CIRCULAR ECONOMY

- Rainwater is harvested for use in mill processes GRI 3-3 (303)
 Clean water is stored and then fed to the manufacturing process (two 90,000 m³ storage tanks) GRI 3-3 (303)
- Packaging is reutilized and steel wires are recycled GRI 306-4

AUTOMATION

Project Star's control room equipment operates autonomously, and data is collected in a network without human action, using industry 4.0 concepts, connectivity and artificial intelligence. This building houses operators, analysts, process coordinators and managers who work to increase synergies, optimize responsiveness and improve overall plant performance.

01 PULPWOOD PREPARATION

- Where pulpwood is handled and chipped for processing
- Water from the process is reutilized to wash the pulpwood logs GRI 3-3 (303)
 Electrically driven equipment is used to move the logs to the chipper
- (zero greenhouse gas emissions) GRI 3-3 (305)An enclosed chip conveyor system avoids dust emissions

02 WATER AND WASTEWATER TREATMENT

Ensures process wastewater is treated to the highest standards of quality before it is returned to the river

- The lowest water consumption in the industry, resulting in one of the lowest levels of effluent emissions **GRI 303-5**
- The first company in the state of São Paulo to implement tertiary treatment GRI 303-2
- Rainwater harvesting and reuse system GRI 3-3 (303)
- Approximately 95% of harvested rainwater is returned to the Tietê River as treated effluent **GRI 303-4**

03 FIBER LINE

- Where pulp is extracted from the pulpwood through a series of cooking, washing and bleaching stages
- Digesters can flexibly alternate between kraft and dissolving pulp
- Highly efficient washing improves chemical recovery and minimizes water consumption **GRI 303-5**

04 PULP DRYING AND PACKAGING

- At this stage, finished pulp sheets are dried and packaged
- Water evaporated in the drying process is recovered for reuse GRI 3-3 (303)
- Dry pulp sheets are packed in bales using the product itself as packaging, and are wrapped in steel wires **GRI 306-2**

05 EVAPORATION PLANT

Where black liquor is concentrated for subsequent combustion

- Evaporated water (condensate) is recovered back to the process GRI 3-3 (303)
- High-performance recovery of odorous gases (non-condensable gases)



Stand-out features of the two new flexible lines in Lençóis Paulista (state of São Paulo)



RECOVERY BOILER

06

07

08

09

10

Where part of the black liquor is burned to generate steam

- Steam is produced with zero greenhouse gas emissions GRI 305-5
- State-of-the-art technology helps to minimize air emissions GRI 3-3 (305)
- High-performance collection and handling system for recovery of non-condensable gases
- The world's largest recovery boiler (13,000 tds)

TURBINE-GENERATOR SETS

Responsible for converting steam into electricity

- Electricity is produced from 100% renewable sources GRI 302-1
- The first pulp mill to inject green energy into the national grid, via a 440-kilovolt connection
- Energy self-sufficient: we generate our mill's full energy requirement on-site GRI 302-1
- We produce enough surplus electricity to supply power to more than 3 million people or 750,000 homes.

CAUSTICIZER

- At this stage, chemicals are recovered into white liquor for reuse at the cooking stage
- Centrifuge technology is used to extract sludge, reducing waste generation **GRI 3-3 (306)**
- Fuel produced by the biomass gasification facility is used in the lime kilns (zero greenhouse gas emissions) **GRI 305-5**

BIOMASS GASIFIER

This facility produces fuel for the lime kilns from pulpwood waste generated at the woodyard

- The first biomass gasification facility in operation in the South American pulp and paper industry
- Zero-emission biofuel production significantly reduces production costs and allows for a fossil fuel-free process under normal operating conditions **GRI 305-5**
- Woodyard waste recovery helps to minimize the amount of solid waste we generate, in line with circular economy principles **GRI 3-3 (306)**

RAW MATERIAL

Bracell uses reforested eucalyptus wood as the raw material for pulp production. Planting is located near 100 cities, approximately, up to 250km from the plant

- 100% of planted forests are certified
- Planting prioritized in pasture and unproductive areas, providing restoration of biodiversity
- Favorable to the environment