

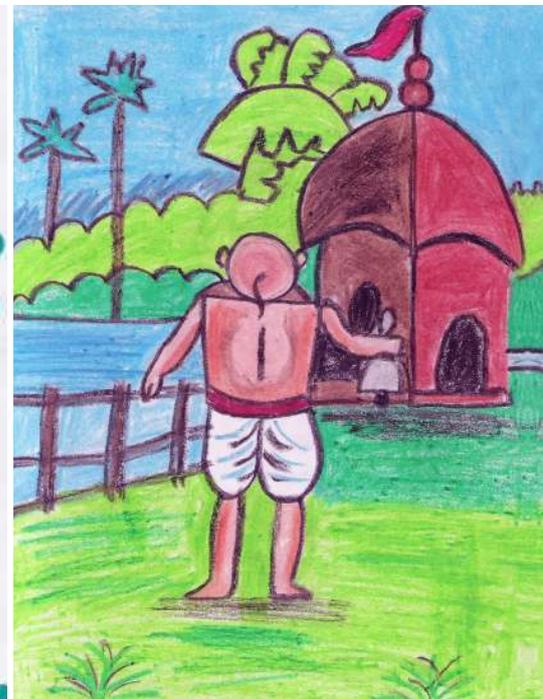
# URJA HI WAY



A Newsletter of Powerlinks Transmission Ltd.

Issue XVI

April-June 2009



## Winning Artwork

## Changes on our Board

Mr. Sanjay G Patki has been appointed Non-Executive Director of our company effective 13th May, 2009.

He is currently Head of Engineering, Procurement & Technical Services in Tata Power handling testing, protection and control of power plants and power systems. He holds a degree in Master of Technology and has a rich experience in the power sector.

We warmly welcome him onto our Board!



Mr. S.G. Patki

## Chairman Powerlinks handing over dividend cheques for financial year 2008-2009 to our promoters - Tata Power and Power Grid



◀ Mr. Sunil Wadhwa and Mr. S. G. Patki receiving cheque on behalf of Tata Power from the Chairman.

Mr. S. Majumdar, Mr. H. L. Tayal, Mr. J Sridharan and Mr. R. T. Agarwal receiving cheque on behalf of Powergrid from the Chairman. ▶



## From the ED & CEO's Desk:

Dear Friends,

It is very heartening for me to inform you that our company has achieved a turnover of Rs. 268.89 crores, and profit after tax of Rs. 65.34 crores during the last FY 2008-2009. The company also distributed a dividend of 10% to its shareholders. I congratulate all our employees for the excellent performance.

As per the new regulations issued by CERC for the period 2009-2014, incentive would be payable on a monthly basis along with transmission service charges, and not on an annual basis, as earlier. Therefore, we ought to be consistent in maintaining the availability of the lines throughout the year. Also, the annual maintenance plan will have to be scheduled meticulously, so that availability is always maintained above 98%. We will need to keep a constant vigil during the monsoon season for maintaining our transmission lines in a healthy condition.

With the formation of the new government, there are indications that a lot of thrust will be given to the infrastructure sector in general, and the power sector in particular. This will definitely give a boost to the transmission sector as well. Powerlinks will make sincere efforts to get some more projects, as there is tremendous potential to grow.

Towards our Corporate Social Responsibility (CSR) initiative, the company installed hand pumps in various flood affected villages in the vicinity of our lines in Bihar.

Wishing you and your families all the best.

Suresh Sachdev  
ED & CEO



Mr. Suresh Sachdev

## Letter from the Editor:

Dear Friends,

The heat is getting to most of us, even though we are blessed to have the respite that occasional showers bring; the monsoons still being a short distance away.

However, work goes on, as always - our O & M work is on, so is our work at Chiplun. We have training programmes being conducted on a variety of subjects ranging from personal growth & conflict management to motivation, since we know that the best time to upgrade our knowledge & resources is NOW!

You will recall the recent art and essay competitions we had held for children of the Powerlinks family. We are happy to share with you the prizewinning art entries on our front cover.

Let's enjoy summer and the bounty it brings! (Children's holidays, mangoes, litchis, swimming, etc.)

Rita Luther  
Editor

## Making Your Acquaintance

Mr. S.T.Dasgupta, Sr. Manager (O & M), Muzaffarpur.



*Q1. What are the challenges and triumphs you face in your work in operations and maintenance?*

A1. Our line passes through different areas that have different terrains, different people, and therefore different issues. The most burning problem we have faced since the beginning of our O & M phase, was the theft of line materials on the Siliguri–Purnea line. This line is usually kept un-energized from December to January & April to May, due to system constraints, and all the incidents of theft have taken place during this particular period. The administration tried their best to gain control over it but failed.

Since the line passes through the border areas of Bihar, Bengal and Bangladesh, the miscreants changed their whereabouts immediately after committing the crimes. Somehow, we could get rid of this critical problem by putting in all our efforts, expertise, connections & PR skills. The result has been encouraging, which is evident from the fact that no theft cases have been reported in the last one and a half years.

Another alarming situation we faced was during the devastating Kosi river floods during August 2008. Hundreds of towers of the Purnea–Muzaffarpur line got water-logged for more than two months. The water logging was more than three meters at some towers and all the approaches to these tower locations were washed out. The locations were somehow patrolled by using boats. By the grace of God, there was not a single untoward incident and the line remained in service without any interruption.

*Q2. Since when have you been working for Powerlinks? What do you like about it as an organization?*

A2. I have been working with Powerlinks since February 2004. I cannot forget the unstinted support from my superiors and the cooperation from my juniors that I received during the construction period. Many of them have left Powerlinks and are working with other organizations now but their contribution in successful commissioning of this line will be always remembered.

*Q3. If there was one thing you could change in your job, what would it be?*

A3. Good or bad, everything has to be faced, nothing to be avoided.

*Q4. Please share something about yourself as a person and as a family man.*

A4. I am from a Kolkata-based joint family, and possess some outdated values. The major decisions of my family are usually taken by the elders, even today. Basically I am a bit of an irresponsible family member and always blamed for pampering the kids!

Regarding professional life, I am never afraid of any task assigned to me. For the rest, my superiors are the best judges.

*Q5. What is your advice for the young people of today?*

A5. Be dedicated, work hard, and the other things will come automatically.

## Key Events & Information

1. Project Management Consultancy for Jaigad PowerTransco Ltd.  
The construction activities are in full swing and a total of 165 foundations & 113 towers have been completed/erected at site for both packages.



2. Consultancy Assignment for the World Bank (WB)  
Powerlinks has completed the World Bank assignment in respect of review/finalization of bidding documents for T&D projects undertaken by Haryana Vidyut Prasaran Nigam Limited (HVPNL) under the Haryana Power Development Programme. The WB appreciated Powerlinks' contribution towards review and finalization of the bidding documents for HVPNL's 400kV Nawada & Nuhiyawali substations.
3. Powerlinks declares dividend for FY 2008 – 2009  
The 8th Annual General Meeting of the company was held on 27th May, 2009 at the Conference Hall of POWERGRID, Katwaria Sarai, New Delhi. The revenue of the company during the year 2008-2009 was Rs.268.89 crores (previous year: Rs.255.29 crores) and profit after tax was Rs.65.34 crores (previous year: Rs.58.41 crores). The company has also declared a dividend of 10% of the paid share capital of Rs.46.80 crores for the year 2008-2009 (Rs.37.44 crores for the year 2007-2008).

## Thermographic Scanning of EHV Lines & Substations

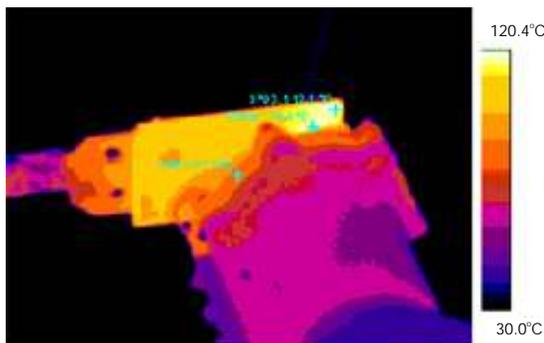
by S N Dhar, Technical Assistant, Powerlinks

Thermography is a method of measuring the temperature of an object using a Thermovision camera, which senses infrared radiations emitted by objects.

Infrared (IR) energy is a part of the electromagnetic spectrum and behaves similarly to visible light. It travels through space at the speed of light and can be reflected, refracted, absorbed and emitted. The magnitude or wavelength of IR energy is longer than visible light, between 0.7 to 1000  $\mu\text{m}$  (millionths of a meter). Other forms of electromagnetic radiation include radio, ultraviolet, and X-rays.

All objects emit infrared radiation as a function of their temperature. This means all objects emit infrared radiation. Infrared energy is generated by the vibration and rotation of atoms and molecules. The higher the temperature of an object, the more its motion and hence the more infrared energy is emitted. This is the energy detected by infrared cameras.

Infrared thermography is the technique for producing an image of invisible (to our eyes) infrared light emitted by objects due to their thermal condition. The most typical thermography camera resembles a camcorder and produces a live TV picture of heat radiation. An image produced by an infrared camera is called a thermogram or sometimes a thermograph. Please refer figure given below.



Example of thermal image of terminal of Bulk Oil Circuit Breaker at 22 KV Substation

Object parameter	Value
Emissivity	0.96
Object distance	2.0 m
Ambient temperature	39.0°C
Label	Value
IR : max	112.3°C
IR : min	-1.2°C
SP01	73.5°C
SP03	112.2°C
SP04	112.3°C
ISO01	119.2°C

By detecting anomalies often invisible to the naked eye, thermography allows corrective action before costly system failure occurs. Portable thermal imaging systems scan equipment and structures, then instantly convert the thermal images to visible pictures for quantitative temperature analysis. Infrared systems have the ability to perform inspections while electrical systems are operational. Since thermography is a non-contact diagnostic method, a thermographer can quickly scan a particular piece of equipment from a safe distance, leave the hazardous area, return to his office and analyze the data without ever subjecting himself to an adverse situation. Since typical industrial, electrical or mechanical problems occur when there is a temperature increase of 10°C or more, the infrared camera sees these problems well in advance of a failure. Accurate temperature measurements allow repairs to be prioritized.

### Application of thermography in monitoring electrical system conditions:

We all know that heating effect is directly prepositional to  $I^2R$  in the electrical circuit. Regarding current factors, we need to see that the optimum quantity of current is maintained for utilizing the full load capacity of the equipment as well as the line, in view of optimum utilization of electrical system capacity for fetching maximum revenue for the organization.

However, simultaneously it is also essential to keep the resistance (impedance) of the transmission or distribution line to a minimum. This is to avoid energy losses as well as heating effects of power connectors and equipment

connections for avoiding not only loss in the form of heat energy but also system breakdowns due to breaking of electrical joints on account of over heating. A loose contact due to loosening of a clamp nut bolt, poor quality of clamp and connectors as well as corrosion due to aging effects, are the main causes for high resistance.

As per IS 5561-1970, the maximum permissible temperature rise for aluminum power connectors is just 45°C above ambient temperature and considering maximum ambient temperature to be 45°C in extreme conditions, the permissible maximum temperature for an electrical joint as per IS is only 90°C, at full load current and the highest ambient temperature of 45°C. Considering that normally about 50 % is the full load capacity of the lines, the gravity of the situation is decided as under:

10°C above ambient,	:	Normal
11°C to 20°C above ambient	:	Alert
21°C to 25°C above ambient	:	Alarm
26°C & more above ambient	:	To be attended immediately

Needless to say, we need to maintain the temperature of electrical joints in transmission, distribution & generation system well below 65°C.

It may be noted that by thermo graphic images we can point out the specific defective disc insulators from the insulator string up to all EHV levels as well as for 500 kV HVDC levels which have high temperatures due to hair cracks in the porcelain body or in the cementing material of the insulator or due to contamination which causes travel of electric charge due to reduction in insulating capacity. Such an insulator being a punctured insulator may flash over any time in rainy, foggy and smoky weather.

Preventive maintenance can avoid breakdowns as well as failure of equipment such as CTs, power transformers, circuit breakers and snapping of jumpers which will save loss of costly equipment, loss of labour cost apart from saving huge revenue losses and national wealth loss as stated above.

The economics of thermovision scanning:

Why preventive maintenance is always more economical than disaster management can be seen from these simple statistics:

For example, one 400 kV line transmitting 250 MW of load which goes under breakdown for about 10 hours and there is no possibility of load diversion, would not only result in energy/revenue loss for the utility but also have adverse impact on national wealth.

$250000 \text{ KW} \times 10 \text{ hrs.} = 2500000 \text{ KWH}$ , i.e., loss of 25 lakhs of units

Considering the rate of Rs. 4/- per unit the revenue loss works out to Rs.100 lakhs, i.e., Rs.1 crore

This is just the revenue loss of the electric supply company but one has also to consider industrial production loss, agricultural production loss and losses due to commercial and residential activities. The national loss of wealth would be about 10 times the revenue loss, which works out to the tune of Rs.10 crores – not to mention the dissatisfaction of consumers due to inconvenience, and expenditure in attending to breakdowns at unexpected times.

Thus a small expenditure on thermography would help avoid the revenue loss and make the system interruption free.

It is said that 'a stitch in time saves nine'. Making a thermo graphic analysis of the electrical system would help in identifying the 'hot spots' and attending to them well in advance to avoid breakdowns.

## Replacement of porcelain disc insulators by long rod polymer insulators in 400 kv D/c Bareilly–Mandola line

By J.R.Pal, Manager (O&M) Mandola

The pollution-prone National Capital Region area has posed a serious challenge for the smooth operation of all the 400 & 220 kV lines under dense fog during the winter season. Our 400 kV D/C Bareilly–Mandola line is no exception to this phenomenon.

For instance, it was during January this year that we had witnessed cascaded trippings because of decapping of conventional porcelain insulators in the NCR area in the early mornings amidst heavy dense fog when visibility was less than five metres. Both our line circuits experienced numerous auto-reclosures, trippings and decapping of line insulators.

The last incident of decapping of the 400 kV Bareilly–Mandola circuit on 18th January, 2009, brought with it agony, frustration and also awareness of our limitation of fighting against nature with the existing resources.

This necessitated the use of long rod polymer insulators with better performance history in pollution-prone areas under dense fog and Powerlinks have decided to replace all the porcelain disc insulators with long rod polymer insulators, where there is known history of incidence of dense fog and where pollution related trippings had taken place in the past.

We have identified such areas starting from Mandola to Hapur bypass, consisting of 708 suspension strings in 118 suspension type towers & 624 D/T strings in 52 tension towers. We had estimated 28 outages (to be availed on a daily basis), for completion of the above work with 10 gangs.

The work was finally awarded to M/s KEC International Limited for completing the job within 17 outages after deployment of 16 gangs with a bonus clause of additional 5% payment if they completed the work within the stipulated time frame.

M/s KEC further mobilized the men & material for taking up the work, and the first outage was availed on 02.04.2009. Although we had planned the work very meticulously, on the first day we could not get the desired progress due to insufficient deployment of manpower and T&Ps. Further in the evening, we reviewed the daily progress achieved, analysed our failures and chalked out necessary remedial measures.

Our introspection paved the way for much improved progress the next day. After that, we never looked back. Every evening we used to have a joint meeting with KEC Engineers and our supervisory staff in order to discuss successes & failures of that day and how to improve further the next day. Our ED & CEO and our COO have also visited the site and boosted the morale of our supervisory staff by their valuable advice.

Ultimately, with meticulous planning & tremendous effort of all team members, we have completed the entire work in 14 outages instead of 17, thus saving 3 precious shut-down days of such an important trunk line.

As we all know, the success of any system depends upon the commitment of all levels and functions of the organisation. We have a very good, highly inspired and committed team, and I can proudly claim that everyone in the team including KEC Engineers and all the workers deployed for the work have performed their duties very honestly and sincerely. This allowed us to complete the work ahead of the stipulated time limit.

Last, but not the least, I would like to put on record the relentless efforts of all the team members – it was with their valuable input that the work was completed ahead of schedule!



## Getting to know places of interest near our field offices

### VAISHALI

**Location:** Vaishali is situated in the state of Bihar, about 37 kms. from our project office at Muzaffarpur and 55 kms. off Patna, the capital of the state. Vaishali extends from latitude 25° in the north to longitude 85° in the east. The town, an important place for both the Buddhists and Jains, is well connected by road to other important cities in Bihar.

**Climate:** As in other places in the upper Gangetic plain, Vaishali has an extreme climate. The summers are hot with the maximum temperature touching 45° C. On the other hand, winters are cold and the minimum temperature can go down to 6°C. The best season to visit this place is winter, i.e., October to March.

**History:** Believed to be the first republic in the world, Vaishali has taken its name from King Vishal of the Mahabharat age. He is said to have constructed a great fort here, which is now in ruins. Vaishali is a great Buddhist pilgrimage centre and also the birthplace of Lord Mahavira.

It is said that the Buddha visited this place thrice and spent quite a long time here. The Buddha also delivered his last sermon at Vaishali and announced his Nirvana here. After his death, Vaishali also held the second Buddhist Council.

The great Lichchavi clan ruled Vaishali in the sixth century BC, and the empire extended up to the hills of Nepal. The Lichchavi state is considered to be the first republican state of Asia. According to the Jataka stories, (Buddhist story books giving the account of different births of the Buddha), Vaishali was ruled by 7707 kings of the Lichchavi clan. Ajatshatru, the great Magadh King, annexed Vaishali in the fifth century BC and after that Vaishali gradually lost its glory and power.

Mahavira, the last Tirthankar of Jainism, was born in Kundupur near Vaishali. The father of Mahavira was King Siddhartha and his mother Trishala was the sister of King Chetaka of Vaishali. Since the wealth of his father's kingdom had increased during the pregnancy, the child was called Vardhaman. He was named Mahavira because he showed great courage at a very young age. After the death of his parents at the age of 30, he renounced the world after fasting for two days under an Ashoka tree in Vaishali.

Vaishali is also famous as the land of Ambapali, the great Indian dancer who is related to many folktales. Ambapali was a beautiful and talented courtesan, who later took sanyas to follow the path of the Buddha.

**Getting there:**

**By Air:** The nearest airport from Vaishali is Patna, 55 kms. away. One can take flights to Delhi, Kolkata, Kathmandu, Varanasi, and Lucknow from there.

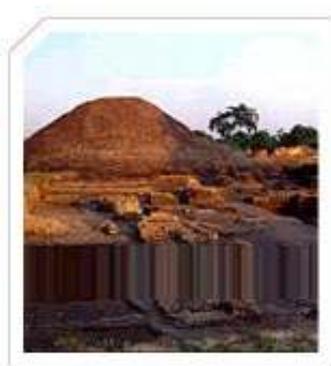
**By Rail:** The nearest railhead is Hajipur, 35 kms., which is well connected to major cities of India such as Delhi, Kolkata, Mumbai, Chennai, and Varanasi by regular trains.

**By Road:** Roads are the most suitable means to reach Vaishali. There are regular buses for Patna and other cities of North Bihar from Vaishali. Tourist coaches with guides are also available from Patna, for a tour of Vaishali.

**Distances from some important cities of Bihar to Vaishali:**

Patna:	55 km.	Hajipur:	35 km.
Muzaffarpur:	37 km.	Bodhgaya:	163 km.
Rajgir:	145 km.	Nalanda:	140 km.

**Places worth visiting:**



Ashoka Stupa at Vaishali



Ashoka Pillar

## Shubh Vivah



Mr. Brijesh Kumar of our Mandaula Office married Anita on 1st May 2009.



Mr. U K Pandey of our Gorakhpur Office married Reetu on 25th May 2009.

Our best wishes to the newly wedded couples for a long married life full of happiness, now and always.

## Completion of 5 years of service with Powerlinks

Hearty congratulations to all of those who have completed five years of service! Powerlinks sincerely thanks each one for the excellent support given in achieving its existing progress. We wish you many more fruitful years in the company!



Parveen Kumar



Rajesh Kumar



Sunil Kumar



M.K.Tiwari



Raju Laik

## Scrambled word quiz – Winners of Issue I Quiz, 2009

We are happy to announce the winners of the last quiz:

1. Sunita Nair, Corporate Office, Powerlinks Transmission Ltd.
2. Raju Laik, Corporate Office, Powerlinks Transmission Ltd.
3. Sai Dhar, Corporate Office, Powerlinks Transmission Ltd.
4. Parveen Kumar, Corporate Office, Powerlinks Transmission Ltd.
5. Sanjay Kumar Yadav, ex-employee, Powerlinks Transmission Ltd.

### Scrambled Word Quiz: The rules:

- ▶ Unscramble each word and write it in its respective slot. Then combine the letters of the darkened squares to form the master word. Each word and also the master word should be correct to be eligible for a prize.
- ▶ Five correct entries will win gift cheques of Rs.500 each. In case there are more than 5 correct entries, winners will be selected on the basis of a draw.
- ▶ Please copy the format below with your answers filled in and mail it to us at [urjaquiz@yahoo.co.in](mailto:urjaquiz@yahoo.co.in).
- ▶ Last date for receipt of entries is August 15, 2009.
- ▶ Please type in your name and physical address (This is most important)

You could be one of the lucky winners!

MCMREMUSAP

NGASEMO

NCAISOTVA

GIMWINSM

NAHITREDDOY

Master word

## Increasing Motivation – 20 Practical Ways

Adapted from *Increase Motivation* by the Editor, Pick The Brain.

If you want to make things happen, the ability to motivate yourself and others is a crucial skill. At work, home, and everywhere in between, people use motivation to get results. Motivation requires a delicate balance of communication, structure, and incentives. These 20 tactics will help you maximize motivation in yourself and others.

1. Consequences - Never use threats. They'll turn people against you. But making people aware of the negative consequences of not getting results (for everyone involved) can have a big impact. This one is also big for self-motivation. If you don't get your act together, will you ever get what you want?
2. Pleasure - This is the old carrot & stick technique. Providing pleasurable rewards creates eager and productive people.
3. Performance incentives - Appeal to people's selfish nature. Give them the opportunity to earn more for themselves by earning more for you.
4. Detailed instructions - If you want a specific result, give specific instructions. People work better when they know exactly what's expected.
5. Short and long term goals - Use both short and long term goals to guide the action process and create an overall philosophy.
6. Kindness - Get people on your side. Put them off and they'll do everything they can to harm you.
7. Deadlines - Many people are most productive right before a big deadline. They also have a hard time focusing until that deadline is looming overhead. Use this to your advantage by setting up a series of mini-deadlines building up to an end result.
8. Team Spirit - Create an environment of camaraderie. People work more effectively when they feel like part of team – they don't want to let others down.
9. Recognize achievement - Make a point to recognize achievements one-on-one and also in group settings. People like to see that their work isn't being ignored.
10. Personal stake - Think about the personal stake of others. What do they need? By understanding this you'll be able to keep people happy and productive.
11. Concentrate on outcomes - No one likes to work with someone standing over their shoulder. Focus on outcomes – make it clear what you want and cut people loose to get it done on their own.
12. Trust and respect - Give people the trust and respect they deserve and they'll respond to requests much more favorably.
13. Create challenges - People are happy when they're progressing towards a goal. Give them the opportunity to face new and difficult problems and they'll be more enthusiastic.
14. Let people be creative - Don't expect everyone to do things your way. Allowing people to be creative creates a more optimistic environment and can lead to awesome new ideas.
15. Constructive criticism - Often people don't realize what they're doing wrong. Let them know. Most people want to improve and will make an effort once they know how to do it.
16. Demand improvement - Don't let people stagnate. Each time someone advances, raise the bar a little higher (especially for yourself).
17. Make it fun - Work is most enjoyable when it doesn't feel like work at all. Let people have fun and the positive environment will lead to better results.
18. Create opportunities - Give people the opportunity to advance. Let them know that hard work will pay off.
19. Communication - Keep the communication channels open. By being aware of potential problems you can fix them before a serious dispute arises.
20. Make it stimulating - Mix it up. Don't ask people to do the same boring tasks all the time. A stimulating environment creates enthusiasm and the opportunity for "big picture" thinking.

Master these key points and you'll increase motivation with a bit of hard work.

Some cause happiness wherever they go; others, whenever they go!

*Oscar Wilde.*

Life is merely froth and bubble

Two things stand in stone

Kindness in another's trouble

Courage in your own!

*Anonymous*

Laugh awhile!

Teacher: If you had one dollar and you asked your father for another, how many dollars would you have?

Little Johnny: One dollar.

Teacher(sadly): You don't know your arithmetic.

Little Johnny (sadly): You don't know my father!



Jupiter: 9810049055

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The views expressed herein are the views of the individual and not necessarily represent the views of the Powerlinks Transmission Limited.