

# Review Case Study of Various Types of DSL System

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**Abstract** -This paper presents a review on various DSL system of industrial crane .. Such type of technique is used in crane for transmission of electric supply. The most vital part that plays a crucial role in proper functioning crane assembly is the DSL system. It is basically the electricity distributing system that helps in providing power to this devices so that proper operation can take place. The main functioning of this device upon the power is to supply. The conversion of energy takes place in this in order to do some work.

## INTRODUCTION

**C**ranes are the most important element of heavy industries. In various industries like aircraft, automobile, construction, manufacturing, shipyard, transportation, etc heavy loads need to be lifted & transported from one application chamber to other. These heavy loads are impossible to carry using human efforts. So, cranes are used to do this job. It is electronic equipment that is used to lift heavy load & transport this. Manufacturers are offering wide array of DSL Systems in order to meet the requirements of the industries. These are basically the conductors through which the power supply is provided to the device. These are developed with the premium quality material so that efficient functioning can be done. The effective power supply helps a lot in proper handling & controlling of the device The most vital part that plays a crucial role in proper functioning crane assembly is the DSL systems. It is basically the electricity distributive system that helps in providing power to this device so that proper operation can take place. The main functioning of this device depends upon the power supply. The

conversion of energy takes place in this in order to do some work

## Some of the most Prominent Designs that are available in the market are discussed below

**Copper Head System:** These are the conducting rails that are widely used with the EOT cranes & JIB cranes. These are the straight conductors using which power is provided to the equipment so that accurate operation can be performed.

**W Type:** These are bolted in design. These are the conductors that can provide 100 amp to 125 amp supply. These are widely used in various applications in order to provide uninterrupted supply.

**Pin Type:** These are specially designed conductors. These can easily withstand more power & also withstand harsh working conditions. These are easy to maintain.

**Angle Type:** These are another type of rail conductors that are designed for heavy operation. These can withstand 1000 amp to 1200 amp current.

**V Type:** These are employed in heavy cranes. Their working capacity is quite high & can handle 2000 amp.

DSL systems for cranes manufacturers are developing their products in order to offer flawless operation. They are striving hard to meet the exact requirements of the clients.

Shrouded DSL Bus bars in Copper, GI and Aluminum metal.

## Various Application of This System

The products are used in the power supply system of mobile devices in various fields such as steel, cement, fertilizers, pharmaceuticals, Heavy Fabrication Industries, Shipyards, rolling mills, Power Plant, engineering workshops foundries and automobile. Runway conductors for overhead cranes, gantry cranes, shipyard and port cranes, automated material handling systems, elevators, people mover systems etc. Conductor bar is a safe, economical and low maintenance way to solve mobile electrification requirement. The shrouded Bus bar is having some special features like compactness, less occupation of space and very easy to install. Over all it is very economical.



**SHROUDED BUSBARS**

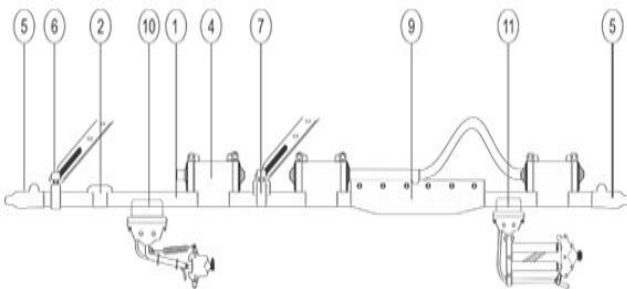
GI Busbar = 60 amps to 125 Amps.

Copper Busbar = 160 to 400 Amps.

Aluminum Busbar = 200 to 315 Amps

**C RAIL FESTOON SYSTEM**

This systems are used on cranes, conveyors, hoists, monorails, automated storage and retriever systems as well as many other electrification applications.



**Safe Power M**

Conductor bars are used for power transmission. Conductor Bar provide a safe & economical supply of electric power for track guided Mobile machinery. Single Pole individually insulated conductors. Ideally used for EOT Cranes etc. 60 to 400 Amps. ratings.

**FEATURES**

- [1] Touch proof, no exposed live part.
- [2] Quick & easy Installation.
- [3] Insulating cover shaped to shed from water and dust.
- [3] Single Pole individually Conductors.
- [4] Suitable for Indoor / Outdoor Installation

**SAFE POWER “M” (Pin Type)**

- [1] Pin Joint for Proper Alignment.
- [2] 60, 100, 125 Amps. Galvanized Iron.
- [3] 1 Pole / 4 Pole Hangers.
- [4] Pin Type Conductor Bar Length 4 Mtr.
- [5] 1500 mm to 6000 mm Radius.
- [6] System up to 150 Meter Without expansion joint

**APPLICATION**

- [1] Eot Cranes.
- [2] Hoist.
- [3] Jib Cranes.
- [4] Conveyor System.
- [5] Electrically Operated Equipment.
- [6] Material Handling Equipment.

**INSTALLATION NOTES**

- [1] Tool kit required
- [2] 10 mm spanner for end power feed lug bolts
- [3] off 13 mm spanner for centre feed lug bolts and rider clamps
- [4] screw diver
- [5] 7 mm spanner for collector shoe lead

**ATTENTION TO THE FOLLOWING WILL ENSURE A TROUBLE FREE SYSTEM**

- [1] Correct alignment of support
- [2] Ensure that conductor joints are not against hanger clamps adequate clearance must be allowed for expansion and contraction
- [3] Wherever possible use the standard bracket pitch. This will avoid conductors joints fouling support brackets.
- [4] correct alignment of collector with conductor bars.
- [5] Ensure that all power cable connections are flexible to allow for conductor movements due to expansion and

contraction. If in doubt mains cables should be terminated in a junction box and separate flexible leads (possibly two) used for connections to the conductor feed points. these can be supplied on request.

**EXPANSION ASSEMBLY**

Expansions assembly air gaps must be set to suit site conditions. See later instructions. Mounting Detail Cluster mounting Not recommended for use outdoors

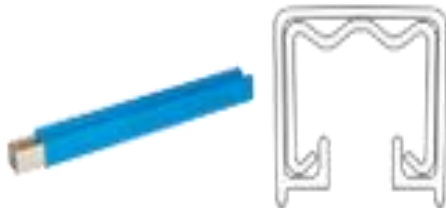
**HANGER CLAMP FITTING**

Drill 9mm dia holes for hanger bracket if Required. Fit hanger clamps to support Brackets leaving final tightening of nuts until After conductors are fitted into hanger clamp.

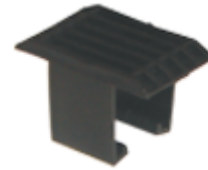
**Note :-** fixing support bracket at a pitch that is divisibly into the bar length will always ensure that the joint positions do not foul the support brackets. Purpose made brackets come complete with all Necessary fixing holes and easy hanger clamp Installation with slide in slots.

**SYSTEM MAINTENANCE**

- [1] Contact shoes should be checked for wear on a monthly basis until a wear pattern can be established. Failure to replace worn contact shoes will result in damage to the conductor, and reduce subsequent contact shoe life.
- [2] When checking for contact shoe wear, also check that all collector pivot points are free, and generally check alignment of the collector to the conductors.
- [3] The whole system should be checked on a regular basis to ensure that all insulation is intact. Repair if necessary



Bar, Cover and Pin Assembly



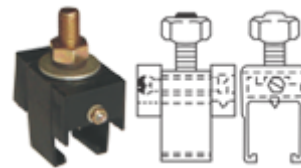
Splice Cover



Four Pole Hanger Clamp



Single Pole Hanger Clamp



Anchor Clamp



Expansion Joint



Joining Tool

**FEATURES**

- [1] Insulated Conductors are touch proof, no exposed live parts to contacts
- [2] Quick & Easy Installation with single bolt, 4 Pole Hanger
- [3] 60 to 400 Amps Conductor in same standard
- [4] 60, 100 & 125 Amps in Galvanized Steel
- [5] 200 & 315 Amps in Aluminum / S.S.
- [6] 4.5 Meters Bar Length

- [7] 160,250, & 400 Amps in Rolled Copper
- [8] Joint Cover provides total protection of joints
- [9] Enclosed Wiring for connection on collectors for safe and simple installation
- [10] No Expansion Joints up to 150 Meters long System

**ADVATAGES**

- [1] Insulated
- [2] Safe to run No chance of accident
- [3] Color coded R Y B G Require less space
- [4] No need for a protection guard
- [5] No spark as spring loaded current collector provides pressurized electrical contact
- [6] Resistant to different climate conditions
- [7] S.S. conductors function in harsh conditions

The conductor for power supplying cranes called DSL(**Down Shop Lead**) for the activities carried down in the work shops

**CONCLUSIONS**

- [1] Studied DSL Track System.
- [2] Overviewed Various Types of DSL Systems..
- [3] Need and advantage of DSL system is studied.

**SPECIFICATIONS**

Rated Current	160A	250A	400A
Cross Section (mm <sup>2</sup> )	53(0.8)	66(1.0)	100(1.6)
Conductor Material	CU	CU	CU
Max Voltage	AC	500V	500V
	DC	600V	600V
Resistance mm	0.35	0.27	0.18
Impedance mm	0.36	0.3	0.22
Standard length	4.5 mtr	4.5 mtr	4.5 mtr

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- [4] Towne, Henry (1883). *A treatise on cranes.* Stamford, CT: Yale and Towne. p. 129. OCLC 938144. *Rotary Bridge Crane...provided with a circular overhead track carrying the outer end of the jib, or rotary bridge. It...avoids the severe lateral strains upon the building and thus dispenses with heavy walls.*
- [4] Towne (1883: 124)
- [5] "Improved overhead steam traveling crane". *Scientific American.* New York. XXXI (794). 21 March 1891.