is often mounted outside of the premise near the NID.

HPON networks are similar to PON networks with the addition of an active optical router between the headend and the premise.

The router is powered with a UPS and both are typically co-located in an enclosure that is either ground or pole mounted.

Alpha's FlexNet™ product family provides the needed HPON optical router (powering 48VDC, 100W to 300W typical).

Both FlexPoint™ and FlexNet™ products offer eight or more hours of backup power to support telephony and critical data services during

utility grid power outages. The advantage of FTTP technology is that it can provide more than 300 times the capacity of competing broadband systems, such as DSL or cable modem.

Because of this inherently higher bandwidth, FTTP can provide residential and commercial customers access speeds up to 500 Mbps symmetrical service, unlike typical asymmetrical services,

where download speeds far exceed upload speeds.

FTTP is gaining interest by municipalities, utility companies, and community associations as a new source of revenue.

These entities are able to compete with incumbent communication providers and offer superior services at competitive prices. Alpha is working with FTTP end users and

optical equipment providers to establish a leadership position as the premier power solutions provider in this emerging market.

Recently, Alpha was selected as the exclusive power solutions provider for an electric, gas, and water utility company.

Upon the project's anticipated completion in 2005, the network

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Alpha FlexPoint™ Series: UPS System for ONT/NIDs

office, where AC UPS or bulk DC power is required.

The distributed fiber network poses some unique powering challenges requiring innovative solutions.

Early FTTP deployments utilize either Passive Optical Network (PON) or Hybrid Passive Optical Network (HPON) architectures.

Fiber Products by Alpha and Argus

FTT(x) (*Fiber-To-The...Premise, Business, Multi-Dwelling Complex, Headend, etc.*) has come alive in recent months.

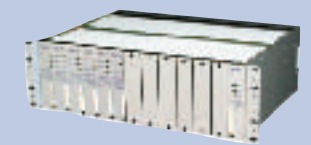
The Alpha Group has met the challenge of this market with a wide range of FTT(x) power products, which include the Alpha FlexPoint™ and Argus CSM series.

Alpha's FlexPoint™ Series UPS powering system provides power to NID for residences and Multiple Dwelling Units (MDUs). The FlexPoint™ Series is a flexible, modular system

providing total or partial outdoor powering solutions for fiber applications.

This powering system consists of a Power-Ring, Power-Ring Converter, Home Converter, and Battery Module, and is available in 18W or 30W versions.

Argus compliments Alpha's product line with the CSM series of DC to DC converters, which provides power over multiple parallel twisted pairs to remote equipment from a central office or outside plant.



Argus CSM series

CSM series systems are employed to power fiber or DSL equipment at remote sites. By providing remote power, neither battery backup nor rectifiers are required at the site.

The CSM series converts 48VDC to 130 or 190VDC outputs. Customer equipment then converts this output back to 48VDC or other voltages as required.

cordex™ Series

Argus and Com10 are excited to announce the Cordex™ series, the latest innovation in DC power technology.

The first two products in the line, the Cordex™ CXC System Controller and the Cordex™ 1kW rectifier, are engineered to work seamlessly together making time consuming and complicated set up and monitoring of DC power systems a thing of the past.

The Cordex™ CXC System Controller streamlines setup, adjustment, control, and

monitoring through a graphic LCD display with a state-of-the-art touch-screen interface.

Innovative IP technology allows complete configuration and monitoring from any location via the Internet.

The Cordex™ CXC also features user definable alarms, flexible battery management, integrated SNMP, and highly reliable CAN bus communications.

Optional RS-485 communication is also available to integrate

with and control the Pathfinder® series of rectifiers.

The Cordex™ 1kW rectifier is a convection cooled, ultra compact unit that fits up to six rectifiers per 19" / 4 RU shelf.

The module features complete hot-swappability, high efficiency with power factor correction, unique power limiting capability, and wide range input allowing for complete flexibility in meeting powering needs.

Brook Adams, Argus Technologies
Piet de Beer, Com10 International

Cordex™ CXC System Controller

- > LCD touch screen user interface.
- > Internet ready, integrated SNMP.
- > High reliability CAN bus communications.
- > User definable alarms.
- > Flexible battery management.
- > PowerSave™ rectifier shutdown.



Cordex™ 1kW

- > Available in 20.8 Amps @ 48VDC.
- > 1kW output power per module.
- > Wide range AC input.
- > Optimized for Cordex™ range of controllers.
- > High efficiency with power factor correction.
- > Hot swappable, ultra compact design allows one to six rectifiers per 19" / 4 RU.
- > Convection cooled.



Did You Know?

PV is a multi-billion dollar international industry with an annual growth rate of more than 20% over the past decade.

Power 101: Voltage Sag

The terms "sag" or "dip" are used to describe a short duration decrease in RMS (root mean square) voltage or current.

Sags or dips may occur when large load changes occur (such as when industrial motors are started).

The duration of a sag or dip is not clearly defined, but typical durations range from two milliseconds (about 1/8 of a cycle) to a couple of minutes.

Sags or dips that last less than 1/2 a cycle cannot be characterized effectively and are considered transients when lasting longer than one minute. They can typically be controlled with voltage regulation

MTI introduces:

Vectra™ Battery Charger

MTI introduced Vectra™, their newest industrial-grade battery charger, this past September at the IEEE Power Transmission and Distribution Conference in Dallas, TX.

Incorporating switched mode technology, the battery charger is designed to recharge all types of industrial stationary batteries for a variety of applications in the utility, petrochemical, and switchgear industries.

The Vectra™ was designed by Alpha Technologies with MTI batteries and Com10 rectifiers, making this charger a true Alpha Group collaboration.

The charger has a power rating between 90-145VDC with a rectifier shelf that can accommodate four 20 Amp Com10 DC rectifiers.

For additional power protection, the charger can be configured with three rectifiers providing 60 Amps of output current with the fourth rectifier providing N+1 redundancy.

High voltage ratings near 145VDC provide optimal charging voltages for Nickel Cadmium batteries.

Other features of the charger include maximum power efficiency, near unity power factor, and very low output electrical noise (<4mV RMS).

The Vectra™'s microprocessor-based supervisory module with Intelligent Monitoring Control provides the user with more control and a central point to monitor the battery charger system.

Using Advanced Auto-Sense Software, the supervisory module will detect the rectifier type, allocate addresses to it, and preload the relevant configuration defaults.

During alarm conditions, the controller — designed to be failsafe under fault conditions — dials out and broadcasts alarms to over 18 different potential free contacts.

The tested and approved Seismic

Zone-4 rated charger has one of the smallest footprints in the industry.

The stacked or wall mounted equipment enclosure holds up to four DC rectifiers, AC input and DC output breakers (up to 12 dual poles), and the control module.

The battery enclosure is designed to hold up to ten Alpha SpaceCell™ SMU front access batteries (100-155Ah) per enclosure.

Two battery enclosures can be stacked to provide longer runtime or battery autonomy.

Sam Ayoubi, MTI Technologies

equipment and may be associated with a wide variety of causes other than system faults.

Equipment can be impacted by:

- > Magnitude of the sag/dip.
- > Magnitude and duration of the sag/dip.
- > Characteristics of the sag/dip (such as the phase unbalance and the point on wave of the initiation and recovery).

Parminder Virk, Alpha Technologies

Symptoms:

- Computers**
 - System lock up
 - System crash
 - Data loss and errors
- Process Control**
 - Loss of control
 - System shutdown
- Monitors**
 - Overheating
 - Contact damage
- Nuisance Tripping ASDs Lightning**
 - Lower output

Probable Causes:

- Fault clearing (either side of the meter)**
 - Weather
 - Fires
 - Trees
 - Animals
 - People
 - Equipment large motor setup
 - Undersized distribution system

Typical Solutions:

- Power Conditioner**
 - Constant voltage transformers
 - Motor generator
- Uninterruptible Power Supply (UPS)**
 - On-Line
 - Line Interactive
 - Off-line stagger motor starts
 - Size infrastructure properly

AlphaBits...

Argus US has settled into their new offices on Alpha Way (sales and orders) and Mercer Way (repairs). MTI Technologies also recently moved. MTI's headquarters relocated to Bellingham and a regional sales office opened in Atlanta, GA.

Kudos to Don Davidson, Argus Vice President, Research and Development, for representing the Alpha Group at the 25th

INTELEC '03 in Yokohama, Japan in Oct. Don co-chaired two sessions: 'Single-Phase Rectifiers' and 'Power Generation and Storage Systems.' The theme of the conference was "Powering the Broadband Network" and sessions covered an array of topics including DC powering of Internet routers and servers, using Lithium Ion batteries for telecommunications, wind and solar power for remote telecommunications sites, high frequency inverters and UPS

systems, and soft switching rectifier and converter circuits.

Alpha Technologies has recently revamped their website at www.alpha.com to make it more user friendly and to provide online order status and tracking.

Altair Energy has another very satisfied customer. Due to the recent wild fires in California, USA, many homes in the community of Alpine were lost in the fire and the area was without

power. This customer was fortunate — his home survived and Altair Sunup's-40 ground mount power system continued to provide power throughout the duration of the fires.

Paul Shmotolokha recently joined Alpha Technologies as VP International Cable Sales and Business Development. He will be working closely with our European counterparts in forging key links to strengthen our regional customer base. Paul



L to R: Paul and Tom (Alpha), René (Eurotronics)

and Tom Sloane, CTO, had the pleasure to meet with René van Hartingsveldt, Director of Eurotronc BV, Alpha's longstanding distributor in the Netherlands during a recent visit to Alpha Bellingham.

Industrial Solar Power

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Terry Schuyler, National Sales Manager
Altair Energy

replace an all-generator powered cell site in Southern Arizona. This site was using a 10KW propane generator to provide a 350W DC continuous load.

The Altair HPS solution will cut the fuel consumption and generator maintenance by a factor of 10, saving the customer nearly \$20,000 per year — paying for itself in short order.

In addition to manufacturing this line of solar systems, Altair and

Alpha are teaming together to bring other new DG technologies to the market.

A new line of grid-tied and stand-alone solar inverters is undergoing beta tests with plans for product availability in 2004.

Altair and Alpha are also exploring the use of fuel cells as an alternative to battery UPS, and potentially as another HPS power source.

Fuel cells are still developmental but will be available through Altair as they demonstrate commercial viability and industrial reliability. Stay tuned!

So keep your eyes and ears open for opportunities where solar may help sell your core products . . . we'll do the same. After all, the rising sun is one of the few things you can count on everyday — unless of course, you live in London or Bellingham.

Terry Schuyler, Altair Energy

Did You Know?

Over the past 5 years, Altair Energy has installed over 1,000kW of PV systems, avoiding the emission of nearly 2,000,000 pounds of carbon dioxide into the air each year — the equivalent of driving an average car nearly 2,000,000 miles or around the world 80 times.

FTTH

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will “pass” 31,000 homes and businesses in the utility company's electric service area and be the largest FTTP network in North America to date.

“Industry response to our new line of FTTP powering products is very positive,” commented David Barany, Product Manager.

“Alpha's innovation and responsiveness in meeting end-to-end powering needs was key to winning this contract.”

the Circuit

Stay informed about Alpha Group events

Alpha Group Represented at ITU

Member companies of The Alpha Group participated at ITU in Geneva, Switzerland Oct 12-18, 2003, with a stand in the US Pavilion. Even though there was

notably less attendance than past years, the attendees had specific objectives and were impressed with our range of product applications.



Attending ITU, left to right: Sanjay Trehan, BSMC Power System - India; Bryan Locker (Argus); Fred Kaiser (Alpha Technologies); and Grace Borsari (G. B. Enterprises)

FTTH Show

Alpha's participation at the FTTH Show in New Orleans was a complete success. Alpha debuted the FlexPoint™ Series outdoor premise power solution and also displayed a variety of

headend and hub site products. Alpha Fiber Director, Roger Draper, reported that by the last day, people were stopping by the booth “just to see what everyone was talking about.”



Attending FTTH Show, left to right: Brendan Murphy (Alpha); David Olps (Argus); Roger Draper; John Hewitt; David Barany; and not shown: Diane Jensen, (all of Alpha).



At ITU, left to right: Bryan Locker (Argus); Grant Clark (Com10); Paul Shmotolokha (Alpha)

WATTS NEW?

Brown Traffic User Group

Moline, IL
December 3-4, 2003

Western Show 2003

Anaheim, CA
December 3-5, 2003

Caribbean Cable & Telco

Fajardo, Puerto Rico
January 7-9, 2004

BICSI (Winter Conference)

Orlando, FL
January 12-15, 2004

ExpoComm Mexico

Mexico City, Mexico
February 10-13, 2004

Texas Cable Show

San Antonio, TX
February 25-27, 2004

Powerful Profiles:

an interview with Paul Muir



Paul Muir, Senior Vice President
Alpha Technologies

What is your job description?

I manage sales for all Alpha Group companies with revenues in the US.

What is the length of time at your current position?

My position is brand new so only since the beginning of September. Before this, I was Vice President of Cable Sales for Alpha for three years.

Life before Alpha?

Vice President of Distribution and Sales for the cable division of a telecommunications company in Hilton Head, South Carolina.

Where were you born and raised?

I'm from all over. I was born in Boston and have lived in New Jersey, Pennsylvania, South Carolina, and now Washington State.

What is your educational background?

I have a Bachelors of Science and Business Administration from Suffolk University in Boston, and an MBA from Penn State.

Non-Alpha life?

I have a beautiful wife Veronica and 5-year-old twins, Samantha and

Robert. We also have a Golden Retriever named Bella and two fish . . . but to be honest, I'm not sure of their names.

What is your most memorable Alpha moment?

I was set up. I won the President's Award 2002, and had no idea. One of my salesmen, Jim Taxdall, was receiving our Regional Sales Director of the Year Award, which I knew about and he didn't, but I had no idea that I would be going up to the podium as well that night.

Favorite food?

Anything Italian and good ole' apple pie ala mode.

What are you currently reading?

I read to relax, so I have Sports Illustrated, Golf Magazine, and Newsweek on my nightstand.

What was the last book you read?

Something about a “chocolate island” . . . if you need the actual name I could get it from my kids.

What is your work philosophy?

Ask my team . . . “no surprises.”

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Please send your submissions and feedback to editor@argus.ca
Submissions may be revised for clarity and length.

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