Press Release

Bosch Rexroth’s global effort key to Panama Canal expansion
Drive and control company developed 158 complete hydraulic drive systems, including six spare units

At the time, this project was the world’s largest construction site and consisted of 22km of interconnected piping.

Bosch Rexroth was challenged to expand the Panama Canal with the highest degree of lock availability to allow for today’s larger ships. The project resulted in 158 complete hydraulic systems, including six spare units, creating exhaustive redundancy that contributes to 99.99 percent lock availability.

Thanks to the opening of the extended Panama Canal, much bigger cruise and container ships can now pass through the connection between the Far East and commercial ports along the North American shoreline, including the eastern seaboard and Gulf of Mexico. Even though the locks are significantly larger than their predecessors, less fresh water is wasted for every lock operation.

Three water-saving basins for each lock chamber help reduce fresh water use. Once the lock chamber closes, it fills with water from the basins. Together, the three water-saving basins hold about 60 percent of the water volume to equalize each corresponding lock chamber. Therefore, only 40
percent of the water volume is lost by using the basins, saving water from the Gatun Lake. When the ship reaches lake level, the outer gates open and it can continue its journey through the Gatun Lake in the direction of the Pacific Ocean.

Apart from the technical challenges of the project, time played a decisive role. Rexroth needed to develop 158 customer-specific power units and drive cylinders for the valve operation to regulate the water flow. These compensating valves control the inflow to the lock chambers and water-saving basins. After final completion of the hydraulic drives’ design, the first partial delivery to the Panama construction sites had to be fulfilled by January 2013.

The lock system’s unique process and international service require as close to perfect equipment availability as possible to ensure the canal operates reliably. Because of this, all installations also require a redundant design, so every step through the Panama Canal has a backup. This exhaustive redundancy contributes to a lock availability of 99.9 percent.

Bosch Rexroth combined know-how and production capacities from China, Germany, the Netherlands, South Korea, Brazil, Chile, Mexico and the United States to complete this successful project.

For more information on Bosch Rexroth’s Civil Engineering projects, go to: https://www.boschrexroth.com/en/civil-engineering.

About Bosch Rexroth

Economical, precise, safe, and energy efficient: drive and control technology from Bosch Rexroth moves machines and systems of any size. The company bundles global application experience in the market segments of Mobile Applications, Machinery Applications and Engineering, and Factory Automation to develop innovative components as well as tailored system solutions and services. Bosch Rexroth offers its customers hydraulics, electric drives and controls, gear technology, and linear motion and assembly technology all from one source. With locations in over 80 countries, more than 31,100 associates generated sales revenue of approximately $5.99 billion (5.4 billion euros) in 2015. To learn more, please visit www.boschrexroth.com.

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Press Release

About Bosch
Having established a regional presence in 1906 in North America, the Bosch Group employs some 32,500 associates in more than 100 locations, as of December 31, 2016. According to preliminary figures, in 2016 Bosch generated consolidated sales of $13.7 billion in the U.S., Canada and Mexico. For more information, visit www.boschusa.com, www.bosch.com.mx and www.bosch.ca.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 390,000 associates worldwide (as of December 31, 2016). According to preliminary figures, the company generated sales of 73.1 billion euros ($80.9 billion) in 2016. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected industry. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group’s strategic objective is to create solutions for a connected life, and to improve quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is “Invented for life.” The Bosch Group comprises Robert Bosch GmbH and its roughly 450 subsidiaries and regional companies in some 60 countries. Including sales and service partners, Bosch’s global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company’s future growth is its innovative strength. At 120 locations across the globe, Bosch employs 59,000 associates in research and development.


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