

**Banco Diocesano de Alimentos de los Altos,
A.C. (BAMX Tepatitlán)**

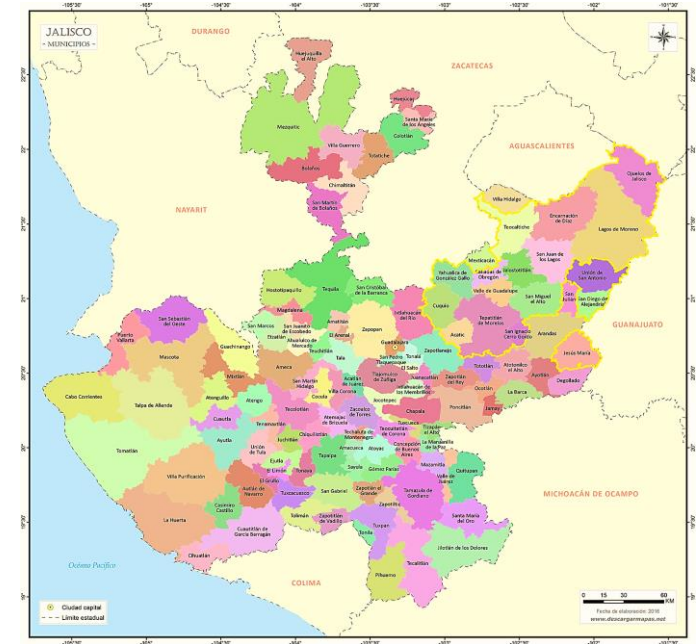
Fruit and Vegetable Processing Plant

Project: Cleaning in Place System



Presentation.

- Banco Diocesano de Alimentos de los Altos, A.C. (® BAMX Tepatlán)
It was founded in 2007. It currently has a building and adequate facilities to fulfill its mission, which is: to support families in need of food.
- With biweekly frequency, 4,500 families are served, delivering 7,000 pantries to a population of 20,000 people; distributed in 17 municipalities of the Altos Sur and Altos Norte Regions of the state of Jalisco.
- The families are identified through a socio-nutritional-economic study which tells us how long they will be helped.



Fuente: <https://descargarmapas.net/mexico/jalisco/mapa-estado-jalisco-municipios.png>

Fruit and Vegetable Processing Plant

- With a dual purpose, the Fruit and Vegetable Processing Plant is implemented:
- 1) Extend the useful life of products from agricultural fields, avoiding waste and environmental pollution caused by the decomposition of these products.
- 2) Offer a fruit and vegetable supplement that has a longer shelf life, achieving a durability between 8 and 12 months, free of preservatives, 100% natural through heat treatment and sterilization.
- 3) High-impact objective: serve the most vulnerable segment of the poor with a natural food, without preservatives, highly nutritional and suitable for their needs:
 - a) Pregnant women.
 - b) Children from 0 to 4 years of age.
 - c) Older adults who cannot chew.
 - d) prostrate patients.



Fruit and Vegetable Processing Plant

*It has been in operation producing puree since 2020.

- 2018 The processing plant is inaugurated. The plant project was achieved with resources from the CONACyT Mixed Funds Program. CIATEJ, TEC de Monterrey, Banco de Alimentos de los Altos, led by ITESO (Jesuit University in the city of Guadalajara) actively participated in the development and installation of the processing plant.
- 2019 In charge of CIATEJ, tests are carried out with different fruits and vegetables, starting up in the month of December.
- 2020 Production begins, having to stop in March due to the pandemic caused by sars-cov-2, resuming in May, managing to standardize production in sufficient quantity to provide this product, in a first line to BAMX beneficiaries. Tepatitlan; having the medium-term project of sharing with other sister food banks and with more social institutions that have the mission of food support.

Environmental impact, water saving.

Cleaning in Place = Fully automatic cleaning procedure using CIP control.

- Currently, the operators control the cleaning and sanitization of the production equipment, completely manually, in order to ensure the requirements of the food standard. With this manual process, there is a cost of 2,600,000 liters of water per year.

CIP cleaning procedure in the food sector.

- The cleaning procedure varies depending on the product to be used. As a general rule, CIP cleaning includes the following steps:
 - Previous washing with water to remove the largest impurities;
 - Equipment washing using bleach or a cleaning product;
 - Intermediate washing with water to rinse and remove the cleaning product;
 - Equipment washing using an acid;
 - Rinsed with water;
 - A deep disinfection at the end of production.

With the installation of the CIP system we would only have an expense of 260,000 liters, having a saving of 90% of water, by making the conversion, we would be saving 2,340,000 annual liters of this vital resource.

Positive impact on the environment.

The waste of fruits and vegetables in their state of decomposition seriously affects global warming.

We will be increasing the rescue of fruits and vegetables by 173 tons per year, which means a reduction in pollution of 108 tons of carbon dioxide.

Added to the current transformation of 518 tons that are already recovered for processing, plus 173 tons with the on-site cleaning system, we will be preventing 691 tons of CO2 from contaminating the environment.

Social impact.

- With the savings in cleaning time, an additional 320,000 .250g bags of puree can be produced per year. Benefit to 160,000 people per year.
- With the current production of 960,000 bags of puree, we add a total production of 1,280,000 pieces of puree per year.
- 2 purees per person (20,000.00) would be delivered every 15 days (24 deliveries), with which we will benefit a total of 480,000.00 people per year.

• Labor impact.

- Currently, 12 direct and 3 indirect jobs are generated daily.
- With the increase in production with the CIP, there will be 14 direct jobs and 4 indirect jobs daily.

*Indirect jobs refers to the personnel hired in the field, for rescue and maneuvers of fruits and vegetables

Cleaning in Place (CIP).- Presupuesto.

BUDGET	
LOT OF INSTALLATION	
Workforce for installation of lines, tanks, support, valves and connections.	
Workforce for the installation of steam lines.	
Workforce for installation of bases-supports for 4 tanks.	
ENGINEERING LOT (PROGRAMMING, SCREEN DEVELOPMENT AND DIAGRAMS)	
Lay Out Diagram, Plant Diagram and CIP Module Elevation.	
Diagram of pipes and instruments.	
Wiring diagrams.	
Isometricos.	
Diagrams of board.	
Schematic instrument installation diagrams.	
Control architecture.	
Sequence of operation.	
PLC programming for start and automatic stop, manual and emergency stop.	
Realization of 5 HMI screens with dynamic graphics (start, level parameter settings, cisterns images).	
START-UP	
Commissioning of each of the field signals to board.	
Tests of the PLC and HMI control system.	
Automatic system operation tests, manual and emergency stop.	
Commissioning of the CIP system.	
TRAINING LOT	
Training to operating personnel for use of the operation panel, change of parameters and automatic operation, manual and emergency stop, operation of operation recipes.	
Training for maintenance personnel for the handling of technical documentation, diagrams, field instruments, solenoid valves, control board, HMI SCADA, calibration of instruments and maintenance recommendations.	
SUPERVISION OF WORK ON SITE (7 DAYS)	
Supervision of jobs such as: equipment blanket, signal connections, electrical installation, mechanical installation, maneuvers and everything necessary for the correct installation of CIP system.	

PROJECT COST USD	\$	93,233.56	USD
MEXICAN INFLATION 7%	\$	6,526.35	USD
IVA	\$	15,961.59	USD
TOTAL	\$	115,721.49	USD

The participation of national and international allies has been the important engine for the development of technologies and social programs that align with the mission of the Diocesan Food Bank of Los Altos, as well as that of Rotarians: Help people in need.

The CIP project implies a saving of 2 hours a day that implies cleaning and sanitizing time, with its implementation those hours will be used in production, so the project is highly justifiable due to the self-sustainability that it gives to the plant, increasing production.

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