

## OX-n Belt Care Equipment

The **Jindal Steel Works, Vijayanagar** plant is India's first integrated steel plant to reach 10MTPA capacity in a single location. It is located at a remote and underdeveloped village of North Karnataka in the Bellary Hospet Iron ore belt called, Toranagallu.

This project has the distinction of having a COREX plant and is India's largest blast furnace and widest hot strip mill, apart from being the highest steel producing plant in India.

Thejo's belt service division has been maintaining the conveyors in this project on an annual rate contract basis since the project inception and has been acknowledged to be a prime reason for JSW achieving its production targets.

### HISTORY

Conveyor no.S4 on Blast Furnace 3, is the feed conveyor and a critical conveyor for JSW. Its down time has been identified by the company as expensive and avoidable, hence conventional belt changing methods are not acceptable.

The client needed a suitable belt changing arrangement that could replace the belt within minimum possible time.

Considering Thejo's track record and experience in the field, JSW's management decided to assign this challenge to Thejo.

The belt was a heavy duty type steel cord belt, of width 2000mm and total centre to centre length of 900m. Approach to the S4 conveyor was a limitation and possible only at the tail end. It was obvious that a normal belt changing equipment would not solve the problem. Hence, a specially designed belt changing equipment with heavy line pull was designed for this specific area.

Belt width	2000mm
Belt Rating	ST 2500
Belt thickness	22mm
Belt weight	78 Kg/m
Length of conveyor(c to c)	400m
Lift of conveyor	70m

### Scope of Work

Scope of work included design, manufacture, supply, erection, and maintenance up to the commissioning and supervision of the first belt replacement .

### Thejo's solution - Combined skid based Belt Replacement station

Thejo designed the belt replacement equipment consisting of two units of belt coilers capable of controlled decoiling as well, with a specialised belt pulling arrangement. The equipment were designed to be positioned at an appropriate location of the conveyor. The equipment were capable of coiling and de-coiling 900m of steel cord belt (70M.Tonnes). The belt pulling capacity was designed for 6M.Tonnes.



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The belt pulling arrangement was designed to pull the existing conveyor belt directly from the structure, with out the aid of the conveyor drives.

The existing belt thus pulled out, would be then wound on the Belt Coiler, while simultaneously the new belt, which would be pre spliced, jointed and duly wound on the other Belt coiler, would be let off and introduced on to the conveyor system.

The equipment was designed, manufactured and erected in April 2011 at the tail end of the conveyor system and duly maintained by Thejo up to April 2015 when it was finally commissioned.

Before taking the shut down, the new belts rolls supplied to the client were pre jointed and wound on to a Belt Decoiler as single length. On taking up the shut down, the old conveyor belt was cut at the tail station. One end of the old conveyor belt was spliced to the new belt in the Decoiler while the other end of the old conveyor belt was reeled onto the Coiler through the specially designed belt pulling equipment.

The entire 900m of belt was replaced within 3 hours, and the total shutdown completed within 30 hours, which included belt replacement and two 2 belt splices.

### Conclusion:

Thejo's engineering team was able to complete the turn key project within the scheduled time frame with the help of innovative Coiling-Decoiling technology, as well as the vast experience of its technical work force.

The client was extremely satisfied with the execution of this project and this proves to be yet another success story for Thejo's Engineering team.

