Conductors

Since inception, Gupta Power has offered conductors that ensure smooth and stable power supply. Our quality range of Wire Rods and Overhead Conductors are designed to not only meet the industryâ€™s varied voltage requirements, but be at par with the industry standards. We are constantly on the lookout for new avenues to explore. Our collaboration with Mercury Cables, USA for manufacturing HVCRC conductors is just one of our many endeavours to tap into dormant possibilities, one that is likely to pen success stories for the world of power transmission

HVCRC Conductor

The G Trans HVCRC conductors will surely revolutionize the construction of transmission line providing the easiest solution to acute power crises for Indian Power Utilities. The “G TrANS-High Ampacity Low Sag HVCRC CONDUCTOR “as a replacement of conventional variant can be strung on the existing towers, thereby completely avoiding much difficult Right of Way problem.

G Trans-HVCRC Conductors

The new G Trans-HVCRC is a light weight and having more strength with very low or negligible linear co-efficient of expansion than any other ACSR or AAAC conductors. This conductor is superior to other conventional conductors by the following points :

- Doubles the current in comparison to ACSR
- Substantially reduces high temperature sag
- Low CAPEX cost
- Increase capacity of existing line structures through retrofitting (i.e., improves their efficiency, and extendstheir life span).
- Eliminates bi-metallic solutions
- Significantly reduces line losses compared to same diameter conventional and composite conductors at equal operating temperatures.

Application :

The G Trans-HVCRC can be used for the following purposes :

- Uprating of any Transmission or distribution overhead line
- Reconductoring of existing line without any tower modification
- New Lines

Standard :

IEC standard, ASTM standard and Gupta Power Specification.

C**onstruction of the Conductor :**

Outer Conductive Wire : Annealed Aluminium wire in Trapezoidal shape so as to provide more Aluminiumin comparison to any round wire conductor of same outer diameter.

Inner Core : Carbon Composite core named as G Trans HVCRC*.(*G Trans HVCRC is a patented product of Mercury Cable & Energy, USA.)

Special Features:

- Double Current Carrying Capacity compared to ACSR
- Low sag
- Lower weight and more strength compared to ACSR

Advantages :

For Uprating Lines :

- Double Ampacity
- No modification / reinforcement of towers
- Cost effective

For Reconductoring :

- Double Ampacity
- No modification / reinforcement of towers
- Cost effective

For New Lines :

- Lesser tower heights

- Number of Towers can be minimized

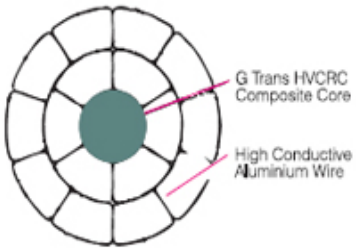
Gupta Power Infrastructure Ltd, a leading manufacturer of all types of cables and conductors in India has signed a deal with USA based Mercury Cable & Energy, an ace developer of High Voltage Composite Reinforced Conductors(HVCRC) with a worldwide presence. According to the agreement, Gupta Power will have exclusive right to manufacture and supply Mercury's HVCRC product line in India and based on mutual consent, across the world, thus providing the best solution to acute power crisis.

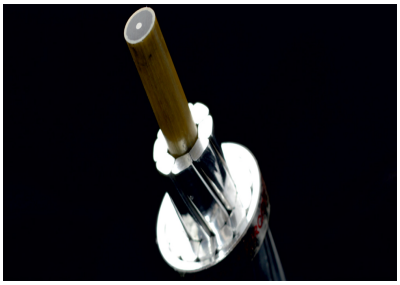
The agreement was signed by the Director of Gupta Power Mr. Abhishek Gupta & Mr. Ron Morriis, CEO of Mercury Cable & Energy on 7th July 2012 in the company's corporate office at Bhubaneswar, India.

Gupta Power will manufacture HVCRC conductors and sell them in the Indian market under its brand name "G TRANS HVCRC CONDUCTOR".G Trans HVCRC is the modern and ultimate smart conductor available in India offering unmatched efficiency over the conventional ACSR & AAA Conductors with innumerable advantages for construction smart grid supporting the concept of Green Power.

The G Trans HVCRC conductors will surely revolutionize the construction of transmission line providing the easiest solution to acute power crises for Indian Power Utilities. The "G TrANS-High Ampacity Low Sag HVCRC CONDUCTOR "as a replacement of conventional variant can be strung on the existing towers, thereby completely avoiding much difficult Right of Way problem.

"We are pleased to begin our relationship with Gupta Power", said Mr. Ron Morris."Gupta Power is an ideal fit for the introduction of Mercury's HVCRC products into India."This will be heralded as starting of a new era in the company's 50th year of excellence in this field, said a spokesperson of the company





Product Images

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STACIR Conductor
G Trans Super Thermal Aluminum clad invar reinforced is normally used to up-rate an existing transmission line by simply replacing the existing conductor without tower modification or reinforcement .The center wires are of aluminum-clad invar and the outer layers of super thermal-resistant aluminum-alloy.

G Trans High Temperature Low Sag Conductors [HTLS]

To address the global demand for Power, launches the G Trans brand of High Temperature Low Sag Conductorsto meet the global power demand.

G Trans STACIR

New aluminium alloy having high thermal resistance can withstand 210°C without significant loss in strength throughout the life time. The core of low linear expansion Invar is used to address the sag.

- G Trans STACIR has the advantage of double Ampacity than a similarly sized ACSR conductor
- No modification or reinforcement required for the towers
- Invar core is having low thermal Co-efficient of expansion which minimize/equal the sag similar to that of ACSR Conductors
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Application :

G Trans STACIR/AW is used to up-rate the existing transmission line by simply replacing the existing conductor without tower modification.

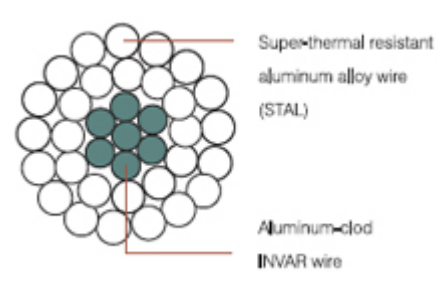
Standard :

IEC, ASTM and Gupta Power Specification.

Construction of the Conductor

Outer Conductive wire: Super thermal aluminium alloy wire which can continuously operate up to 210°C.

Inner Core wire: Aluminium Clad Invar wire (Invar is a metal which is having 36% Ni in Steel)



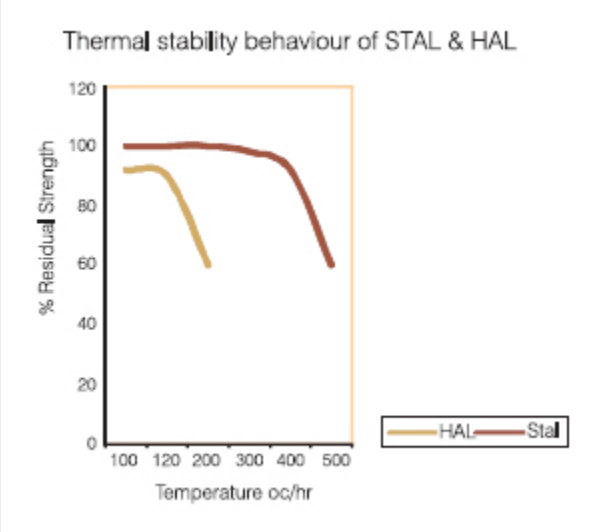
Feature :

- Double Amapacity compared to ACSR
- Low Sag
- High Corrosion resistance

Super Thermal Aluminium Alloy

The thermal resistance of aluminium can be improved by adding Zirconium so as to keep the strength even at high temperatures. The super thermal resistant alloy can operate up to 210°C with specified strength loss. The Super thermal resistant alloy has similar mechanical and electrical properties like EC 1350.

Material	Tensile Strength Mpa	% IACS Conductivity	% Elongation	Operating Temperature in °C
EC 1350	160	61	1.2	90
STAL	162	60	1.2	210



Invar Core Wire :

The Aluminium Clad invar wire has lower linear co-efficient of expansion than the galvanized steel wire.

Material	UTS Mpa	Linear Co-efficient of Expansion / 0C	Modulus of Elasticity Mpa
Galvanized Steel wire	1226	$11.5*10^{-6}$	196000
Aluminium Clad Invar wire	1200	$3.7*10^{-6}$	152000

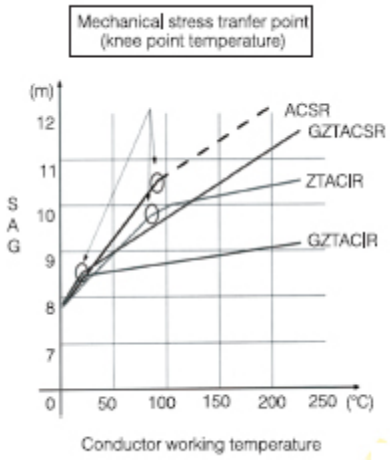
Advantage :

For Uprating Lines :
Double Ampacity

No modification/Reinforcement of Towers

Cost effective

For New Lines :
Lesser Tower height



Number of towers can be minimized

Product Images

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G Trans Super Thermal Aluminum clad invar reinforced is normally used to up-rate an existing transmission line by simply replacing the existing conductor without tower modification or reinforcement .The center wires are of aluminum-clad invar and the outer layers of super thermal-resistant aluminum-alloy.

Product Images

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TACSR Conductor

G Trans TACSR covers thermal-resistant aluminum-alloy stranded conductors steel reinforced which could withstand high tensile load to be used mainly for overhead transmission lines, overhead distribution wire. The center wire or wires are of galvanized steel and the outer layer or layers of thermal-resistant aluminum-alloy.

G Trans TACSR

New aluminium alloy having high thermal resistance can with stand heat upto 150°C without significant lossin strength throughout its life time. This conductor is similar to an ACSR conductor. Only the conductive layer is replaced with Thermal alloy to avoid the hard drawn aluminium's loss of strength at 150°C.

- G Trans TACSR has 1.6 times higher ampacity than a similarly sized ACSR conductor
- No need for modification or reinforced required for the towers
- Steel core either aluminium clad or galvanized (After knee point Linear coefficient is 11.5 X 10–6/°C)

Application :

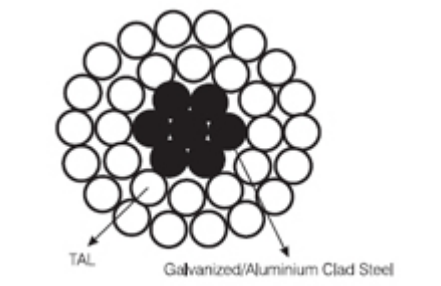
G Trans TACSR is used to up-rate the existing transmission line (X 1.6) by simply replacing the existing theconductor without tower modification.

Standard :

IEC, ASTM and Gupta Power Specification.

Construction of the conductor :

Outer Conductive wire : Thermal aluminium alloy wire which can continuously operate up to 150°C.
Inner Core wire : Aluminium Clad/Galvanized steel wire.



Thermal Aluminium Alloy

The thermal resistance of aluminium can be improved by adding Zirconium so as to keep the strength even athigh temperature. The thermal resistance alloy can operate up to 150°C with specified strength loss.

The Super thermal resistance alloy has similar mechanical and electrical properties like EC 1350.

Material	Tensile Strength Mpa	% IACS Conductivity	% Elongation	Operating Temperature °C
EC 1350	160	60	1.2	90
TAL	162	61	1.2	150

Core Wire :

The Aluminium Clad / Galvanized steel wire is similar to an ACSR conductor. Aluminium clad steel minimizesthe power loss.

Advantage

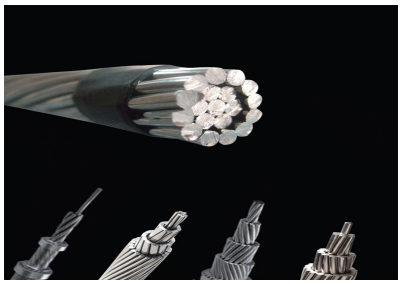
For Uprating Lines :

- 1.6 times higher Ampacity than ACSR
- No modification/Reinforcement of Towers
- Cost effective

For New Lines :

- Lesser Tower height
- Number of Towers can be minimized

Product Images

- 

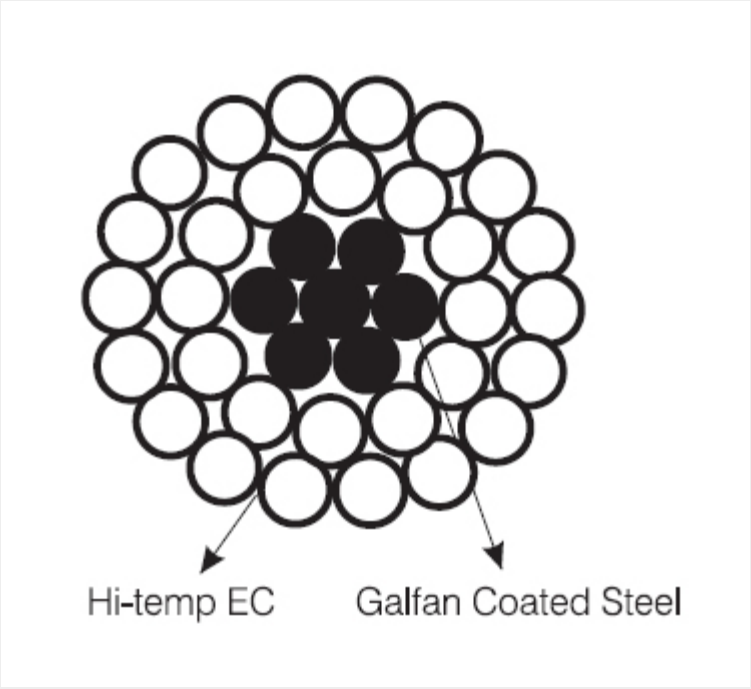
ACSS Conductor

Aluminum Conductor Steel Supported is composed out of annealed 1350-0 aluminum wires, surrounding a galvanized steel core or aluminum clad steel core. It can operate in high temperatures.

Aluminium Conductor Steel Supported (ACSS)
Introduction :

G Trans Aluminium Conductor Steel Supported (ACSS) has unique capabilities for high operating temperature and Better Aeolian vibration resistance. G Trans ACSS is a composite Aluminium steel conductor that looks just like conventional ACSR conductor. The difference is in the aluminium temper. The aluminium used in G Trans ACSS is fully annealed wire (O) where as the aluminium used in ACSR is fully work hardened (H19).
G Trans ACSS conductor meets the requirement of ASTM B856.

Construction of the conductor :



Performance Advantage :

- G Trans ACSS can operate continuously at very high temperature without any determinant to mechanical properties.
- The final Sag tension properties is not affected by long term creep of aluminium.
- G Trans ACSS has a high capability for damping mechanical oscillation, such as those associated with Aeolian vibration.
- G Trans ACSS aluminium wire having high conductivity of about 63% IACS where as the ACSR aluminium wire having the conductivity of only 61% IACS.

G Trans ACSS Aluminium Wires Hi-temp EC :

All of the above performance advantages derive from the fact that G Trans ACSS aluminium wires areannealed and have very low yield strength. Because of this low yield strength, inelastic elongation of the aluminium occurs quite rapidly when tension is applied to G Trans ACSS conductor and thereby forcing most of the load to steel core. More importantly these aluminium wires have higher ductility and higher conductivity than the conventional ACSR.

Steel Core in G Trans ACSS :

Steel core wire shall be Zinc 5% Aluminium Mischmetal alloy (Galfan) coated steel confirming to ASTM B802 and B803.

High Temperature Characteristic :

As ACSS Hi-temp EC wires are fully annealed and there is no possibility of further annealing by high temperature in services. So there will not be any strength loss in the aluminium in the high temperature application.
The only temperature limitation is that which can cause damage to the coating of the steel core. Gupta Power offers galfan coated steel wire the coating will not damage up to continuous operation of 250°C.

Self Damping Capability :

Conventional types of conductors inherently have some degree of capability for damping mechanicaloscillation such as those associated with aeoliation vibration. The most generally accepted theory holds that this self damping capability derives primarily from the generation of heat by interstand friction as the wires slip, however, a force is required to overcome the static state frictional coupling between them. Because operating stresses in the aluminium wires of G Trans ACSS are much lower than in ACSR, there is less static state frictional coupling between wires in successive layers. As a result aluminium wires in G Trans ACSS are much more free tomove relative to the wires of the other layers when the conductor is flexed.

Long Term Creep :

In service, all the tension in G Trans ACSS will be carried by steel core, Because of this long time creep of aluminium is of no concern and does not affect the final sag.

Long time creep rate of steel wires throughout the operating stress and temperature is very low and it will not have major effect on final sag.

ACSS/TW Conductor

ACSS/AW offers strength characteristics similar to ACSS, along with slightly greater ampacity and resistance to corrosion due to aluminum-cladding of the steel core wires.

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