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METHODOLOGY FOR CONTROL AND MONITORING THE RESULTS OF THE CORRECT APPLICATION OF HYDROMETERS, TO ENSURE ACHIEVEMENT OF THE GOALS OF PREVENTIVE METER REPLACEMENT PROGRAMS, AS A STRATEGY TO IMPROVE THE RESULTS OF ACTIONS TO COMBAT WATER LOSSES IN SANITATION COMPANIES

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Abstract: The efficiency of micro-metering in a sanitation company is one of the main factors that contribute to reducing water loss rates due to under-metering.
To achieve the efficiency of the meter park, in addition to immediate actions to replace water meters that have defects and are unable to read, it is essential to adopt a preventive replacement program, which seeks to improve measurement quality.
Normally, sanitation companies have already adopted strict criteria for establishing a replacement program, depending on the technical characteristics of the meter, the customer's consumption history and installation time.
However, to fully achieve the defined goals of reducing losses due to under-metering, it is essential to establish rigorous mechanisms for monitoring and controlling water meter application activities, in order to ensure that all water meters defined by the planning methodology are effectively replaced, thus, ensuring the success of the main objective, which is the reduction of apparent losses.
Keywords: Management of Hydrometers, Hydrometry, Sub-Measuring, Losses, Business Intelligence.

INTRODUCTION

The efficiency of micro-metering in a sanitation company is one of the main factors that contribute to reducing water loss rates due to under-metering. To achieve the efficiency of the meter park, in addition to immediate actions to replace water meters that have defects and are unable to read, it is essential to adopt a preventive replacement program, which seeks to improve measurement quality. Normally, sanitation companies have already adopted strict criteria for establishing a replacement program, depending on the technical characteristics of the meter, the customer's consumption history and installation time. However, to fully achieve the defined goals of reducing losses due to under-metering, it is essential to establish rigorous mechanisms for monitoring and controlling water meter application activities, in order to ensure that all water meters defined by the planning methodology are effectively replaced, thus ensuring the success of the main objective, which is the reduction of apparent losses.

WORK OBJECTIVES

The present work aims to present a methodology for controlling the activity of replacing water meters by the Micrometering Quality Improvement Program, based on the individual monitoring of each of the water meters selected by the methodology applied in planning, comparing the information with the records of movement of water meters, in order to ensure that all of them are included in the replacement and avoiding the replacement of water meters that do not have the characteristics established by the program.

METHODOLOGY USED

To ensure the efficiency of the Micromeasurement Quality Improvement Program, data modeling tools are used on a platform that uses Business Intelligence – BI methodologies, which allows establishing the Annual Hydrometer Replacement Planning, based on the criteria adopted, depending on the technical characteristics of the meter, the customer's consumption history and installation time.

The Annual Hydrometer Replacement Planning includes the segmentation of water meters to be included, distributed by regionalization (business unit, regional management, location, route sector and supply zone), characteristics of the meter (age, type, model, metrological class and predicted IDM) and consumer characteristics (monthly consumption, category and industry), when

monthly application schedules are drawn up.

In addition to the segmentation by the characteristics presented above, the system carries out an individual assessment of each of the water meters that make up the mass of selected data, based on the individual estimate of losses due to under-measurement of each water meter and the expectation of recovery of the lost volume with the new one. water meter to be installed and performs a classification based on the recovery capacity of the measured volume, prioritizing the most significant results.

Based on this prioritization, a database is created comprising all the information from each of the selected water meters.

The methodology developed to monitor the established application evaluates the information resulting from the replacements, comparing it with the planning, promoting full compliance with the characteristics of the defined meters.

By making this information available for access by each of the business units, it is possible to take actions for a more assertive application and refined control of this application.

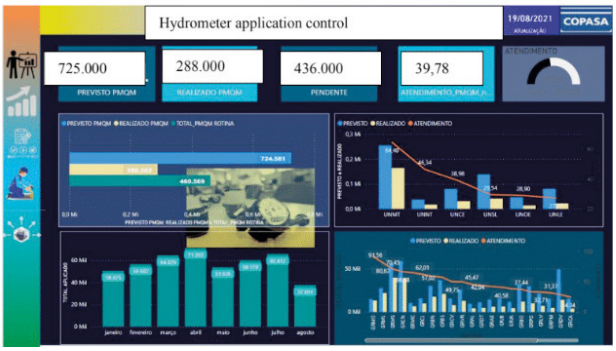
Based on the functionalities of a Business Intelligence – BI platform, this database is automatically fed with information from the operational work order management system, in order to allow a continuous and systematized update of the status of each water meter included in the planning. and meeting established goals.

RESULTS OBTAINED

The use of this management tool allows data to be processed based on statistical analysis and mathematical modeling, which allows for detailed monitoring of compliance with the goals established in water meter replacement planning and allows for better management of field activities in conjunction with operational teams in order to optimize the process.

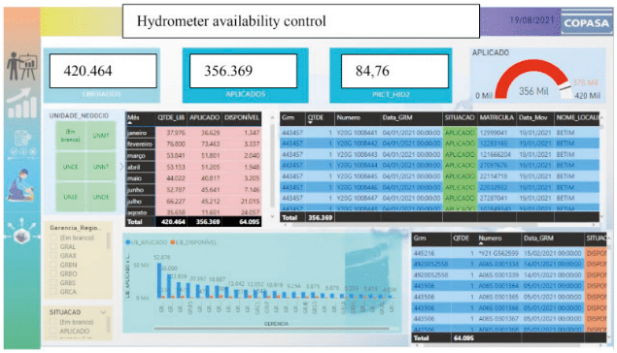
By applying this management methodology, it has been possible to obtain the following results:

- Monitoring of information related to planning compliance, at all levels of the company (Board/Business Unit/Regional Management/Locality);



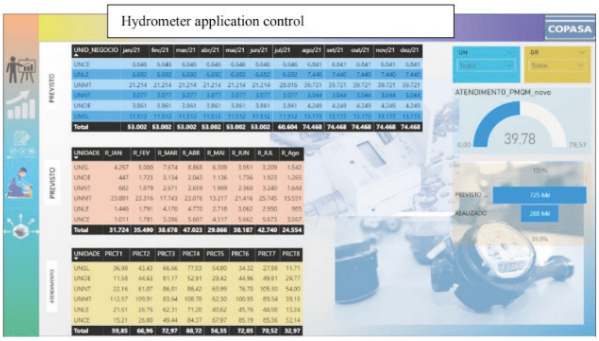
- Monitoring the logistics of making water meters available, comparing with information regarding the replacement of each water meter;

- Monitoring the stock of water meters in all operational units, based on monitoring the water meters made available and not used.

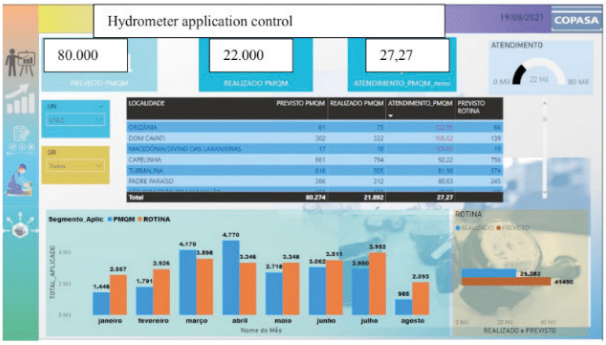


- Daily monitoring of compliance with established goals;

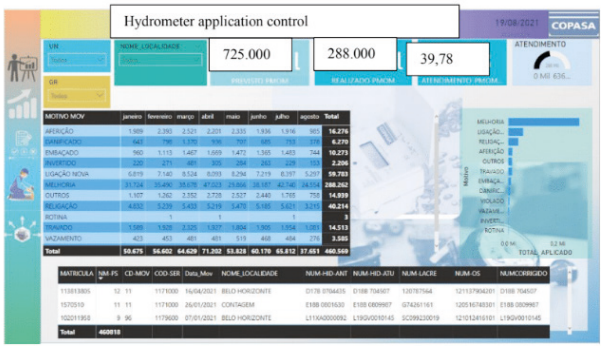
- Assessment of the projection of compliance with monthly and annual goals, based on the historical analysis of the application;



- Monitoring the assertiveness of replacements, comparing the characteristics of the water meters applied, in relation to what was planned;



- Identification of applications not foreseen in planning;



RESULT ANALYSIS

The analysis of the results presented, based on the rigorous monitoring and control mechanisms of water meter application activities, demonstrates the effectiveness of water meter replacement programs, ensuring their correct application depending on the technical characteristics of the meters and the consumption characteristics of customers, with a consequent reduction in apparent losses and an increase in revenue.

CONCLUSIONS/ RECOMMENDATIONS

The implemented methodology demonstrates the importance of correctly using the information that guides water meter application programs by sanitation companies, to optimize the water meter park, in the search for a constant reduction in the company's loss rates.

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