TECHNICAL NEWSLETTER

YASKAWA INDIA PVT. LTD.

QUARTERLY NEWSLETTER

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D&M&C Division - After Sales Support - India |

Updates on New Application Developments and Technical Achievements

Website : https://intra.YASKAWAindia.in/index.php

COMMISSIONING High-Capacity Rail Receival Belt Feeder: 600kW HHP Drive

by Nandakumar R



4000 Tons per Hour

Efficient Operation of Hopper Rail Receival Belt Feeder with YASKAWA 600kW HHP VFD: Handling 700 Tons of Coal The YASKAWA HHP Series of drives, renowned for their robust nature, is employed within a Rail Receival Belt Feeder System at one of India's largest ports

A rail receival belt is a specialized equipment used in material handling and bulk material transport systems, typically within industries. Its primary function is to efficiently transfer bulk materials from railcars (train wagons) onto a conveyor belt or other downstream equipment.

This system assumes a pivotal role in effectively managing material handling and bulk material transportation across diverse industries. Upon the arrival of a train loaded with materials such as coal or ore, a strategically positioned rail receival belt feeder stands ready alongside the train tracks, poised to facilitate the unloading process.

Given the array of diverse materials and distinct processing requirements, varying belt speeds are often imperative. The integration of a Variable Frequency Drive (VFD) system

proves invaluable, enabling seamless adjustments without necessitating extensive manual intervention.

Leveraging the capabilities of the YASKAWA 600 kW, 400V Class HHP VFD, the belt feeder operates successfully for the Receival Belt Feeder for Hopper Rail Carrying Coal, boasting a capacity of 700 Tons.

The belt itself is engineered to manage an operational capacity of **4000 TPH.** The YASKAWA HHP Series drives play a pivotal role in optimizing material handling at this prominent port.

Their robust design and adaptable technology contribute to the efficiency of the Rail Receival Belt Feeder System, ensuring the seamless transfer of materials for further processing, storage & utilization.



APPLICATION DEVELOPMENT

A New Era of Warp Knitting: Powered by Sigma 7, GA500 & MP 2300 Technology by Prem Chand M



Warp knitting is a fabric production method wherein the yarns used to form the fabric run parallel to its length where every yarn is managed by an individual needle. These needles move in a zigzag manner, crafting interlocking loops that shape the fabric. In warp knitting, where speed and precision are of paramount importance, YASKA-WA servo packs enhance overall performance. They provide an output for the knitting machine's servo motors, integrated into the needle beds and carriages of the knitting machine. This integration enables precise positioning at a speed of **450 rpm**. This high precision is critical for generating intricate patterns, as even minor deviations can significantly impact the final appearance of the fabric.



APPLICATION DEVELOPMENT

Tri-Motor Harmony: Encoder-Free Synchronization with GA700 in Limestone Scrubber



The rotary drum scrubber, installed at one of the largest cement plants in southern India, consists of a cylindrical drum that rotates on its axis. The rotation of the drum facilitates the movement of limestone through it, effectively mixing and scrubbing the material (limestone) at 12 RPM, resulting in an output of 320 TPH. The primary purpose of the rotary drum scrubber is to eliminate contaminants, clay, and other undesired materials from raw limestone. This process holds significant importance in mining operations, separating valuable minerals from gangue or waste materials. YASKAWA has seamlessly integrated three 75 kW motors with three 90 kW GA700 VFDs to ensure uniform load distribution across all three motors while maintaining a speed accuracy of +/- 1%. Achieving load sharing with drives is executed through PID mode regulation Iq (Quadrature Axis current), which precisely adjusts the speed command among the slave drives. In conjunction with the master speed reference, this signal is transmitted to the slave drives, serving as a set point for Slave 1 and Slave 2 VFDs. A PID function is utilized to fine-tune the speed command, thereby equalizing the load generated in the slave drives with that of the master.

<u>Q2 : 2023-24</u>

Highest Excellent Score Feedback for Field Support Visits

98%

CONGRATULATIONS!



Sriramswarup Mishra

TRAINING

From Coast to Coast: YASKAWA's HV600 Training Transforms India's Pump Industry

by K Raghunath & Technical Team Members



A comprehensive training program was conducted for a prominent Pump Original Equipment Manufacturer (OEM), spanning across India and encompassing 8 Iocations with a total of 139 participants. This extensive initiative aimed to equip the entire team with a profound comprehension of the fundamental principles underlying Variable Frequency Drives (VFDs). This encompassed not only the operational mechanisms of VFDs but also highlighted their pivotal role in elevating motor performance and enhancing energy efficiency. Integral to this training was an in-depth exploration of precise steps for setting up YASKAWA HV600 VFDs within pumping systems, ensuring seamless integration and optimal functionality.

Participants didn't just engage with theoretical concepts; they also gained hands-on experience in programming VFDs. This practical exposure empowered them to adeptly configure control settings and meticulously fine-tune the drives to align with specific operational requirements. This holistic training approach not only nurtured participants' theoretical understanding but also, and adeptly troubleshoot within the domain of pumping systems.



APPLICATION DEVELOPMENT

Enhancing EVs: BLDC Motor Test Bench

by Manohar R

The EV Motor Testing System evaluates the compatibility of electric vehicle testing motors in terms of speed and torque. It involves a drive motor connected to the testing motor (EV motor), which is regulated by a variable frequency drive (VFD) for accurate adjustments of speed and torque. Additionally, two loading motors simulate various capacities to mimic real-world conditions. This system employs specialized low-inertia, high-speed AC induction servo motors for loading, capable of operating at speeds of up to 15,000 RPM. The YASKAWA Matrix Technology U1000 45 kW VFD efficiently manages the entire system, eliminating the need for an extra braking system. In torque mode, the drive governs the speed of the loading motor, while the testing motor operates under torque control, applying torque (ranging from 2 Nm to 20 Nm) at speeds of up to 7,000 RPM.in speed mode, the testing motor's speed control counters torque, simulating real-world conditions with precise torque adjustments as per the testing motor's specifications.

COMMISSIONING

Enhanced Torque-to-Turn with Direct Drive Motor

by Sahil Malwanker

YASKAWA has achieved a successful implementation of a Direct Drive Servomotor by integrating it with a Mechatrolink Servo System, facilitated by a Profinet Master. This integration has been applied to a Torque-to-Turn Application within an Engine Assembly Machine.

The process was enabled through the utilization of the 266IF-01 Profinet Slave Option Card. The operational sequence was meticulously programmed using the MP Controller in conjunction with the Mechatrolink-II Servopack. In this setup, an Absolute Encoder DD Motor plays a pivotal role in accurately positioning the internal components of the engine. The machine has a single DD driven Torque Axis used within a rotation of 360 degrees with the torgue requirement going up-to 110 Nm at speeds of 150 RPM. This Engine Assembly Machine has a cycle time of 90 Seconds with production capacity of 150,000 Engines per year with an OEE (Overall Equipment Effectiveness) of 85.5%. YASKAWA's successful implementation showcases the harmonious interplay of cutting-edge components and technologies, culminating in the achievement of high precision and impeccable control within the Engine Assembly Machine.





EXHIBITION

YASKAWA's Cutting-Edge Solutions at Green Cementech 2023



At YASKAWA, we take immense pride in our association with the major players in the Indian cement industry. Together, we share a common objective: striving for carbon neutrality and continuous enhancement in operational efficiency.

Our participation at the Green Cementech event in Hyderabad was a significant milestone. The YASKAWA Booth showcased pivotal technologies that have been successfully integrated into the cement manufacturing process. Notably, the Hot Standby simulation kit garnered attention for its impressive demonstration of operational re-

dundancy, highlighting our commitment to seamless operations. We also provided an in-depth overview of the A1000 HHP Product and its architectural features. This presentation allowed visitors to enrich their understanding of this product and its application in the industry.

Mr. Sreekumar, from YASKAWA, had the privilege of addressing the event's panel team. His insightful seminar delved into the advanced technologies that YASKAWA drives offer. One of the highlights was the 3-Level Varispeed G7 VFD, renowned for its unique capabilities. The Matrix Drive U1000, another standout offering, was also discussed. This drive is acclaimed for its straightforward 3-in 3-out setup, effectively ad-

dressing harmonics and boosting energy savings while promoting environmentally-friendly solutions. We shed light on additional features such as MTPA with GA700, i³ mechatronics, underscoring YASKAWA's comprehensive approach to cutting-edge solutions. Our participation at the event was a testament to our commitment to sustainability and collaborative efforts towards a greener future in the cement industry.



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COMMISSIONING

Efficiency Redefined: The Sigma-7 FT79 Software

by Sahil Malwanker

The revolution in manufacturing implemented by Sigma-7 FT79 Built-In Indexing software stands as a testament to progress. This cutting-edge software stores pivotal point positions, opening up new opportunities for precise sequential control. By obviating the requirement for a PLC, the software ingeniously stores position logic within FT-79's Program Table, thereby effectively reducing costs. This seamlessly integrated solution

empowers a Rotary Servomotor, orchestrating the seamless indexing of diverse tools such as grinding, drilling, and chamfering, immediately following CNC Router machining. What was once a mechanical arrangement centered around a rotary cylinder encountered issues of position shifting and repeatability. Recognizing an opening for advancement, we strategically positioned our indexer module, presenting a paradigm shift towards enhanced accuracy and impeccable repeatability .

