JW
EQUIPAMENTOS

Technology and Innovations for Different Segments


Ethanol


Oleochemical


Sugar


Foods


Beverage


Oil and Gas

www.jw.ind.br

Founded in 1995, **JW Indústria e Comércio de Equipamentos em Aço Inoxidável** began its activities on the **sugarcane bioenergy sector** with efficient projects and manufacturing equipment for Ethanol production.
Professionals with more than **30 years** of **experience** ensure to the clients all the safety of a production based on technology and national and international quality standards.
With product engineering, strategic technological partnerships and adequate factory structure, it also meets the same quality certified by **ISO 9001** and **CRCC Petrobrás** to **other segments**.

Our equipment are installed in more than 13 countries, with JW's manufacturing quality:

More than 60 Hydrous Ethanol plants

More than 62 Anhydrous Ethanol plants

5 Neutral Ethanol plants

More than 80 plants of Ethanol Recovery Columns

6 Ethanol Purification plants

2 Vinasse Concentration plants

More than 18 Evaporators for Indirect Heating

JW EQUIPAMENTOS

Always Innovating

Hydrous Fuel Ethanol

Responsible for efficient projects with more than 60 plants in operation that produces 35 million of liters/day of Hydrous Fuel Ethanol, JW stands out in the national (ANP standard - Brasil) and international markets, providing customized projects to reach the need of each client.

JW's technology attends from the lower to the highest ethanol concentration level in the fermentation and different capacities production that currently vary from 90,000 L/D to 1,300,000 L/D.

Offers the indirect heating option in the Stripping Columns, using thermosiphon or falling film evaporators, providing a reduction of extraction in the vinasse volume.

Cerradinho - GO - 1,300,000 L/D

The equipment can be operated in the atmospheric pressure or under vacuum, with the following characteristics:

Atmospheric pressure

- Lower investment cost.

Guarani - Usina Vertente - SP - 300,000 L/D

Pedra - Unidade Ipê - SP - 1,200,000 L/D

Under vacuum

- Possible saving on vapor consumption;
- Reduces the equipment incrustations factors;
- Operates in lower temperatures.

Hydrous Neutral Ethanol

JW develops equipments for Neutral Ethanol production following strict quality standards, high efficiency and high automation level, that provides more operational facility. The projects are customized enabling to meet each client's need from different market segments.

With high added value and low quantity of impurities and acidity, Neutral Ethanol is a product with high quality and can be obtained from different raw materials, such as: fermented mash derived from sugarcane, malt, cereals and others.

Ambev - Nassau - PE - 32,500 L/D

Soderal - Ecuador - 45,000 L/D

In addition to the conventional atmospheric system, JW has technology for equipment for neutral ethanol production with double effect and under vacuum systems.

Between the advantages of the double effect and under vacuum systems, it can be highlighted: lower vapor consumption, final product with higher quality and low rate of incrustation. It is ideal for process with large quantity of salts and/or compounds that causes incrustation.

JW also develops projects for Hydrous Special Ethanol according to the specifications as H1, H2 and Korea standard.

Has as an option the projects implementation of neutral and special ethanol from existing plants of Hydrous Ethanol.

São Francisco - Sertãozinho - SP
100,000 L/D

Ambev - Piraí - RJ - 65,000 L/D

Anhydrous Ethanol - Molecular Sieve

The Molecular Sieve has been highlighted in the sugar-energy market as a differentiated process for obtaining Anhydrous Ethanol.

JW has more than 20 plants installed with a production of approximately 14,000,000 liters / day of anhydrous ethanol.

The plants can be designed so the final product meets the Agência Nacional do Petróleo (ANP-Brazil) standard or to the export standard and has the following advantages:

- It uses low-pressure steam as the source (almost in a whole);
- It has low specific consumption of steam and water;
- The process is automated and easy to operate.

Santa Adélia - Pereira Barreto - SP
1,000,000 L/D - DE model

Santo Angelo - MG
400,000 L/D
SR model

Del Chira - Peru
300,000 L/D
CR model

Rio Claro Agroindustrial - GO
1,200,000 L/D - SR model

JW offers differentiated Molecular Sieve models such as:

HLSM-CR model, which sends the phlegm produced from the regeneration of the zeolite vessels to the existing ethanol rectification column in the hydrous ethanol plant.

HLSM-SR model, which has its own recycle rectification column, using hot water vapor as source, its process is independent and can dehydrate the ethanol in the off-season.

HLSM-DE model, which has its own recycle rectification column, using vapor from anhydrous ethanol as the hot source, reducing then the consumption of water vapor. Its process is independent and can dehydrate the ethanol in the off-season.

Anhydrous Ethanol - BSM

The BSM dehydration process of Ethanol uses extractive distillation, with Monoethyleneglycol as dehydrated agent, and it is based on the strong affinity of the water with the glycol. The volatility of water is decreased facilitating the release of anhydrous ethanol in the vapor phase.

Cofco Agri - Unidade Potirendaba - SP
500,000 L/D

Tropical Bioenergia - GO
400,000 e 1,000,000 L/D

This process presents the following advantages:

- The dehydrating used is non-volatile and non-flammable;
- It shows reduced consumption of steam, water and dehydrating;
- It is not sensitive to small variations in the alcoholic grade of the feeding product in the equipment.

Cocal - Narandiba - SP - 800,000 L/D

Melhoramentos - PR
1,000,000 L/D

Ethanol Purification

JW Equipamentos has a differentiated process for the elimination of impurities from Ethanol.

The JW Ethanol Purification Units are dimensioned and constructed in a single module to operate with ion exchange resins. The hydrous, neutral or anhydrous ethanol will pass through the bed of resins in direct contact, occurring the removal of impurities from the feed product.

The purpose of the Purification System is to eliminate the contaminated substances presents in the ethanol. These substances are usually presents in the form of cations and/or anions and tends to be retained in the resins of their respective vessels, making the ethanol extracted from the system to be within the quality standards (acidity and conductivity)

The equipment is compact and can be easily transported to other units.

Usina Colorado - SP - 50m³h

Guarani - Usina Vertente - SP - 30m³h

Vale do Verdão - Floresta - GO - 30m³h

Fermentation

JW, in partnership with Fermentec, offers to its clients fermentation units with high alcohol concentration.

To obtain distillation process with low energetic consumption and lower volume of vinasse that may reach up to 6 liters per liter of ethanol produced, the equipments are developed according to appreciated standards and project codes that are applicable in Brazil and abroad.

The fermentative process can be obtained from different raw materials, such as: sugarcane juice, sugar syrup, corn and others.

Evaporative Condenser

JW, in partnership with LM Engineering, develops projects for the manufacture of the Evaporative Condenser, which is a tubular heat exchanger used for the condensation of cooking vapors, condensation turbines or the latest evaporator effects, replacing the barometric condenser, multi-jet and surface condensers.

Advantages of the Evaporative Condenser:

- The cooling towers are not required;
- In most applications it does not require external replenishment water;
- Eliminates the need for water treatment;
- Does not require high power pumps;
- Does not require large and large gauge pipes;
- Low cost of instrumentation;
- Simplicity of operation;
- Long life for being totally manufactured in stainless steel;
- Besides the vinasse concentration, it can be used in other segments.

Adecoagro - Angélica

Adecoagro - Ivinhema

Imcopa

Ethanol Recovery Columns

JW develops equipments which uses the principles of gaseous absorption, in order to increase productivity and efficiency in the ethanol production.

The purpose of the installation of a gaseous absorption equipment is to recover the ethanol that is entrained along with the CO2 produced in the fermentation.

With more than 80 columns in operation, designed through customized projects, JW offers different models for the installation of Absorption Columns:

Santa Isabel - SP - 700,000 L D

Guarani - Usina Vertente - SP - 800,000 L/D

Aroeira - MG - 700,000 L/D

- **On the Main Vat:** The liquid that reaches the column base already falls on the main vat, eliminating the need of a pump and liquid level control in the base;
- **On the floor on concrete base:** In this case it is necessary to use a pump to return the phlegm to the main vat and we recommend the installation of an automatic valve, for the control of liquid level in the base of the column;
- **On the steel structure:** The liquid that reaches the column base already falls by gravity in the main vat, eliminating the need of a pump and level control in the base.

Itapagipe - SP - 400,000 L/D

Vinasse Concentration

JW, in partnership with LM Engenharia, develops projects for the manufacture of Vinasse Concentration System, in the following options:

• **System with energy integration:** It operates together with the distillery, being able to absorb the energy available at the top of the rectification column and transfer it to the vinasse.

• **Conventional system:** It operates using as hot source vegetable steam or exhaust steam.

Adecoagro - Ivinhema

Adecoagro - Angélica

Some benefits of vinasse concentration:

- Decrease of the vinasse volume, facilitating the distribution in more distant areas;
- Lower cost in fertilizing and distribution;
- Decrease of water consumption in distillery by up to 2.5 times;
- Decrease in fermentation acid consumption, applying the condensed in the fermentation dilution;
- Low or zero vapor consumption, it depends on how much the client needs to evaporate;
- Decrease of transport cost;
- Condensate utilization in several industrial places, such as: decrease in water catchment, using in the sugar cane washing at the feeding table, in the soaking of extraction in the rollers mill system, mash prepare and ferment dilution;
- Reduction of the risk of water contamination (rivers and lakes);
- Elimination of strong odors and flies proliferation.

Selecta

Imcopa

Engineering and Services

JW has an Engineering which operates with Quality Management System certificated by ISO 9001, composed by engineers and designers from the mechanical and process areas.

They are specialized professionals in different markets, engaged to create innovative solutions which combine productivity and efficiency through resources such as:

Engineering

- Team of professionals with more than 20 years of experience in the market;
- Development of projects through specific softwares as: CAD, PLANT, HTRI, COMPRESS among others;
- Qualified team that develops studies and researches for specific equipments, meeting the requirements, needs and complexities of each project and client;
- Specialized technical support to assist, guide, supervise and seek the best technical and economic solution for new and existing projects.

Equipment for maintenance

JW provides engineering, manufacturing, assembly, operation and maintenance solutions for high-complexity projects to increase efficiency and performance within enterprises with reliability.

The innovation and quality capacity is the differential that makes the company recognized by customers and important market organizations.

Equipment after maintenance

Other Segments

JW with the same efficiency and engagement already proven, employees qualification, its own engineering, technological partnerships and CRCC certification achievement, serves several segments.

The experience of more than 20 years with carbon steel, stainless steel and special alloys, allied with the competency to offer products with higher quality standard, making it possible for JW to act in the following sectors:

- Sugar
- Paper and Cellulose
- Oil & Gas
- Oleochemical
- Foods Industry
- Fertilizers
- Chemical and Petrochemical
- Mining
- Pharmaceutical

Foods - Pasteurization and Juice Concentration cap. 10,000 UHT Nova Amafrutas - AM

Foods - Açaí Processing cap. 3 Ton/h - Bolth House - PA

Foods - Blender - Bolth House - PA

Foods - Production of Tomatoes Concentrate cap. 1,000 Ton/day – Cristalina Alimentos

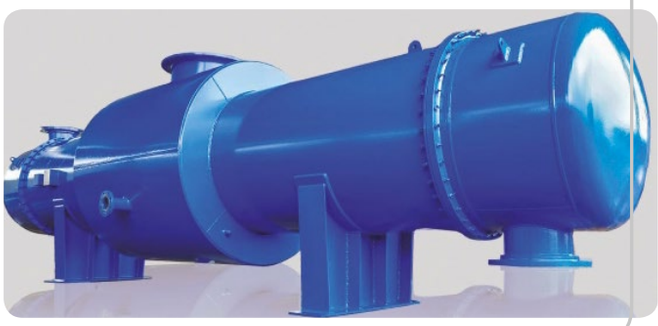
Other Segments

Petrochemical - Thermal Deaerators
Petroquímica SUAPE – PE

Oleochemical - Barometric Condendenser

Oil & Gas - Compressed Air Filter Coalescing (Platforms P74 and P76)

Oil & Gas - Compressed Air Filter Coalescing (Platforms P74 and P76)



Oleochemical - Vacuum Condenser

Other Segments

Fertilizers - Pressure Vessels ETA/ETE (UFN-V)

Beverages - Storage Tank - Ambev Piraí - RJ

Sugar - Tank for Liquid Sugar Mixed Juice Us. Alto Alegre - PR

Oleochemical - Storage Tanks - Sementes Selecta - MG

EQUIPAMENTOS

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