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**RESTORATION OF THE BOILER OF THE EX – FACTORY “ LA PASTORA”  
FROM THE PUEBLA CITY, MEXICO**

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Summary

Session of work 3: The project: restoration, reuse and transformation  
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This paper registered under the theme of the restoration, reuse and transformation of La Pastora, has the objective to share the proposal of restoration of the boiler of the ex-Factory “La Pastora”, as part of the real estate located in Puebla, Mexico. This property was intervened to form part of the project of the Convention Center inside the framework of the Regional Program of Development called Angelópolis during the government period from 1993 to 1999 in our city. Thus the proposal contemplates the placement of the boiler and its exposition in the Plaza called of The Mother in said joint.

This work was carried out contemplating the different possibilities for the cleaning, assembly of the boiler, protection and feasibility as for cost. An analysis of its main materials is presented which permits to determine the most adequate procedure for it (cleaning and armed).

Concerning its goals, the constructive elements and their operation are shown. The following elements are taken into account:

The knowledge of its parts and its material.

- Normal Deterioration by its use and the duration of the same one.
- The relation between the place of relocation and the cleaning and processing, considering the open space as well as its protection of the environment.

The methodology: documentary Investigation and of field: analysis and reading of the place (photographic lifting, uses of the floor, surveys of opinion). According to the above the historic background of the project is first presented, consisting of the intervention process in the former factory La Pastora that brought as consequence the destruction of historic testimonies and the loss of the boiler like its main diagnostic and the proposal of intervention.

With this presentation we agree in the reuse of industrial spaces that are obsolete before the technological advance and the social and political changes, whenever a comprehensive project of conservation of the industrial patrimony is being carried out  
**OK**

## **INTRODUCCIÓN**

This paper registered under the theme of the Restoration, reuse and transformation into the general context of the XIII TICCIH INTERNATIONAL CONGRESS “INDUSTRIAL HERITAGE AND URBAN TRANSFORMATION, PRODUCTIVE TERRITORIES AND INDUSTRIAL LANDSCAPES” has the objective to share the proposal of the restoration of the boiler of the “La Pastora” Factory, as a part of the real state located in Puebla City, Mexico. This property was intervened to be part of the project of the Convention Center inside the framework of the Regional Program of Development called Angelópolis during the government period from 1993 to 1999 in our city. Thus the proposal contemplates the placement of the boiler and its exposition in the Plaza called of “La Madre” in said joint.

*Image N° 1. Plaza de “La Madre”*

It is structured from the beginnings of the declaration of Puebla city as a humanity patrimony in 1987 and the connotation of the Angelópolis megaproject and its relation with the boiler establishing the proposal of the communication and strategic methodology; the Convention Center as part of Río de San Francisco project; the boiler, its description and physical conditions getting the diagnosis and consequently the proposal of intervention ending with a conclusion.

## **PRECEDINGS**

During the government period elapsed from 1993 to 1999 is implemented in the city of Puebla, Mexico the Development Program Angelópolis, which establishes specific actions for the Monumental Zone of the city of Puebla, declared world heritage by the UNESCO in 1987 having as the defendant of incident the Region Angelópolis like one of the seven regions that integrate the State of Puebla.

Thus the actions carried out by the Program Angelópolis for the capital city and the particularly developed in their Historic Center unchained diverse consequences in the urban-architectural, environmental, political, economic, and social environment.

The Historic Center of Puebla is incorporated like fundamental element in the search of modernization of the city, capitalizing the hereditary wealth to become a place of tourist interest of international character in harmony with the global objectives of the Program Regional statement.

Its application in the Río de San Francisco Project was an energetic action which has radically modified the monumental zone of Puebla; however, from its conception up to its execution this presented some problems by not considering the social reality and the historic and patrimonial context

The topic is referred to the textile industry in Puebla which entered in crisis during the 50's decade, and it defines the abandon of the productive spaces located in this zone. Since this period until the 90's this area was suffering a mayor damage due to the absence of conservation actions and additionally, to the types of use of its nearing to the supply center located in the 3 Oriente Street which occupied six blocks where there were installed storing and motels, using for this the abandoned factories.

*Image N° 2. Interior view of the dyeing room Ex- Factory “La Pastora”*

In the same way its established the reutilization of old industrial areas due to the technologic progress and sociopolitical changes, with a vision of heritage conservation project.

## **METHODOLOGIC STRATEGY**

Documental research

- Recognizing of general and particular historic context of the study object: La Violeta Factory, San Francisco River Project, the Convention Center area and the boiler.
- Information sources: books, magazines, documents, texts, data banks and Internet
- Procedure to collect information: selection, reading, synthesis and organization
- Analysis Type: descriptive and hermeneutic

Field research:

- Area Reading.
- Analysis, diagnostics and intervention proposal
- Intervention criterions: disciplinary studies, professional experience and outside-working experience

## THE CONVENTION CENTER AREA

The Project of the Paseo de San Francisco originally covered 26 blocks of the Historic Center, and contained great projects of luxury hotels, restaurants, movies, the recovery of the riverbed of San Francisco and fundamentally a Convention Center. With this last equipment was endowed to the city of a necessary space given the cultural and economic importance that this had acquired historically; would favor also the strengthening of its internationalization therefore was conceived like space magnet for events of this type.

*Image N° 3. Air View of the zone "Proyecto del Río de San Francisco"*

Of the ambitious project manages to summarize after hardly so much controversies with the company and the neighborhoods as among the different levels of government involved, only a pedestrian bridge and Conventions Center which was located in the margin east of what was the River San Francisco in the area of the factories in disuse: "LaPastora", *La Guía e Hilatura y Cobertores*, counts on a surface built of 32,400 square meters, 380 drawers of parking in two levels, a parlor with capacity for 2,500 assistants, six rooms of work, two rooms of meetings, a room of expositions and an audience for 260 people (Macip 2002:210).

The architectural project was of the office of the Ing. Javier Sordo Madaleno nevertheless during the process of the work they had innumerable problems of technical type by the lack of liftings of the existing manufacturing spaces destined al new use, what brought with himself the improvisation of solutions and the destruction of great part of the existing architectural heritage.

*Image N° 4. Puebla Convention Center*

The construction in a zone that during years had remained in state of deterioration and that caused the formation of a negative urban image favored an impact that in the first instance can be considered as positive, nevertheless the project carried out by contrast turned out to be weak in its conception, characterized by a weak one memorize of some village architectural elements like the talavera and the balcony besides this, other elements of the Architecture they would be able to have enriched the form and content of the architectural urban project.

## THE BOILER

One of the composite elements of “La Pastora” as one of the manufacturing buildings in disuse (*La Guía e Hilatura y Cobertores*) was the “chacuaco” which like part of the intervention carried out for the project of the Conventions Center was not done in the adequate way, since was imprisoned by the slabs of the parking with which lost its proportion and perspective being it more serious the Boiler that was splits fundamental of the assembly and which is motive of the present study.

*Image N° 5. “La Pastora” Factory*

Its location inside the assembly of the factory textile was planned strategically, with the energy losses to avoid intention by distance, besides maintaining intimate relation with the process of wash, dying and dried of fabric. The Boiler was one of the first working in the city, and from the analysis of its constructive system, is considered that its production was previous to that of the “chacuaco”, although its placement have been subsequent.

## **BOILER COMPONENTS**

- Air source
- Boiler hopper
- High Pressure System
- Medium pressure system
- Low Pressure System
- Smoke Chamber
- Vapour ducts
- Regulator valves
- Ash- deposit
- Smoke ducts
- Floodgate air regulating
- Chimney or “Chacuaco”

*Image N° 6. Boiler Components*

## **DESCRIPTION AND PHYSICAL CONDITION**

It is a boiler “Baco Wilcom” of American origin, of 125 horse power; has adaptations to its original design to implement its modernization and to go harmonious with the technological advances of the principles textile production of the 20th century. By its characteristics is an unique example inside the manufacturing assemblies of the region Puebla -Tlaxcala.

The process of change is noted clearly al to observe the different constructive materials of its elements. The original design was so that worked utilizing the mineral coal and/or firewood, the first adaptation was done so that functioned with different types of fuels, until arriving al “refined petroleum”; to achieve this it a burner with motor was adapted to it, doing an enlargement of their combustion area enclosing him a fuel tank of plates mentioned and repeated with a preheated, these modifications are evident with the change of the security double valve that is more modern.

Also, traces of the fusion refractory bricks were found with the union mortar, which comply with the requirement to achieve a homogeneous material piece to avoid the loose of heat, the separation of the material and the frequent repairs.

*Image N° 7. Refractory bricks with the mortar of union*

As well it was found that a double valve of emergency pressure reliever was included and their whistle of warning that indicated the lack water; two meters of exterior level of glass that served to verify the quantity of water and vapor in the “dome” ó cylindrical upper deposit, lacking only the meter of pressure of this last one; the pipes of evaporation were found in excellent conditions as well as their covers. The lateral flood-gates “ash-tubs”, of iron strained, they had been removed but in spite of this, they were found in good condition, nevertheless, the machine was almost complete

The lateral ventilation was found complete, nevertheless the connections among the fuel storage tank, water feed, the exit of vapor and electric feed were offline, remained the same as the union of the “chacuaco” with the combustion area of the Boiler, which by the distance, the materials, the constructive system and its private characteristics should have a different metallic chimney of the present ”chacuaco”, that by the same modifications to the boiler, the smoke emanations and the increase of population in its environment.

The constructive system utilized was a fathom stone foundation of 1.50 meters of depth with a structure of iron beams of 8” that serve of vertical reinforcement for the different layers of brick abroad and refractory brick inside. They were located iron tensors of 7/8”, placed in the longitudinal sense.

The burner or aggregate combustion zone is constituted by metallic elements (iron beams of 6” drowned in the foundation) besides a support structure of refractory material in the covered with the same one. It is important to recall that the boiler was

designed and manufactured in an epoch in which not the electric welding of arch was known, for which each element of the original boiler was joined, repeated or screwed.

The foundation was formed by four stone bases placed to 1.50 meters of depth, on the ones that were placed the backups of iron strained, in which they write down the columns formed by profiles IPS that they serve of structural elements for the walls of brick refractory and normal placed in four layers, two inside and two outside respectively. Among these elements the union is carried out through tensors they formed by round metallic set with nuts and the bolt with cords in the same one tensor.

In its upper part beams are presented like elements of union, and on these channels matched with separators of wood are placed, you united with screws, of which remains the upper deposit or dome suspended by two elements called “omegas” or joints, iron rounds in the shape of half an arch of  $1\frac{3}{4}$ ” that surrounds the dome and the fixed thing and these elements with two distribution backups of the load and set with two nuts and rounds included a collar.

*Image N° 8. Iron beams*

Under the dome and in independent form, is placed al frontal side and interval of the columns an element that does the function of stretch to cross beam, united to the structure by screws, that besides serves of backup to the screen of sheet that separates the upper deposit. In the front the vapor pressure meters they are found and water, in their subsequent part likewise an element that serves to set the dome to the structure and to give it greater inflexibility.

The connections of the system of the boiler with the dome were given through 9 short pipes of equal dimensions evaporation pipes calls or “flus” which were connected the collectors and these at the same time they were connected with the 90 pieces of the pipes evaporators placed on 9 pieces of base for 10 pieces of height, is important to insist that all the unions including the flus they find you united by means of pressure of the extremes of the pipes inside the collectors. The flat of the original boiler included 9 levels of partition refractory to avoid the loss of heat.

Subsequently to this original boiler, him was attached a burner with electric motor and a control at the outset of smoke with operation by counterweight driven by cable of steel, since the frontal part.

The aggregate of the burner was in unevenness to be able to have access to a lower floodgate, and to have a better distribution of the fire by the induction of the air al motor electric that to permit for its upper cover the access to the plugs or tortoises on the collectors of the pipes evaporators or flus for its cleaning or replacement. It counts besides with a system of brick refractory hanging that impedes that the heat be dissipated for the covered with the burner that serves of flat for repairs. The elements before mentioned were found soldiers to the structural elements (beams IPS) among itself.

*Image N° 9. Floodgate air regulating*

In the referring thing al covered of partition that contained to the exactly said boiler, important elements for their operation were found like the floodgates known as “ashtrays” of iron strained; for the cleaning of the flat and the possible access for the revision of the pipes evaporators ó flus lower of the boiler, the ventilations included movable elements and they were placed to different height (high, average and low), for better of the same one, on the long wall of her. In the upper part also elements were found that served of registration for the revision of the dome in its lower part.

The drain at the outset of liquid was carried out through a valve and a pipe that placed the content in a registration. Regarding the exit of smoke the circulation was carried out through a “chimney” that was built of normal partition and in the union with the kettle the at the outset united floodgate was found to her by means of a cable of steel that permitted its opening since the burner to facilitate the work of the stoker al to enrich the mixture, circulating thus more or less quantity of air. This activity also was performed by means of the floodgate of swaying inside the chimney.

*Image N°10. Chimney or ”Chacuaco”*

All the construction that united the boiler with the”chacuaco”, cover in sections was found, with sections of sheet and with crosspieces of rieles, used as backups inside the structure of brick.

Not all the pieces were considered for the armed one due to its deterioration, and the one that did not belong to the kettle directly was the traces of material that was aggregate or adapted for its operation during its period of life.

DIAGNOSTIC

The boiler showed a normal deterioration by the use that had during the process of the production textile and the natural aging of the materials that constituted it as well as the consequent deterioration by their null utilization from the closing of the factory. By not to be contemplated their location and the hereditary value of this important machinery as well as all the manufacturing assembly by the office of the Ing. Javier Sordo Madaleno responsible for the general intervention in the project of the Paseo del Río de San Francisco, during the process of construction of the Conventions Center they were destroyed great part of their elements, standing out fundamentally the demolition of their structure.

*Image N° 11. Boiler Damages*

In agreement to the project mentioned itself replace in it called Plaza de la Madre located to a side of the Convention Center on the street where passed the Stream of Xonaca. Its transportation unscripted, brought with himself the cut and inadequate duplicity of some of its parts and the total lost of other without any possibility of rescue as its structure was it wall, its lost caused that the metallic material that constitutes the heart of the boiler remained exposed the weather agents with the ones that never had contact, this situation causes its probable disappearance like the witness of the processes of the textile industry in Puebla.

#### PROPOSAL OF INTERVENTION

Before the new conditions of the boiler by the actions that already we describe, the following actions were proposed:

- Reinforcement of some of their structural elements (beams and bases of support among others), after their cleaning, works that should be carried out with the major care and possible quality.
- Location of all the pieces of the boiler
- Protection of the elements that were withdrawn of the boiler and exposed to the elements
- Protection of the elements that are susceptible of corrosion, including valves and connections to
- Devise an inventory detailed of all their parts incorporating measures, state of conservation and material of production (sweet iron, strained, steel, etc.)

## AS A CONCLUSION

In the communication the antecedents of the Proyecto del Paseo del Río de San Francisco were presented like part of the Regional Program Angelópolis, in which there was an intervention proposal for the zone of important manufacturing buildings of the 20th century located in the historic center of the city of Puebla, such as “*La Pastora*”, *La Guía e Hilatura y Cobertores* and consequently important elements for the proposal the Boiler from the Former factory “La Pastora” as object of research showing the methodological strategy carried out and with it to propose an action for its conservation, since to our consideration did not have the sufficient study in a specific way for it on the part of the responsible for the project.

### *Image N° 12. Convention Center located in the factory*

Its fundamental elements toward it were described physically to establish the diagnostic and to propose the intervention convenient actions with an integral focus considering the context of location and to have thus an adequate place and with it to give him the value due to the function that complied as part of a building of the industry textile that denoted a system of production that influence in an important way in the economy of the Region. It is concluded that the intervention in a zone depressed of the Historic Center, in this case the rescue of The Boiler from the Former Factory “La Pastora” inserts in the Project Paseo del Río de San Francisco was not part of an integral project of conservation which brought as consequence the destruction of an important part of the patrimony of the industry textile like testimony of the Heritage of Puebla, Mexico.