

Under the framework agreement for the supply of 80 structured trolleybuses of 18 meters, deliveries of the 30 vehicles referred to in the first application contract were completed in the first half of 2020. For the second application contract of the next 50 trolleybuses, the administrative procedures for the allocation of finance by the Ministry to the Municipality of Milan are in the process of being concluded. In January 2021, the request for the contract was launched by spring and deliveries from mid-2022. With these investments the average seniority of the ATM trolleybus fleet will fall to about 4 years, thus allowing the disposal of all the old 12 and 18 meter vehicles, particularly dated. It is recalled that the new trams and new trolleybuses will offer customers a better quality of service, in terms of comfort and accessibility. They will be updated to the most modern safety requirements, will be equipped with anti-collision system, will guarantee the mitigation of the noise emitted in the environment, they will be equipped with technology systems to enable customers to network once on board and will save energy with the braking energy recovery system.

In the context of the renewal of the fleet of vehicles and in the perspective of sustainability, the project for the replacement of diesel service cars by rental electric cars, is to be used for the assistance of on-line vehicles, the control of the operation and for the maintenance of the underground and tramway systems, continues. There are currently 97 cars on the road, and a further 10 cars already ordered will be delivered in 2021.

With regard to the operations on the installations, the project to upgrade the M2 underground line, co-financed by the State at 60%, has been highlighted, which has seen ATM take over from the Municipality of Milan for the financing of the remaining quota. In 2020 the second phase began, which concerns the route from Cascina Gobba to the terminus of Cologno Nord, the supply activities in place is foreseen by contract that end in 2021.

Alongside these interventions, ATM is the leader in the revolution of *ticketing* in local public transport. The digital transformation of public transport in Milan is now at a turning point in *the ticketing mode*. In fact, ATM takes another step forward in the contactless payment revolution. After two years of operation in the underground, the contactless payment system has also been installed on the first bus lines 56, 70 and 73 and plans are made to extend this payment method also to the car parks.

For the management of the COVID-19 emergency, investments were made in implementation of the regulatory provisions introduced on the control of the crowding of the vehicles and stations. The amounts spent at 31 December 2020 exceed Euro 650 thousand and further investment is expected in the coming months.

Technological innovation

ATM is constantly engaged in the experimentation and use of new technologies applied to mobility services. In this context, it has developed distinctive skills in creating platforms for integrated mobility information management.

Following the COVID-19 emergency, ATM has found itself operating in a new and complex scenario that has required the introduction of new organizational measures and technological tools suitable to meet new needs such as: ensure interpersonal distance, avoid crowds, increase information to users to reduce inconvenience and, finally, monitor in real time the presence of users both on board the vehicles and at the points of sale. In 2020, a number of projects for technological innovation were launched, such as:

- **New functionalities in the distribution and sale of tickets**, increasingly aimed at digital and easy-to-access solutions with the aim of continuing with the dematerialization of travel titles.

Among these are highlighted: **The subscription recharge from App ATM** or the possibility to purchase the subscriptions of the public transport service through the App ATM Mobile; **The issuance of digital tickets (Smart Tickets) by App “third party”**. These are web services made available to external suppliers, which allow the sale of tickets also from other Apps (currently used by Trenord and AGI) in order to extend the number of users; **POC EMV line 73** consisting of new validators, compatible with the contactless EMV technology, installed on vehicles of line 73. These validators, integrated with the charging engine already active for the metro lines, allow the payment of the ticket with contactless credit card guaranteeing the best travel fare “*best to do*” even to the surface lines.

In addition, the first prototype, called “**Tessy**”, of a new automatic device dedicated to the immediate issue of smartcards in self-service mode has been released. This device, which is installed at the underground stations, it allows you to speed up and optimize the process of issuing cards, thus eliminating the need for users to physically visit an ATM Point and eliminating the waiting times required for the delivery of the support to the home in case of online purchases.

In order to comply with the rule of the “Revival Decree” which provides for the reimbursement of the canteens of March and/or April of the subscriptions of the public transport service, a web application “**compensations subscriptions for lockdown**” where the citizen, upon verification of the actual possession of a subscription valid in march and/or april, he can choose in which period he will again take advantage of this canteens. Once the choice has been made, the customer can top up his subscription by going to the totems, thus activating the” refund “requested.

- **New access reservation systems** – these systems eliminate queues and allow customers to book the time slot in which to present themselves at the points of sale or at the points of access to services, thus avoiding assemblage and guaranteeing social distance. The system as a whole is the result of one of the many technological projects included in the wider context of access reservation systems linked to the mitigation plan of the risks of contagion COVID-19.

From May 26, 2020, the new reservation system has been operational at all ATM Points in Milan and the Province, which can take place both through the new Totem and remotely through the ATM App. The new Totem is a 23” touchscreen and meet ADA standards of usability of the device for users with disabilities. Moreover, through the high-visibility 43-inch monitors installed in all areas, it will be possible, through Digital Signage technology, to expose information to customers, effectively opening an additional information channel for communication to the public.

Since July 16,2020 the same system has been installed at the departure station of the Como/Brunate Funicular allowing customers to book the time slot in which to present themselves at the counter, purchase the ticket and then carry out the journey. In this way it is possible to avoid the customer from queuing up and to guarantee the operation of the funicular in full safety in compliance with the requirements laid down by the regulations.

In an experimental way, through a special App called “*App Reservations Z30*”, a system has been adopted for the booking of the races related to the transport network managed by the subsidiary NET. In addition to network map display, route calculation, ticket purchase, The App allows the booking of some races of the Z301 – Milan – Bergamo line, since the regulation provides for the booking and the obligation to sit during the trip, obviously related by the demonstration of the possession of a travel license, ticket or subscription.

Start of the reservation service for the customer counter responsible for the provision of services related to countering and removal of vehicles at the offices of Viale Zara. The reservation system

has allowed the optimization of the service through the scheduling of appointments, the reduction of waiting times of the customers, the monitoring of the accesses and the services provided. Access to the reservation system can be made through the corporate institutional site, this solution makes it immediately accessible by the population concerned.

- **Monitoring systems** – these systems are designed to ensure interpersonal spacing and thus to allow the adoption of interventions to avoid overcrowding. These include:

Overcrowding Underground Train Forecast – Engineering an algorithm using “Machine Learning” technology to calculate overcrowding forecasts for underground trains. The application, using the historical series of the weighing data collected by the devices on board the train and the data related to the inputs to the stations, provides for the calculation of the crowding forecast for a given standard day and each time slot.

Access counting system to the subway barriers – the entry barriers of the 4 subway lines have been updated to allow the real-time counting of the incoming passengers and to signal the reaching of special attention thresholds with consequent blocking of the accesses to avoid the assemblage in the docks.

Station crowding – the project, aimed at customers using the metro lines, has set the objective of providing the expected crowding status for each time slot/station in order to allow a possible planning of the journey at a time of less crowd. Therefore, a web application has been released, which can also be called from the ATM Mobile app, where the citizen by selecting a subway station displays the crowding status for time and day (weekday, Saturday, holiday).

Train weighing Data Project – this is a project that allows the collection of cross domain data for two purposes: Real time and Analytics. The process allows real-time data access by the endpoints using it (e.g. infomobility systems) which refreshes rates every 10 seconds and historicization toward the business intelligence platform and the various analysis systems on a daily basis (e.g. models of forward-looking load estimates).

NFC Sanitation APP – to monitor the sanitization of both company premises and cars at every shift, the “*NFC Sanitation*” App was created. The App, which is installed on smartphone devices, allows the external ATM personnel, through the tap of NFC Tag placed in proximity of the company premises and on board the cars (tram, metro and bus) to track the sanitizing activities and certify their intervention. In this way an electronic record of the sanitization interventions has been created, which can be available to the ATM managers directly from the smartphone or from their personal computer. All incidents are placed on the data base in AZURE cloud and sent to SAP using Web Service to generate intervention alerts.

As part of the initiatives introduced by the Municipality of Milan during the health emergency COVID-19, ATM has actively collaborated through a series of projects including:

- **Adaptation of the ZTL Area C, Area B and Emergency Stop for Health** – It has been developed on the Area C platform, an application solution able to handle the different needs of the users. In particular, a new section has been created on the MyAreaC portal, called “Emergency Sanitaria”, through which the citizen belonging to specific categories can benefit from facilities. Moreover, given the continuity of the emerging state and on the basis of the various municipal resolutions, the suspension of the ZTL Area B and Area C has been managed on several occasions, as well as the massive extension of the authorization titles for free parking, access in preferential lanes, ZTL and pedestrian areas. It should be recalled that the Municipality of Milan has decided on a series of precautionary measures for specific categories of users to allow: Exemption from the payment of the daily amount provided for access to Area C; The free stop in the parking spaces reserved for residents and in the parking spaces on payment throughout the city; the derogation from the entrance to Area B.
- **APP Sosta Libero** – the implementation concerned: The implementation of a procedure to be provided to municipal operators to allow the authorization to be granted to the “Free sosta Pass”; the adjustment of THE APP to allow the recognition of authorized accounts to which it is granted to stay free of charge in the indicated areas or municipalities; The realization of a monitoring system to be supplied to the Municipality of Milan; the integration with the systems of control of regularity on the road in use to the traffic ascertained (palmari, Eagle-Eye).
The project was born from the request of the Municipality of Milan to dematerialize the free parking mark and make it easier to use. It is addressed to all entities and subjects who, for reasons of public interest or for important reasons connected to their activities and services, can stay free of charge in the territory of Milan using their smartphone. In the context of the digitization of all the rest titles, efforts have been carried out to ensure that the free rest marks are also available in digital form to authorized subjects through personal accounts and names on APP dedicated to the management of the rest.
- **Integration of ADI Alert flows produced by Eagle-Eye and G-Mobile** – the Municipality of Milan is in the process of issuing a new service for citizens: Notification of received sanctions sent directly to the citizen's APP. The service aims at all those who register on the site of the municipality and express their interest to ask for their membership, by indicating the “attenzione” plate. For this service, the collaboration of ATM has been requested to make available the investigation of high infringements from the auxiliaries both with the handhelds, with the Eagle Eye vehicles and with the G-Mobile system available to the local police. Therefore, integrations with all the mentioned control systems have been developed and a single scalable data transmission system has been realized to the Municipality of Milan to send all the information of the investigations, regardless of the operating instruments with which they were issued.

Within the framework of internal business processes, systems and functionalities have been introduced aiming at the dematerialization of documents and the adaptation of payroll programs to the regulatory changes linked to the health emergency, among which:

- **Employee Portal and SC Release** – the project has enabled qualified employees who have had a domain user in MS Office365 and a Dual Factor Authentication (MFA) system, to be able to access an area of the Employee Portal where the coupons of the last twelve months are made available as well as the SC (Single Certification) of the current and previous years. The service can be used both

through business and personal devices provided that the criteria described above are met, which is necessary to guarantee a secure access to the information.

- **SAP Payroll: Application of DL rules care Italy** – it became necessary to apply the D.Lgs. “Cura Italia” which has provided the establishment of different types of new absence forms such as special leave for children aged <12 years (allowance equal to 50% of remuneration); extraordinary leave for children aged 3 12 and 16 years (without allowance); extension of parental leave by law 104.

In addition, adjustments to the SAP Payroll system were important in support of the administration processes in the area of extraordinary cash integration to manage the use of the bilateral Solidarity Fund, an instrument of income support for the TPL, as well as to follow up the payment of the 100 euro bonus provided for by the regulations. All these activities, mostly completed in the most acute phase of the pandemic, have ensured that all ATM employees have received the correct and constant remuneration in accordance with the sector agreements established where necessary.

- **SAP Payroll: Payroll, Parasubordane and Stage** – in January 2020, the project started in May 2019 for the transfer of payroll processing of non-auto-railway contracts (executives, Consultants, Stage) from the GE.PE. DATA MANAGEMENT system to the SAP system was completed. It was an important project that also allowed the review of some process elements that were long handled off-system.