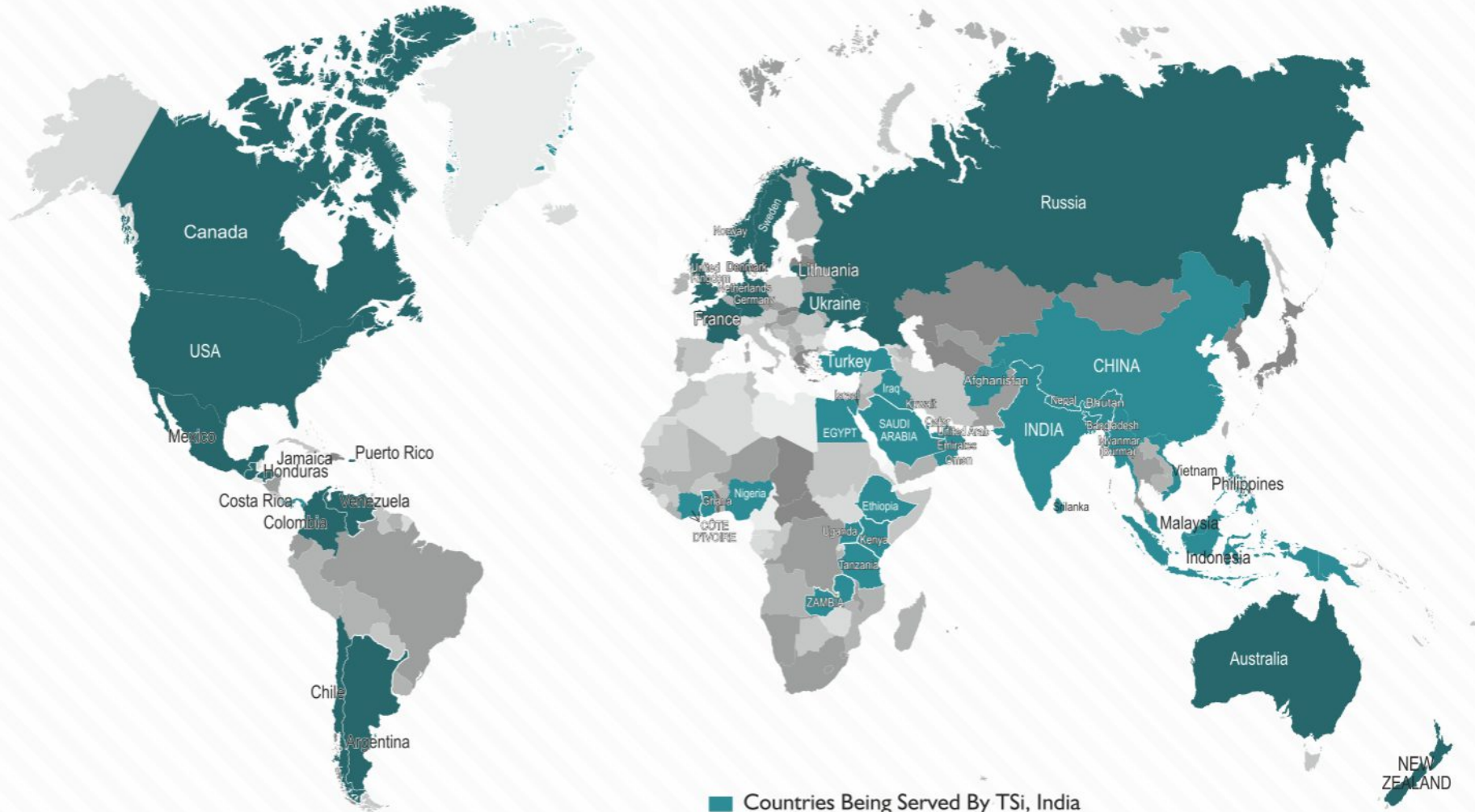




MILLISECONDS
THAT WILL CHANGE
YOUR BUSINESS



■ Countries Being Served By TSi, India
■ Countries Being Served By TSi, USA

The biggest enemies of modern electronic machines are voltage disturbances like sags, swells, spikes, transients and HF noises. These damaging voltage disturbances severely harm your electronic production machines, causing breakdown, data corruption, reduced productivity, tool damages and loss of profits.

20 milliseconds is the maximum time you get to control these enemies and convert bad power quality into precision power, conforming to ITIC Curve for electronics.

Only VRP Precision power conditioner, based on TSi's legendary PWM regulation & sag control technology, delivers this performance in 20 milliseconds.

TSi, headquartered in WI, U.S.A. started Indian operations at Vadodara in the state of Gujarat in 2011. The Indian joint venture manufactures a range of power conditioning products for Asian & African markets. Its premium offering includes the legendary TSi-VRP Precision PWM Static Voltage Regulators featuring solid state voltage regulation technology offering tightly controlled output power quality.

TSi-VRP Precision PWM Static Voltage Regulators are for applications where stable power is mandatory for high-end power and control electronics used in CNC machines, robotics, automation, power looms, spinning, IT, telecommunication, security and surveillance, plastic moulding, printing, packaging, welding, X-ray, Imaging and other hi-tech applications.



Precision fast-PWM ac mains voltage correction with sag, swell & noise control

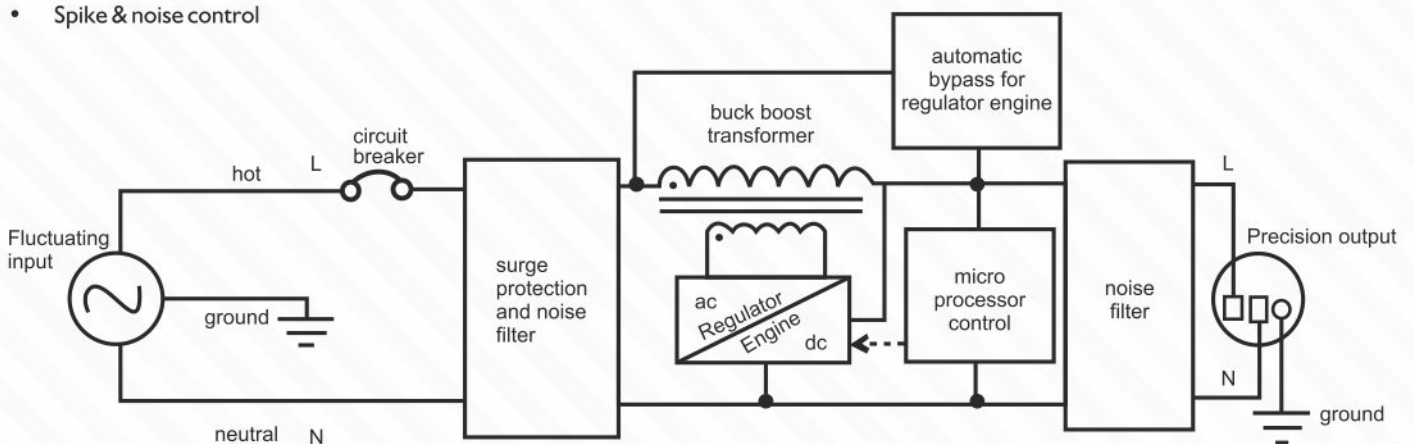
TSi-VRP assures seamless operation of electronic machines by providing purest power through continuous pulse width modulation (PWM) switching of a buck-boost transformer using a converter engine.

Because of the series buck-boost transformer, there is no switching of taps or otherwise a break in the power path.

The high frequency insulated gate bi-polar transistor (IGBT) driven converter engine takes the incoming ac power, measures against the nominal voltage and adds or subtracts voltage, 20,000 times per second, to achieve real-time compensation of voltage disturbances, sag or swell. All this is achieved within 20 milliseconds through seamless PWM compensation of voltage so that all voltage disturbances are corrected within ITIC curve for flawless operation of electronics.

It is a revolutionary technology that provides:

- Optimum voltage compensation
- Sag control
- Swell control
- Spike & noise control



Key VRP Technology features & consumer benefits

- Since the VRP technology controls any sag or swell cycle within 20 milliseconds, it is the ideal voltage conditioner for your sensitive electronic devices.
- Since the VRP has in-built spike and noise control, it eliminates the need of additional spike & noise filters.
- Since the VRP does not switch components in the power path, it is compatible with most loads including regenerative loads.
- AC input circuit breakers prevent costly equipment damage due to load side faults.
- Automatic bypass circuitry assures failsafe operation.
- Light weight and compact size makes for ease of installation.
- Static technology results in quiet operation, high product up-time & low maintenance.
- High efficiency and energy savings through optimum voltage result in energy efficient operation.
- Tight control over electronic card failures, data corruption and machine breakdowns results in higher productivity, lower operating costs and greater consumer comfort

Specifications sheet: Single Phase VRP Precision PWM Line Conditioners for Machinery

CATEGORY	FEATURE	± 20% full regulation	± 26% full regulation
Electrical	Capacity (in KVA)	2KVA to 15KVA	3KVA to 10KVA
	Regulator engine	High frequency 20 KHz IGBT driven voltage regulation convertor	
Input	*Nominal voltage	230 volts ac, single phase	230 volts ac, single phase
	*Normal operating voltage range (typical output regulation within +/- 1% of nominal)	184 - 276 volts ac	170 - 290 volts ac
	Relaxed operating voltage range (for relaxed output regulation within functional range of 200-250V P-N)	160 - 300 volts ac	148 - 315 volts ac
	Nominal frequency	47 - 63 Hz	
Output	*Nominal voltage	230 volts ac, single phase	
	Power efficiency (with 20-100% load conditions & worst incoming voltage)	over 96%	over 95%
	Voltage regulation (typical, excluding meter error)	+/- 1%	
Physical	Dimensions (mm)	460D x 300W x 170H upto 5KVA	460D x 300W x 170H for 3KVA
		560D x 450W x 300H upto 15KVA	560D x 450W x 300H upto 10KVA
	Weight (approx.)	15 kgs for smallest capacity to 55 kgs for largest capacity	
	Annunciation	LED display for Regulation mode, Bypass mode & Fault conditions	
Environmental	Ambient temperature	0° to + 45° centigrade (32° to + 113° farhenite). 10 to 90% RH non-condensing	
	Cooling method	Natural Cooled	
Protective Features	Standards & Safety	Designed to meet UL 60950-1 standards. Protection class IP 20	
	Overload & Short Circuit Protection	Through suitably rated input circuit breaker	
	Soft Switch-On	This feature ensure that the output voltage is never higher than the input voltage upon switch-on, before it commences full stabilization	
	Automatic bypass	Regulator engine will be automatically bypassed when there is a fault condition	
	Surge Test Conditions	Per Class 2 Surge (combination wave)	
	Surge let-through voltages	1.2 X 50µs, 6kV, 8 X 20 µs, 3 kA waveform. L-N < 300V	

- Notes:
1. Nominal output voltage can be factory preset at any value between 215 to 240V P-N. Regulation range will accordingly shift.
 2. Please ask if any non-standard range or customised feature is required.
 3. Since our designs are constantly evolving, the above specifications are liable to change without prior notice.

Specifications sheet: Three Phase VRP Precision PWM Line Conditioners for Machinery

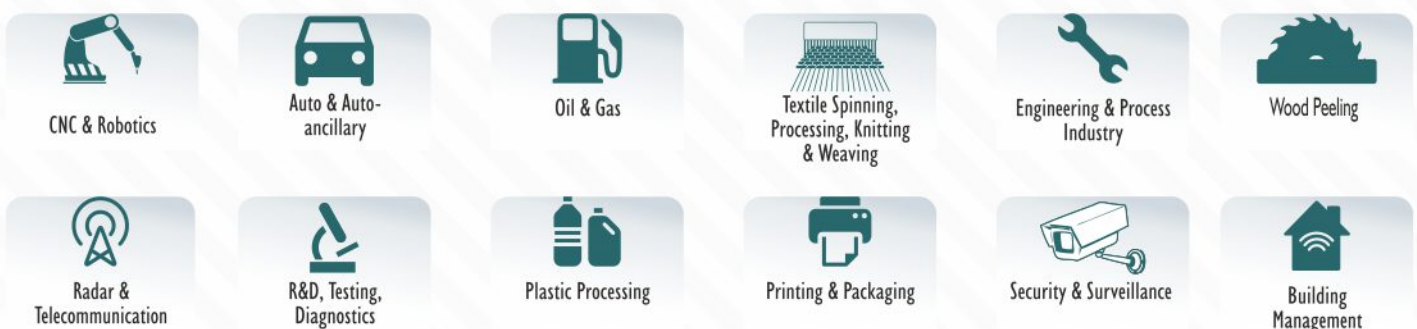
CATEGORY	FEATURE	± 13% full regulation	± 20% full regulation	± 26% full regulation
Electrical	Capacity (in KVA)	6KVA to 300KVA	3KVA to 175KVA	6KVA to 100KVA
	Regulator engine	High frequency 20 KHz IGBT driven voltage regulation convertor		
Input	*Nominal voltage	415 volts ac, three phase	400 volts ac, three phase	400 volts ac, three phase
	*Normal operating voltage range (typical output regulation within +/- 1% of nominal)	360 - 470 volts ac	320 - 480 volts ac	295 - 500 volts ac
	Relaxed operating voltage range (for relaxed output regulation within functional range of 200-250V P-N)	300 - 490 volts ac	277 - 520 volts ac	256 - 541 volts ac
	Nominal frequency	47 - 63 Hz		
Output	*Nominal voltage	415 volts ac, three phase	400 volts ac, three phase	400 volts ac, three phase
	Power efficiency (typical, with 20-100% load conditions & worst incoming voltage)	over 97%	over 96%	over 95%
	Voltage regulation (typical, excluding meter error)	+/-1%		
Physical	Dimensions (mm)	610D x 610W x 640H upto 30KVA	610D x 610W x 640H upto 30KVA	610D x 610W x 640H upto 21KVA
		660D x 660W x 720H upto 75KVA	660D x 660W x 720H upto 50KVA	
		888D x 888W x 838H upto 160KVA	888D x 888W x 838H upto 100KVA	660D x 660W x 720H upto 32KVA
		650D x 1020W x 2150H for panel models 130-200 KVA	650D x 1020W x 2150H for panel models upto 120KVA	888D x 888W x 838H upto 75KVA
		650D x 1220W x 2150H for panel models upto 250 KVA	650D x 1220W x 2150H for panel models upto 175KVA	
		850D x 1220W x 2150H for panel models upto 300 KVA		650D x 1020W x 2150H for panel models upto 100KVA
	Weight (approx.)	55 kgs for smallest capacity to 725 kgs for largest capacity		
Annunciation	LED display for Regulation mode, Bypass mode & Fault conditions			
Environmental	Ambient temperature	0° to + 45° centigrade (32° to + 113° farhenite). 10 to 90% RH non-condensing		
	Cooling method	Fan Cooled		
Protective Features	Standards & Safety	Designed to meet UL 60950-1 standards. Protection class IP 20		
	Overload & Short Circuit Protection	Through suitably rated input circuit breaker		
	Soft Switch-On	This feature ensure that the output voltage is never higher than the input voltage upon switch-on, before it commences full stabilization.		
	Automatic bypass	Regulator engine will be automatically bypassed when there is a fault condition		
	Surge Test Conditions	Per class 2 Surge (combination wave)		
	Surge let-through voltages	1.2 X 50µs, 6kV, 8 X 20 µs, 3 kA waveform. L-N < 300V		

- Notes:
1. Nominal output voltage can be factory preset at any value between 215 to 240V P-N. Regulation range will accordingly shift.
 2. All models of VRP are optionally available with additional 400 Volts to 200 Volts step down transformers.
 3. Please ask if any non-standard range or customised feature is required.
 4. Since our designs are constantly evolving, the above specifications are liable to change without prior notice.

Comparison

Features	Servo Voltage Stabilizer	Ferro Resonant CVT	On line UPS	AVR with SCR based Tap Changer	VRP - Solid State PWM Voltage Regulator
Stepless Voltage Correction	Yes	Yes	Yes	No	Yes
Instant, Real Time, Precision Voltage Correction	Poor	Depends on Load & Line	Yes	No	Yes
Sag Elimination	No	Yes	Yes	No	Yes
Surge & Spike Suppression	No	Yes	Yes	No	Yes
Load Regulation	Excellent	Very Poor	Good	Good	Excellent
Ability to handle regenerative loading	Becomes Unsteady	Poor, Can't handle	Can't handle	Satisfactory	Excellent, stays undisturbed
Power Back-up	No	No	Yes	No	No
Load Compatibility	Good	Poor	Poor	Poor under inductive loads	Excellent
Overload Capacity	Yes	Poor	To a limited extent	Yes	Yes
Static Design / No Moving Parts	No	Yes	Yes	Yes	Yes
Reliability against Breakdowns	Maintenance Prone	Excellent	Excellent	Poor	Excellent
Servicing/Installation	Support Needed	Simple	Simple, but batteries need regular maintenance	Simple	Simple (Plug and Play)
Built Auto Fast Bypass System	No	N/A	Yes	No	Yes
Energy Saving	Yes	No, energy guzzler	No, due to poor efficiency of double conversion	Limited Saving	Yes
Voltage overshoot during Mains Cycle	Yes	Can be very high	Never	Yes	Never
Soft Switch-on	No	No	Yes	No	Yes
Cost of Ownership	High, due to maintenance, failures & technology limitations	High, due to poor efficiency	Extremely high, only justified in case back up power is mandatory. Cost of mandatory air-conditioning is additional	High, esp. due to frequent failures under inductive loads	Extremely cost effective

Applications



Application Notes:

CNC & Robotics:

- **TSi-VRP** adds value to leading international brands of sophisticated CNC machines and robotics. Many original equipment manufacturers strongly recommend VRP technology for voltage conditioning so as to gain control over warranty issues caused by poor power quality and, thus, earn customer appreciation for their brand's performance.
- **ITL Industries - Indore** endeavours to earn happy customers through uninterrupted machine running. Knowing that VRP enables better performance of their machines, they regularly suggest to their customers, "you must have an IGBT Power stabilizer so that your machine has a stabilized supply and you do not have any problem. You can buy one from TSi, Vadodara."
- **HAAS CNC** regularly invite TSi to their HAASTEC Road shows so as to engage existing & potential customers with modern technologies for better performance of their machines. They recommend in their Pre-installation information manual "we would recommend strongly to use as first choice to have Static Control Stabilizer in place of standard servo stabilizer".
- **MacPower CNC - Rajkot** extensively tested our VRP before certifying to us thus, "our CNC machines work under regenerative conditions. We are very satisfied with the steady performance of your VRP. Your technology will go a long way in enhancing the productive use of our machines."
- **Hwacheon - Pune** strongly recommend VRP with their CNC machines. Often they supply VRP as a package with their machines.
- **Hwashin Automotives - Chennai** (builders of body parts for Hyundai cars) did an annual comparative study of 2 robot welding lines in 2013-14. One was powered by 99 VRP's without any isolation transformer & another was powered by 100 Servo stabilizers + isolation transformers. The results established long term advantages of VRP technology. Hwashin certified thus, "The welding lines powered by servo stabilizers incurred Rs. 2.0 million on burnt cards and average downtime of 4 hours per week. But there has been no burnt cards & no downtime in the lines powered by VRP".



This rests the case in favour of VRP technology. Since then, Hwashin have gradually phased out servo stabilizers on robotics as well as other CNC machines & replaced them with VRP. The result is an all-round productivity increase.

- Several top brands of sophisticated CNC machining, metal cutting, diamond cutting & metal forming machines run flawlessly with TSi- VRP, to name a few makes:

- | | | | |
|------------|----------|------------|--------------------|
| • HAAS CNC | • JYOTI | • STARRAG | • SAHAJANAND LASER |
| • DMG MORI | • MAZAK | • HWACHEON | • MITSUBISHI |
| • BFW | • MAKINO | • MACPOWER | • TRUMPF |
| • PMT | • LMW | • AMADA | • MESSER |

- TSi - VRPs are powering some of the finest robots of reputed makes such as:

• HYUNDAI • YASAKAWA • MOTOMAN • ABB

Auto & Auto-ancillary:



- By far the single largest segment worldwide using maximum electronic machines is the auto sector. This sector has been quick to adopt the revolutionary TSi - VRP technology across several applications of machining, welding, metal cutting, metal forming, which crucially depend on pure power. Today VRP is synonymous with pure power in the auto sector. Its technology advantages are easily measurable and its benefits are quick to see. We believe, once a VRP customer, always a VRP customer. All our customers today place repetitive orders. As a result, there are thousands of VRP's operating in the auto sector.

- **JBM-Manesar** reported huge productivity improvements after installing TSi-VRP as a 3 months trial on weld Line CYP8. They were regularly facing problems of power source IGBT card burn-out, power source main switch MCB burn-out, repetitive (4-5 time in a shift) power source over heating alarm/ input over current alarm. They were forced to frequently shut off power source for 2-3 minutes and then restart. These were resulting in huge break downs.

Says their Project Manager "To our surprise, since the time we installed VRP, we did not find a single card failure and any fault in power source. Due to this we are able to achieve NIL downtime regarding power source as compared to other line. Besides this major problem, we were facing continuous minor Problems in power source like input over current/ output over current/ welder error/ negative cable burning problem/ heating problem which are resolved now. After installation of VRP at line C YP8 we did not find any power source failure and any card failure in power source on this line. Even we are not facing any minor alarm in Line C YP8."

- **Honda Cars- Tapukera & Bharat Forge - Pune** both were suffering due to sags from incoming supply side. After having successfully tested and adopted VRP technology, they have now consolidated their benefits further by replacing several servo stabilizer applications with VRP to effectively control sags & to stop interruptions in crucial CNC machines.
- **Somic ZF - Delhi** were hard pressed to solve rejection problem due to sudden voltage sags in projection welding machines. Today they have solved the problem with TSi-VRP which instantaneously corrects voltage dips & maintains quality welding in their 2-phase projection welding machines.
- VRP has now become the preferred choice at several prestigious automobile manufacturers & auto-ancillaries, to name a few:

- HONDA CARS - TAPUKARA
- HONDA CARS - TAPUKARA
- HONDA CARS - TAPUKARA
- JAYA HIND MONTUPET - DEWAS
- JAYA HIND INDUSTRIES - PUNE
- FORCE MOTORS - PUNE
- GESTAMP - PUNE / CHENNAI
- BRAKES INDIA - CHENNAI
- WHEELS INDIA - CHENNAI
- SUZUKI MOTORCYCLES - FARIDABAD
- CATERPILLAR INDIA - THIRUVALLUR
- DAIMLER INDIA COMMERCIAL VEHICLES - CHENNAI
- JBM AUTO - SANAND
- VOLVO EICHER - DEWAS
- MAHINDRA GEARS - PUNE
- APOLLO TYRES - VADODARA
- FEDERAL MOGUL - PATIALA
- ROYAL ENFIELD - CHENNAI
- STEEL STRIPS - CHENNAI / JAMSHEDPUR / CHANDIGARH
- WAPCO TVS - CHENNAI / LUCKNOW
- H-ONE INDIA - TAPUKARA
- WINDALS AUTO - PUNE
- SML ISUZU - CHANDIGARH / NAWANSHAHR
- MERCEDES BENZ INDIA - PUNE

Oil & Gas:

New generation retail petrol pumps use latest dispensing machines, centrally connected through SCADA. These pumps also use inverter air-conditioners and special lights. All these devices need precision power. VRP flawlessly powers these new generation retail pumps and their sensitive dispensers of reputed international makes viz:

- TATSUNO
- GILBARCO VEEDER-ROOT
- L&T
- MIDCO
- VRP not only ensures flawless operation of these dispensers on the face of spikes, swells, sags, noises, but also eliminates the need for energy guzzling CVT's, thus saving enormous power & quickly paying back for itself.
- Hundreds of pump owners of HPCL/ IOCL located across Kerala, Tamil Nadu, Andhra and other Indian states are happy because they installed only VRP instead of combo of servo stabilizer plus CVT.
- TSi - VRP customers in Oil sector include:



- ONGC - DAHEJ
- GUJARAT GAS - ANKLESHWAR
- IOCL PUMP OWNERS IN RAJASTHAN
- HPCL - COCHIN / CALICUT / CHENNAI / TRICHY / BENGALURU / VIZAG / AHMEDABAD
- NAYARA ENERGY - SURAT / VADODARA

Textile Spinning, Processing, Knitting, Weaving:

- By far the biggest success story of VRP in textile sector has been in textile looms. It was in 2013 that a leading Indo-Italian joint venture company approached TSi for trials on their Italian Rapier looms, which were repeatedly failing due to poor power quality and causing them huge warranty costs in damaged drive cards.
- Since then, there has been no looking back for VRP applications in all international brands of looms, auto-coners as well as other textile machines, viz:



- ITEMA - ITALY
- PANTER - ITALY
- LMW - INDIA
- TOYOTA - JAPAN
- PICANOL - BELGIUM
- SAURER - SWITZERLAND
- Since modern spinning mills & process houses also employ sophisticated electronic machines, the word about effectiveness of VRP technology quickly spread. Consequently, this technology has found several applications in spinning mills, process houses, knitting machines & several other applications in major textile mills, to name a few:

- BSL - BHILWARA
- SANGAM GROUP - BHILWARA
- RSWM - BANSWARA
- SPUNWELL SYNTEX - BHILWARA
- RAYMOND - AMRAVATI
- GINNI FILAMENTS - NEEMRANA
- GIRDHAR TEXTILES - AHMEDABAD
- SAURER TEXTILES SOLUTIONS - VADODARA
- DYNAMIC AUTOLOOM - AHMEDABAD
- BMD INDIA - BANSWARA
- CHINCO TEXTILES - SURAT
- BINDAL SILK - SURAT

Engineering & Process Industry:

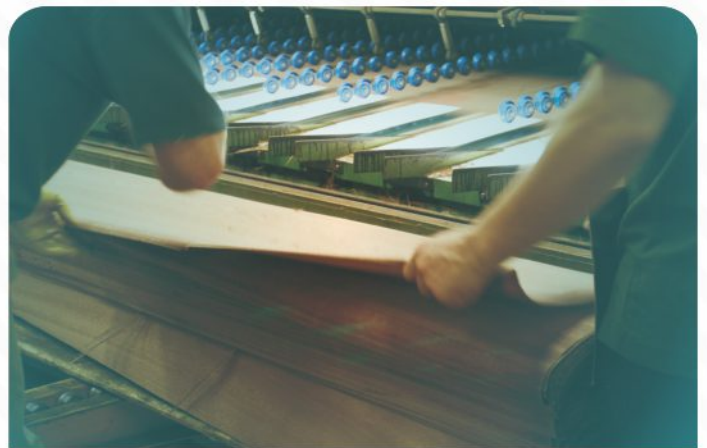
- VRP is steadily replacing conventional stabilizers for its superior performance in engineering & process companies. It helps their drives, PLC systems & other electronic machines to operate flawlessly, resulting in higher productivity. Almost all customers have been repetitive, to name a few:



- | | | |
|--------------------------------------|---|--|
| • P2P POWER - NOIDA | • ROOTS MULTI CLEAN - COIMBATORE | • CERA - MEHSANA |
| • L&T- HAZIRA / VADODARA | • DECCAN PUMPS - COIMBATORE | • EQIC DIES - HYDERABAD |
| • SUN PHARMA - VADODARA | • INOX - VADODARA | • AMARA RAJA BATTERIES - TIRUPATI |
| • ALEMBIC PHARMA - PANCHMAHAL | • JYOTI - VADODARA | • SAGAR CEMENTS - HYDERABAD |
| • PIRAMAL GLASS - VADODARA | • HONEYWELL AUTOMATION - PUNE | • HINDUSTAN HYDRAULICS - JALANDHAR |
| • KEI ENGG - ROORKEE | • BHURJI ELECTRONICS - GURUGRAM | • LIBERTY SHOES - KARNAL |
| • CRI PUMPS - COIMBATORE | • TEXMO - COIMBATORE | • SHREE CEMENTS - BEAWAR |
| • LMW - COIMBATORE | • PRIMA AUTOMATION - AHMEDABAD | • ROCA - ALWAR |
| • AIRFLOW EQUIPMENTS INDIA - CHENNAI | • ISGEC HEAVY ENGINEERING - YAMUNANAGAR | • SOMIC ZF COMPONENTS - GURUGRAM / SURENDRANAGAR |

Wood Peeling:

- Wood peeling machines need precision voltage to perform flawlessly. In case of a fluctuation or sag, not only the machine becomes susceptible to break-down, but the peel thickness of veneer varies. Peel thickness variation ultimately produces inferior quality wavy plywood. Traditional method of voltage conditioning through servo voltage stabilizer could never fully solve this problem. But introduction of VRP revolutionized this application by ensuring smooth machine operation as well as constant peel thickness.
- Today VRP is the choice of leading wood-peeling machine builders in India. VRP complements the machines of many leading wood machine manufacturers with hundreds of installations across U.P., Haryana, Punjab, Kerala.
- Some leading OEM brands who strongly advise customers to power their machines with VRP are:



- | | | | |
|--------------------------------|----------------------------|-----------------------------------|--------------------------------------|
| • WOODMAC - AMRITSAR | • GURU AMAR - YAMUNANAGAR | • CTC - YAMUNANAGAR | • JUPITER - YAMUNANAGAR |
| • PIONEER PLYWOOD - COIMBATORE | • SAMRAT PLYWOOD - MUKTSAR | • EVERGREEN PLYWOOD - YAMUNANAGAR | • GRAND WOOD PRODUCTS - MUVATTUPUZHA |

Radar & Telecommunication:

TSi - VRP technology has been a popular choice of telecom & satellite industry in the harsh environment of Africa, where reliability & ruggedness count most. Because telecom equipment are easily damaged by incoming spike, swell & sags, VRP is the most appropriate technology to keep them up & running continuously. VRP ensures that as long as there is power, DG set does not need to operate, nor batteries need to discharge. This results in considerable OPEX saving.

Due to its ability to provide precision voltages, it has also been deployed successfully in powering radar stations.

Satisfied operators using thousands of VRPs include:



- MTN - UGANDA
- CELTEL - UGANDA
- UGANDA TELECOM
- V-MOBILE - NIGERIA
- CELTEL - NIGERIA
- MTN - IVORY COAST
- ZAIN - GHANA
- VSAT TELECOM SYSTEMS - MEXICO
- RAHA TELECOM - TANZANIA
- BHARAT ELECTRONICS - GHAZIABAD

R&D, Testing, Diagnostics:

- **Mercator Healthcare - Muzaffarnagar** is a classic example of VRP application where precision voltage is needed for accurate testing, research & development work. In their latex manufacturing facility at Muzaffarnagar, they needed to generate test voltages of 1500 milli volts \pm 10 milli volts through a testing transformer. It wasn't possible through conventional methods. They were able to achieve desired accuracy only by using VRP & have certified thus, "we were not able to get this accuracy with any other stabilizer, but we are consistently achieving the desired result with VRP".
- **CEM - USA** is a supplier of precision lab equipment & they recommend use of VRP with their devices. Their distributors in Europe consistently import our VRP for supply to any lab with poor power quality.
- X-ray & scanning machines face sudden voltage sag due to excessive inrush current drawn by their high voltage transformer. This causes malfunction, which is often controlled by using expensive high capacity UPS. This causes high CAPEX as well as provides poor power conversion efficiency. The problem is best overcome with VRP, which provides a very smooth operation to all types of diagnostic machines.



- MERCATOR HEALTHCARE - MUZAFFARNAGAR
- TERRA ANALYSIS - TURKEY
- JAY AGRO - VADODARA

Plastic Processing:

Yash Polymers - Vadodara have been able to quantify the benefits of VRp on their plastic injection moulding machines, says their M.D. Mr. Narendra Bhai, "There has not been a single failure of electronic components with VRP, whereas it used to happen often with servo stabilizer. Because the voltage always stays constant hence there is no variation in shots, leading to improvement in product quality and savings in raw-material."

Several reputed makes of Plastic processing machines today operate flawlessly with VRP, such as:



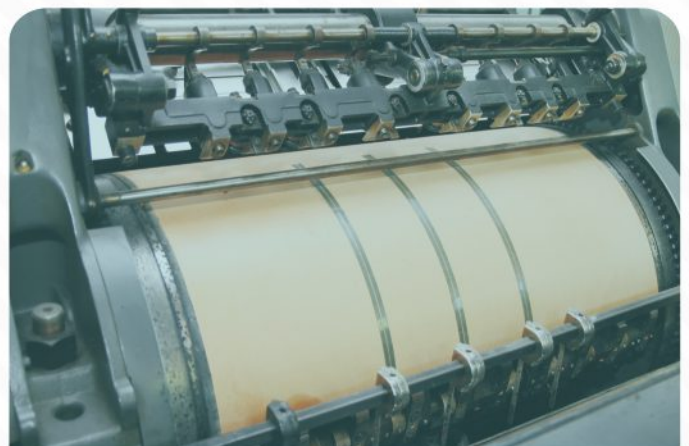
- NEGRI - BOSSI
- FERROMATIC
- KLOCKNER
- FANUC
- SBR
- SIDEL

Reputed users include machine suppliers as well as plastic processors, such as:

- BD MEDICAL - BAWAL
- JAY POLYPACK - VADODARA
- SBR MACHINES - PUNE
- YASH POLYMERS - VADODARA
- SIDEL - PUNE
- SHRI PLASTO PACKERS - CHENNAI
- HINDUSTAN SYRINGES & MEDICAL DEVICES - FARIDABAD
- SUPERMAC INDUSTRIES - GURUGRAM
- ASB INTERNATIONAL - AMBERNATH

Printing & Packaging:

- Modern printing and packaging technology is loaded with hi-tech electronics. Printing & packaging machines are so sensitive that they are unable to withstand the onslaught of slightest voltage disturbances, especially those due to transients, swells & sags. This results in expensive card failures and productivity loss.
- Several printing & packaging companies using Heidelberg and other sophisticated machines have immensely benefitted by using TSi - VRP, some of them are:



- AMAR UJALA - NOIDA
- SYNDICATE LABELS - DELHI
- SWASTIKA - OKHLA
- MEERA OFFSET PRINTERS - MUMBAI
- NIKHIL OFFSET - OKHLA
- ABM GRAPHICS - NOIDA
- NEW MODEL IMPEX - DELHI
- ADZONE - OKHLA
- MEDCRAFT PRINTPACK - PUNE

Building Management:

- Buildings & corporate offices use automated operating, diagnostic & warning systems, LED lighting systems, IT systems and other types of electronic machines. Additionally, for power back-up, almost all of them use UPS systems and DG sets. When voltage goes beyond the trigger range of these back-up power sources, the system goes in back-up power mode. This happens often, thereby draining UPS batteries as well as consuming expensive DG power. When there is real power outage, the system suddenly halts because batteries have already drained. Wide range VRP entirely eliminates this problem, thereby ensuring smooth operation as well as saving OPEX even if supply voltage is beyond trigger range.
- They also use several inverter based machines, such as HVAC systems, elevators (lifts) and escalators. These modern machines give frequent trouble due to electronic VVVF drive failures. Many of them have resolved these issues of electronic failures by adopting VRP technology.
- VRP is also ideal bypass mode conditioner for large UPS systems, since it provides ideal quality of power when UPS is under bypass, without being affected by transient loads.
- Several institutions now use VRP for flawlessly running their entire commercial operations & for providing greater consumer comfort, notable amongst them are:



- | | | |
|---|----------------------------------|------------------------------|
| • BAJAJ ALLIANZ - VADODARA | • STANBIC BANK BRANCHES - UGANDA | • AVAIDS LIGHTING - MANESAR |
| • VIJAY SALES - VADODARA | • CRANE BANK BRANCHES - UGANDA | • JUPITER LIGHTING - BHIWADI |
| • CITIBANK - NAGPUR | • AKSHARDHAM TEMPLES - DELHI / | • CMS INFO SYSTEMS - MUMBAI |
| • DTB BANK BRANCHES - UGANDA | BOTAD / NAVSARI | • W.H.O - DELHI |
| • PIONEER CRANES & ELEVATORS - LUDHIANA | • C & S ELECTRIC - NOIDA | • SRS CINEMAS - SAHARANPUR |

Security & Surveillance:

- Astrophysics - USA as well as Smith's Detection - UK are 2 major providers of security systems to airports worldwide. Said the Service Manager of Smith's Detection- Australia, "We have been quite happy with what the supplied VRP units have done to improve the performance of our equipment at various locations." These companies ensure fool-proof operation of their X-ray Baggage Screening machines at several airports worldwide with VRP, such as the airports at Chennai, Bhubaneshwar, Jaipur, Tirupati, Lucknow, Kolkata, Goa, Coimbatore, Varanasi, Pune, Guwahati, Trichy, Sydney, Brunei, Singapore, Kuala Lumpur and many more.
- Buildings Business Division of Schneider-Electric had major problems of non-performance of their security systems at UP Police HQ in Mathura, which could be resolved only with the installation of VRP. Said their Manager of this project, "now the system is stabilized & working very well. After VRP and additional surge protector installation we have not faced any problem so far."



- | | | |
|----------------|---------------------|-------------------------|
| • ASTROPHYSICS | • SMITH'S DETECTION | • EDS MOBILITY - BRUNEI |
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