GranBio, a Brazilian industrial biotech company, started operation of the São Miguel dos Campos second-generation bioethanol plant, the first plant of its type in the southern hemisphere, in early 2014. This plant has a production capacity of 82 million liters of biofuel per year, which makes it one of the largest such facilities in the world. Materials such as sugarcane bagasse and straw are readily available in Brazil, and it is hoped that these materials can be a stable energy source.

**Yokogawa’s contribution**

As the main automation contractor (MAC) for this plant, Yokogawa performed basic design and delivery of the control system and field instrumentation. Biofuel manufacturing involves step-by-step processes under appropriate temperature control, consisting of pretreatment of raw materials, enzymatic hydrolysis, fermentation, and distillation/separation. Yokogawa’s CENTUM VP integrated production control system automatically controls a series of complex processes according to the preprogrammed conditions for each production process, such as temperature and pressure, thereby contributing to high-quality, stable production. Various Yokogawa field instruments are installed throughout the extensive plant site, including magnetic flowmeters and pressure/differential pressure transmitters. Although some of these instruments are exposed to high temperature processes and other harsh conditions and/or are mounted in high, narrow, and other difficult to access locations, Yokogawa’s Plant Resource Manager (PRM) asset management package enables integrated monitoring of the soundness of all field instruments from the central control room. In this way, Yokogawa is supporting safe and efficient operation of the entire plant.

**To a sustainable society**

Based on its highly reliable products as well as its extensive experience and track record, Yokogawa will continue to contribute to the improvement of production efficiency and safe and reliable operation throughout the lifecycles of customers’ plants. In the renewable energy field, the Company is committed to contributing to a stable supply of clean energy in order to realize a sustainable global environment in collaboration with customers.

*Amid concerns about the correlation between greenhouse gases generated from burning fossil fuels, etc. and global warming, as well as food shortages worldwide, second-generation bioethanol made from non-food sources such as woodchips and straw, as opposed to the first-generation bioethanol made from edible resources such as corn, has been attracting attention in recent years as a renewable energy source.*

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Yokogawa started on cultivating the control system market from the conclusion of a distributor agreement with a local company in Saudi Arabia in 1970s. Having established Yokogawa Saudi Arabia in 2006 and Yokogawa Services Saudi Arabia in 2007, Yokogawa has accumulated a track record in the key oil and gas sector and has expanded business led by local employees. Yokogawa’s customers in Saudi Arabia are mainly state-owned enterprises. As well as contributing to Saudi Arabia’s industrial development by helping customers resolve their issues, Yokogawa has been addressing the resolution of the nation’s social issue since the inception of these companies.

In recent years, a high youth unemployment rate in line with the increase of foreign workers has become a pressing issue in Saudi Arabia. The Saudi government is implementing a policy to increase employment opportunities by promoting employment of Saudi nationals (Saudization). While expanding business in Saudi Arabia, Yokogawa has been supporting human resources development in the country in cooperation with local universities and other educational institutions and providing employment opportunities.

**Contributing to human resources development**
Based on a memorandum of understanding on human resources training programs signed with the King Fahd University of Petroleum and Minerals (KFUPM) and three other universities in Saudi Arabia, Yokogawa provides engineering training and short-term internships for students and new graduates. In the 10 years from 2007, of 275 people who completed the training program, 63 joined the Yokogawa Group.

**Contributing to creation of jobs**
As of June 2017, Yokogawa’s subsidiaries in Saudi Arabia had 300 employees of whom 135 were Saudi nationals (75 men and 60 women), with a Saudization percentage of 45%. According to the criteria for the ratio of Saudi nationals to the workforce of companies specified by the Ministry of Labor of Saudi Arabia, Yokogawa subsidiaries are in the top level in the six-level ranking.

**Supporting advancement of women in society**
Yokogawa is vigorously supporting advancement of Saudi Arabian women and has hired some 150 local women since 2010. Of the current 60 female employees, 50 are engaged in engineering work.

Initiatives to resolve social issues of Saudi Arabia have a great significance in the context of Yokogawa’s sustainable development of business in the country. Yokogawa continues to address issues of customers in Saudi Arabia and national issues with devotion in order to contribute to the country’s industrial development while enhancing Yokogawa’s corporate value.

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1) President Nishijima (left) had an audience with Custodian of the Two Holy Mosques King Salman Bin Abdulaziz Al-Saud, King of the Kingdom of Saudi Arabia, at Saudi-Japan Vision 2030 Business Forum in March 2017 during the King’s visit to Japan.

2) At the Business Forum, Yokogawa concluded an MOU with Saudi Arabian Oil Company (Saudi Aramco) concerning cooperation in R&D and human resources development in the measuring and control fields of the oil, petrochemical, and gas sector.