

USER REPORT

Malt production in Brazil: green field large-scale plant delivers up to 800 tons per day with technology from Zeppelin Systems

Friedrichshafen, March 2022. The German Purity Law of 1516 already proves that the mixture of hops, malt, yeast and water guarantees good taste and made beer famous worldwide. This is also the case in Brazil. This is where one of the world's largest green field malt production plants is currently being built. A cooperative made up of several companies, including Cooperativa Agrária, is relying here on the technologies of plant manufacturer Zeppelin Systems, based on the know-how to supply complete plants for malt production for more than one decade.

Brazilian beer consumption is growing by 3.5 percent per year. Yet Brazilian consumers already drink beer brewed from 1,75 million tons of malt per year. Until now, the country has imported more than a half of the barley for malt production from abroad. The rising demand for beer and thus also for malt and barley therefore requires not only the country's own cultivation areas, but also new plants that can convert the mass of malt required. In addition, the drinking behavior of consumers is changing, and they are increasingly preferring beer varieties with one hundred percent malt content. Therefore, in Brazil, the cooperatives Agrária (Guarapuava), Bom Jesus (Lapa), Capal (Arapoti), Castrolanda (Castro), Coopagricola (Ponta Grossa) and Frísia (Carambeí) have joined forces to build the world's largest malting plant ever built in a single project: Maltaria Campos Gerais.

This plant is expected to produce between 700 and 800 tons of malt per day. This corresponds to an annual production of about 240,000 tons of malt and about 14 % of consumer demand. For Agrária, this is the second Zeppelin plant of this kind, but with much higher capacity. The existing plant is reaching its limits due to changing consumer behavior and cannot be expanded because there is no more free agricultural land in the surrounding area. The Maltaria Campos Gerais project is located in an area that has an additional 100,000 hectares of land available for barley cultivation.

Process technology from raw material intake to uprooting

Agrária has already relied on the renowned technologies of this plant manufacturer for the first Zeppelin plant. The quality of the components, the overall concept, and the process engineering design convinced the company, so that they are now placing an order for the large-scale plant with the same supplier. The Maltaria plant in Campos Gerais consists of a steeping building with 24 steeping tanks, two towers with five germination boxes each and two kilns, as well as peripheral equipment. To ensure the high throughputs with consistently high product quality from raw material reception to uprooting, Zeppelin Systems offers various solutions. For example, the bucket elevator ensures gentle, vertical conveying of the barley into the flow weigher. The automatic flow scales from Zeppelin Systems enable precise weighing and the user always has all parameters in view, so that the exact amount of barley is fed into the production process and the steeping process can then begin. Here, the barley is moistened until it begins to germinate.

Germination and kilning - high quality and efficiency thanks to sophisticated technologies

Germination is a fundamental process step in every malting plant. The Maltaria Campos Gerais plant has ten round germination boxes distributed over two 65-meter-high concrete towers, each with a diameter of 30.5 meters and a capacity of 400 tons of barley. This Zeppelin technology ensures the handling of large volumes, which is elementary for Agrária, since the large plant will produce malt 365 days a year. In the germination plant, the barley is continuously moistened by air flowing through and ensuring that the barley does not dry out.

In addition, there are two circular kilns with a diameter of 40 meters and a capacity of 400 tons of barley. The kilns are located in adjacent buildings. When it comes to roasting, Agrária relies on high-performance equipment from Zeppelin Systems - this makes it possible to generate differentiated taste and visual profiles and thus specifically influence the character of the final product. Between the two kilns, a heat recovery system and automation solutions are used to ensure an extremely efficient process.

All in all, the high quality of the components and smooth running of the individual process steps are elementary for the Maltaria Campos Gerais plant. This is because the breweries have already planned several large orders in Brazil, which are currently ensuring full capacity utilization of the plant.

Sustainable management for environmentally friendly production

In addition to efficiency and profitability, sustainability is a high priority at Agrária. For this reason, the plant has heat exchangers to recover the heat generated in production. This achieves energy savings up to 20 percent. In addition, the technology used reduces water consumption. Investing in the topic of sustainability primarily generates good partnerships internationally, as the customers - large global corporations - also place a strong focus on this topic. Cooperativa Agrária is listed with the Sustainable Agriculture Initiative Platform (SAI) and ranked with 20% Gold and 80% Silver level. SAI is committed to building a sustainable agricultural sector and emphasizes strong as well as secure supply chains.

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Captions:

Maltaria_300dpi: The plant *Maltaria Campos Gerais* produces between 700 and 800 tons malt per day

Malztrockung_300dpi: Malt drying in kilns with a capacity of 400 tons

About Zeppelin Plant Engineering

Zeppelin Systems is a global leader in plant engineering for the handling of high-quality bulk materials. With over 70 years of experience in process engineering and extensive knowledge in handling countless raw materials, Zeppelin Systems offers complete and reliable solutions. With 22 locations worldwide, the company supports its customers from plant design through implementation and provides all aftersales services locally, from a single source. At Zeppelin Systems, innovative

processes are just as important as the clever automation solutions and full range of service they provide to cover the entire life cycle of your plant.

Each Zeppelin plant is customized to meet the requirements of each customer be it in the plastic, chemical, rubber and tire, or food industries. With the world's largest technology center network for bulk materials, Zeppelin enables its customers to carry out tests on an industrial scale and verify and optimize their plant design. Zeppelin Systems develops and manufactures its own components for key plant functions, which are also used in third-party plants. For more information, visit www.zeppelin-systems.com.

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About the Zeppelin Group

The Zeppelin Group offers solutions for the construction industry, drive systems and energy sectors as well as engineering and plant engineering; it is represented in 43 countries and regions around the world at more than 220 sites. The company's approximately 10,000 employees work together in a management holding company, six strategic business units and a strategic management center (= Zeppelin Digit): Construction Equipment Central Europe, Construction Equipment Nordics, Construction Equipment Eurasia (distribution and service of construction, mining, and agricultural machinery), Rental (rental and project solutions for construction and industry), Power Systems (drive, propulsion, traction, and energy systems), Plant Engineering (engineering and plant engineering) and Zeppelin Digit (IT and digitalization). All digital business is handled together within Zeppelin Digit. In the 2020 financial year, the Group generated sales of EUR 3.3 billion. Zeppelin GmbH is the Group holding company. It is legally domiciled in Friedrichshafen and has its head office in Garching near Munich. The Zeppelin Group is a foundation-owned company. Its roots can be traced back to the establishment of the Zeppelin Foundation by Graf Ferdinand von Zeppelin in 1908. For more information, visit zeppelin.com.

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