

ELECTRIC MOTOR SHOP

SUMMARY OF SERVICES:

(but not limited to)

ELECTRICAL SERVICES SUMMARY:

Electrical Control Systems
Electrical Engineering
Electrical Installations- Industrial, Commercial, Residential
VISIO and AUTOCAD Documentation of existing systems
PDF Documentation for electronic manuals
Hard Copy Binders- projects and/or machines and processes
Data Acquisition- power monitoring/ reports
Legacy machines and systems
Foreign equipment repair and drawing translation
Motor and Motion Control- VFD; DC DRIVES; Encoders;
Servos; Oscilloscope; PWM;
Consultations; Estimates;
Inspections (safety; fire; power quality)
Surplus- Obsolete- and Used Equipment
MSHA and OSHA Compliance Inspections
Class I; II; III Explosion Proof Installations or Inspections
Emergency Generator Systems

INDUSTRIAL AUTOMATION SERVICES:

PLC; HMI; OIT; SERVO; DRIVES; INDUSTRIAL PC;
OEM CONTROLLERS
Local OEM Support via Skype and Team Viewer
Code Backup and Retrieval
Custom Control Panels
Process Control
CNC and Machine tool diagnostics and repair
PLC repair/ programming/ documentation/ backup
HMI replacement/ new install/ programming/ backup
CAT5 and CAT6 cabling and testing; Industrial ETHERNET
Wireless control and monitoring- including remote access
Industrial Cyber Forensics:
location of original code files from defunct manufacturers
Industrial PC repair:
hard to find components for 286; 386; 486
PC DOS; DOS; Win 95; Win 98; Win 2000; XP- OS Recovery
Hard Drive backup and recovery; cloning

INDUSTRIAL ELECTRICAL SYSTEMS:

Engineering; construction; preventative maintenance; Infra-Red Analysis; Arc Flash Analysis; testing;
safety systems; training of maintenance staff; Power systems; conduit runs; high Voltage, back up power.
Motors and Drives; Industrial Automation; More...
Emergency response- 24/7. No job too big or too small.

24 HOUR EMERGENCY SERVICE

Please Visit www.electrictorshop.net For More Info
Since 1913



Construction Division



Ray Keith- Service Manager
Kelly Martin- Field Manager



Parts and Supplies Division

Steven Ray- Operations Manager
Fresno: 559.650.1153
Rodney Wilson- Outside Sales
Larry Negrete- Inside Sales



Visalia: 559.651.8450
David Scott- Visalia Manager
Sami Sabbagh- Outside Sales

Motor Service Division

Jon Wiseman- Repair Shop Manager
Bob Lange- Shop Foreman



Automation Division

559.650.1153

Call us for Your Automation Needs:
New Projects; Legacy Service; Backups; System Recovery



 Since 1913
Electric Motor Shop
 IBEW LOCAL 100
 LIC. NO. 246015
Automation Division
 559.650.1153
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C.S.T. SERVICES
Serving Industry Since 1972
Control Systems Technician Services
 Legacy PLC / HMI Code Recovery and Backup
 Industrial Cyber Forensics / Data Retrieval / Documentation
 559.289.0086
 byron.sanders@cstservices.net http://www.cstservices.net




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**INDUSTRIAL CONTROL SYSTEMS
 INTEGRATION**
 "BRING YOUR PLANT INTO THE 21st CENTURY"



 Since 1913
 LIC. NO. 246015
 IBEW LOCAL 100
 Electrical Contracting:
 Engineering, Service and Construction
 Ray Keith: 559.250.3611
 559.650.1153 electricmotorshop.net

**SUPPORTED P.L.C.'s
& SMART RELAYS:**

Allen Bradley
 ABB
 Automation Direct
 Bosch
 Crouzet
 Cutler Hammer D100
 Easy
 Eaton
 Fatek
 Fuji
 Furnas
 GE
 GE-FANUC
 Hitachi
 Horner-APG
 IDEC
 Kinco
 Koyo
 Logo
 Melsec
 Mitsubishi
 Modcell
 Modicon
 Moeller
 Omron
 Panasonic
 Parker IQAN
 Pico
 Rexroth
 Schneider
 Shihlin
 Siemens
 Square D
 TECO SGClient
 Telemecanique
 Texas Instruments
 Toshiba EX10; 20; 40
 Twido
 Unitronics- PLC/HMI
 Velocio PLC
 Wago
 Westinghouse
 Xlogic PLC (Easy)
 ZEN (Omron)

**SUPPORTED HMI; MMI; OUI;
TOUCH SCREENS; INDUSTRIAL PC:**

Allen Bradley PanelView
 Automation Direct
 AVG-Uticor
 Baldor
 Broderson
 Cutler Hammer
 Eaton
 Exor Uniop
 EZ-Panel
 EZ-Soft
 EZ-Touch
 FANUC Ladder III
 HAKKO Monitouch V-SFT
 Hitachi WinYUMO
 Hitech ADP
 Horner OCS; OIU; HMI
 IDEC
 KEP
 Lauer
 Maple Systems
 PILZ
 Proface
 Quickpanel and Jr.- (TCP; Proface)
 Quickpanel GE
 Quickpanel View
 Red Lion
 TECO OP HMI
 Magellis
 Unitronics PLC/HMI (OPLC)
 Vijeo
 Weintek
 Xlogic HMI
 Zelio

SUPPORTED C.N.C.'s:

FANUC
 Mitsubishi
 Peddinghaus
 Gernetti
 Legacy systems
 Foreign and unfamiliar
 MAZAK
 Mori-Seiki
*Too many brands to list
 Just call...*

This is a Partial List:

(If you have any brands or models not named above- CALL US- we are adding support for different brands regularly)

RECOMMENDATIONS TO AVOID EXCESSIVE DOWNTIME ON EQUIPMENT WITH PROGRAMMABLE COMPONENTS:

1. Maintain up to date/ accurate binders on each machine and process. Make more than one copy. ONE FOR EACH OF THE FOLLOWING: (minimum)
 - Maintenance Office (with back up disks of Logic)
 - Maintenance Personnel (possibly two copies)
 - Machine/ Operator (if needed)
 - Administration (with back up disks of Logic and Software/ Software Licenses)
2. Make sure that **ALL PROGRAMMABLE EQUIPMENT** is backed up: **PLC; OCS; HMI; OIT; MMI; VFD; SERVOS;** etc. The **program code;** drawings; notes; manuals should be backed up- on hard drives and C.D.
3. Include a printout of the Ladder Logic in each binder along with any special manuals for **DRIVES; SERVOS; PROXIMITY SWITCHES; ETC.** Most manuals can be downloaded in PDF format and then archived electronically and printed for the binders. Obtain annotated copies of the Ladder Logic from the manufacturer or programmer if possible.
4. If a Maintenance person wants to take a binder home for extra-curricular study- have a binder for that purpose and use a check out procedure like the local library does- and the same goes for laptops.
5. **If program changes are made** by maintenance or an outside vendor- **update all binders, disks and printouts.**
6. **If wiring changes are made** on a machine- the person responsible should get approval and/ or **DOCUMENT THE CHANGES-** and initial and date the changes on the prints. As time permits the field drawings should be compared to the archives and updated in **AutoCAD or VISIO.**

The above recommendations can be accomplished by **C.S.T. SERVICES** and **ELECTRIC MOTOR SHOP.** **Proper DOCUMENTATION and the MANAGEMENT thereof is THE MOST IMPORTANT FUNCTION** of the Industrial Automation Business in order to minimize down time. Maintenance personnel come and go. Vendors come and go. Sometimes the equipment is sold. A system or piece of equipment with **good documentation** will be easier to liquidate than equipment with missing or inaccurate documentation.

Regardless of the brand of PLC, DRIVE or CONTROLLER- call us. We have multiple brands and versions of software and cables in our inventory. Usually if we don't have it, we can get it.

Sometimes a recommendation to upgrade will be made if the controller is obsolete and no longer serviceable. Sometimes legacy components can be obtained from eBay or other sources. Sometimes critical equipment can be repaired for a nominal fee- board level repair, etc.

We had a \$5000.00 printed circuit board repaired in 2010 for \$250.00 locally (as an example) So if there are blown units sitting on a shelf and no spares or back up components are in your stock room, it is sometimes a good idea to have the old units repaired for an emergency. Other times an upgrade to a newer model or different brand is the wiser choice.

It is a good idea to identify unknown or unfamiliar components and make sure support is available and if the component or unit in question is still available. If it is not, is there an upgrade option?

Lost code can often be found using cyber-forensic methods and the Internet. Annotated versions of ladder code often can be obtained or created. Printed copies of ladder logic can be manually entered into any platform. This is a lot more efficient than starting from scratch for lost code.

Best Regards,



Byron K. Sanders- C.S.T.

**ASK ALL OF YOUR OEM's FOR ANNOTATED
CODE BACKUPS AND PDF OR ACAD
DRAWINGS. THEN CALL US FOR ONSITE
BACKUPS AND VERIFICATION.**

<p style="text-align: center;">C.S.T. SERVICES <i>Serving Industry Since 1972</i> Control Systems Technician Services Legacy PLC / HMI Code Recovery and Backup Industrial Cyber Forensics / Data Retrieval / Documentation 559.289.0086 byron.sanders@cstservices.net http://www.cstservices.net</p> 	<p style="text-align: center;">INDUSTRIAL CONTROL SYSTEMS INTEGRATION</p> <p style="text-align: center;">"BRING YOUR PLANT INTO THE 21ST CENTURY"</p>	 <p style="text-align: right;"><i>Since 1913</i> LIC. NO. 246015 IBEW LOCAL 100</p> <p style="text-align: center;">Electrical Contracting: Engineering, Service and Construction Ray Keith: 559.250.3611 559.650.1153 electricmotorshop.net</p>
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EMP-CME and COI

(Continuity of Industry)

OVERVIEW:

(Article excerpt from: "Protecting Yourself from EMP", by Duncan Long :

<http://www.aussurvivalist.com/nuclear/empprotection.htm>

EMP (Electro-Magnetic Pulse), also sometimes known as "NEMP" (Nuclear Electromagnetic Pulse), was kept secret from the public for a long time and was first discovered more or less by accident when US Military tests of nuclear weapons started knocking out phone banks and other equipment miles from ground zero.

EMP is no longer "top secret" but information about it is still a little sketchy and hard to come by. Adding to the problems is the fact that its effects are hard to predict; even electronics designers have to test their equipment in powerful EMP simulators before they can be sure it is really capable of with standing the effect.

EMP occurs with all nuclear explosions. With smaller explosions the effects are less pronounced. Nuclear bursts close to the ground are dampened by the earth so that EMP effects are more or less confined to the region of the blast and heat wave. But EMP becomes more pronounced and wide spread as the size and altitude of a nuclear blast is increased since the ground; of these two, altitude is the quickest way to produce greater EMP effects. As a nuclear device is exploded higher up, the earth soaks up fewer of the free electrons produced before they can travel some distance.

For more information, search the internet for EMP; CME; SOLAR FLARES; FARADAY CAGE

EMP can also be produced by CME (Coronal Mass Ejection). This emanates from the Sun. Solar flares happen all the time, but the intensity increases and decreases according to natural cycles. Every so many years a high intensity cycle occurs. The next BIG ONE is scheduled between now and spring of 2013, according to scientists. Congress has a bill called "The Shield Act" which would have protected our infrastructure, but to date they have not passed the bill. The military and other government critical systems have been protected to a degree. The private sector so far has been largely ignored. The last big event was in 1859 and we are overdue for the next one.

Here is an article about it, plus you can Google the subject for more:

http://en.wikipedia.org/wiki/Solar_storm_of_1859

On September 1–2, 1859, the largest recorded geomagnetic storm occurred. Aurorae were seen around the world, even over the Caribbean; those over the Rocky Mountains were so bright that their glow awoke gold miners, who began preparing breakfast because they thought it was morning.[3] People who happened to be awake in the northeastern US could read a newspaper by the aurora's light.[4] Telegraph systems all over Europe and North America failed, in some cases shocking telegraph operators.[5] Telegraph pylons threw sparks and telegraph paper spontaneously caught fire.[6] Some telegraph systems continued to send and receive messages despite having been disconnected from their power supplies.[7]

We did not have a power grid then. We were not reliant upon electrical power then. Our infrastructure was not reliant upon computers and electronics then. Scientists are concerned if an event hits North America it could set us back to the 1500's lifestyle for quite awhile until repairs are made. No one knows for sure, but the prudent will prepare the best they can, like the military already has done and is doing.

We may not be able to protect all of the equipment in a typical industrial plant or office, but we can at the very least protect the critical data for recovering the plant operations after an event. The most important data in the industrial plant is backup code from all programmable devices: PLC; HMI; OIT; OPLC; SERVO; DRIVES; etc. (You may want your office and personal data protected as well, like family photos and the like).

Once the code is backed up, copy it to "light storage" devices such as DVD; CD. These disks do not use magnetic storage, but are light inscribed. Or put the data on portable USB drives which are then stored in a Faraday bag, cage or enclosure. To test your enclosure or bag, use the following test: place your cell phone in the enclosure and try to call the phone from another line. If the call is blocked, more than likely it will block the EMP or CME waves which are similar to Micro Wave radiation. There is debate over whether the enclosure should be grounded or not. As of October 2012 we are still researching this topic for the best recommendations. The information on this topic is quite convoluted, to say the least.

If and when an event happens your equipment can be replaced, the data is another matter all together. It takes TIME to re-write program code, depending on the complexity of the process or machines it can take months.

Assuming the grid is restored in a timely fashion, the industrial plant can be put back into production much faster IF you have PROTECTED BACKUPS of your program code.

If you are interested in protecting your code for COI, please contact us.



Byron K. Sanders- C.S.T. SERVICES

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C.S.T. SERVICES and E.M.S. PARTIAL CLIENT LIST SINCE 1972/ 1913

ACX Pacific Northwest (International Animal Feed)
A.P.C.C.O
Air National Guard
American A.V.K
American Beauty
Angelica's Laundry
Athens Bakery
ATMF
Automated Controls
Avenal Prison
Banks and Company
Bee Sweet
Bell Tech
Borba Gin
Brownie Baker
Bruno's Iron and Metal
Butterfield Brewery
Canfield Construction
C.D.I
Calgren
California Compress
California Industrial Service
Calmat
Cardio Heart Center
Cargill
Caruthers Liquor
Catholic Charities
Cellulo
Central Valley Machining
Certainteed Glass
Chamlian
Channel 24
Channel 49
Channel 61
Cheston Oil
China Lake
City of Clovis Water Works
City of Fresno
Clipay (film extrusion)
Cocola Broadcasting
Computer Designers
Corcoran Prison
Crimson Resource Management
Dale Brisco
Darling International
Delno Terrace
DOSCO
Dow Chemical
Drip-In Irrigation
Dr. Pepper
Dry Creek Construction
Dumont Printing
Earth Grains
East Electric
Electric Motor Shop
Electronic Recyclers
Elliot Manufacturing
EPS- REDI-VOLT
Fab Tech
Fig Garden Packing
Fiore Pasta
Foster Farms Chicken
Foster Farms Feed Mill
Foster Farms Dairy
Foster Farms Hatchery
Franz Family Bakeries
Franzia Wineries
Fresno Air Guard
Fresno Air Terminal
Fresno Bee
Fresno Beef Processors
Fresno City Waste Water
Fresno Diocese
Fresno Farming- Traver Feed Mill
Fresno Rescue Mission
Fresno School District
Gallo Winery
Gary Brown Construction
G- Building
Gee Manufacturing
Geil Enterprises, inc
Georgia Pacific
Gleim Crown Pump
Giumarra
G.S.A.
Guardian Glass
Gurjant Gill Residence- Caruthers
Hansen Brothers
Harris Beef
Heavens
Helm Bean and Seed
Hines Color
Holiday Inn
Hunt Wesson- Helm Plant
Huron Ginning
HydraTech
Hydrite Chemical Company
I.R.S.
I.S.C. (automatic doors)
Inspections for P.G.& E
Integrated Grain & Milling- I.G.M
International Paper
Industrial Repair (Carwashes)
Jack's Carwashes
Jack Frost- Fresno
Jack Frost- Visalia
James L. Davison and Associates
Jensen and Pilegard
JS West Propane
Kaweah Container
Kearney Manufacturing (Foundry)
Kemmer Ag
King-O-Meat
Klink Citrus
Kocherger Farms
La Tapatia Tortilleria
Leprino Foods
Levi's Iron and Metal
Lion Packing
Lone Star
Madera Glass
Madera Waste Water
Manna Pro
Margie Hinds Women Center
MB Technologies
McBride Electric
Miller- Marthedahl Refrigeration
Mission Organics
Morello Trust (Gene Blonder)
Morning Star Farms
Mt. Whitney Gin
Nazareth House
Nada Pacific Corp
Northrup King (Seed)
O'Neil's Beef
Orange Avenue Disposal
Pacific Boring
Pacific Coast Packing
Paper Pulp and Film
Parichan
Park Industries
Peninsula Packing
Penny Newman
Peabody Floway
Point Source Irrigation
Peoples Church
Pepsi
P.R. Farms
Pro Equipment
Producer's Cotton Oil
Producer's Dairy Delivery
Pro Screen
Rainbow Bakeries
Rain For Rent
Rancho Realty- Jack Emerzian
Rand Machine Works
Raymond Granite (Cold Springs)
Red Carpet Carwashes
Red Cross
Redi-Volt
Renaissance Old World Inc
Rio Bravo Bio-Mass Plant
Rock Plants
Roger Rocka's
Rosendahl Dehydrator
RPM Beef and King-O-Meat
Ruiz Foods
Rutter Army
Salvation Army
Sanger Boats- Stelling's Marine
San Joaquin Memorial H.S.
Santa Barbara Technology
Ski's Iron and Metal
Siemens
Sierra Vista Mall
Simplot
Smurfit- Stone Fresno Container
Division
Social Security Administration
Specialty Branded Products
Specialty Steel
Spray Force Mfg. Inc
Stainless and Steel Welding
St. Helen's
St. John's Cathedral
Sultana Water (City of)
Sunmaid Raisins
Sunmet Raisins
Swanson's Machine and Hydraulic
Tenty Construction
T.G. Schmeiser
Tom's Foods
Tower Theater
Trinity Fruit Packing
U.S. Cold Storage
Ulbrich of California
United Japanese Christian Church
Used Pallet Company
Valley Detroit Diesel
Valley Fig Growers
Valley Foundry
Valley Lahvosh Bakery
Valley Manufacturing (CNC)
Valley Welding
Vulcan
Wade Irrigation
Warnor's Theater
Wasco Hardfacing
Wasco Prison
Wawona Frozen Foods
Western Foam Pack (foam blow mold)
Wilson's Theater
WorkForce
Zacky Farms
Zemarc Corporation

INDUSTRIES SERVED- PARTIAL LIST SINCE 1972 (1913 FOR E.M.S.)

Automated Conveyor Systems:

Various Clients

Bakeries:

Conduit; wiring; Automation; Ethernet; Training; Safety Inspections; Documentation

Continuous Batch Plants:

Instrumentation; PLC Automation; HMI; Integration; Documentation

Dairy Industry:

Dairies; Dairy Processing; Bottle Extrusion; CIP

Emergency/ Backup Generators/ Transfer Switches:

Television transmitters; Red Cross; Government; Private Parties; Businesses

Fuel Systems:

Gasoline; Diesel; Propane; Butane; Service Stations; Car Washes; controls; Class I, II, III; Bulk Storage

Food Processing Plants:

Various projects- power systems; conveyor systems; Automation; PLC; HMI

Fire Alarm Systems:

Control wiring; testing

Foundries:

Various Equipment

Glass Industry:

Sheet; Fiber; Bottles

High Voltage Work: (4160- 12KV)

High Schools; Airport; Water Districts; Plants; Municipalities

Industrial Ethernet:

Structured Cabling- CAT5- CAT6; Testing; Tracing; Installations; Wireless; Remote Access

Lumber Industry:

Sawmill; Excelsior; Pallet Manufacturers

Machining:

C.N.C.; Lathes; Mills; RS-232 Networks; Ethernet

Medical:

Equipment Connections- conduit; wiring per NEC: XRAY and other equipment

Military:

Various projects; controls; testing; compliance issues

Petroleum Industry:

Gasoline; Diesel; Bulk Storage; Butane; Propane; JP8; Computerized Dispensers; POS; Mini Marts; Garages; Service Stations
JP8- Aircraft- Cathodic Protection

Prison Systems:

Various projects; controls; programming

Restaurants:

Point of Sale (POS); Ethernet- LAN

Printing Industry:

Printing Presses- connections; troubleshooting; foreign language translation for schematics

Prison Industry:

Levels one; two; three and four- security systems; fire systems; waste water systems; CATV; new construction

Rock Plants:

Troubleshooting/ Repair; Automation; MSHA Compliance Inspections; Gold Recovery

Refrigeration Controls:

Troubleshooting/ Repair; Installation of controls and control wiring; PLC; HMI

Theater:

Stage Lighting; power systems

Waste Water:

Automation; PH Factor Monitoring- Adjustment

Commercial; Banks; Residential; Pools- Spas; Government; Feed Mills; More.....