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The role of intelligent fuel system in fuel consumption Management

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Abstract:

intelligent systems are a developed model of intelligent systems that include computer networks, information flow, deployment of suitable hardware and software, sensors and intelligent measurements. The systems are mostly in macro, national and even have been used internationally and have a high ability to improve management and monitor performance. The management of fuel distribution in Iran, in terms of security and strategic sensitivity on the one hand and the urgent and daily needs of the people on the other hand, requires the establishment of a very strong system that, while monitoring the amount of fuel consumption and controlling all fuel supply channels in the country, provides the ability to provide Various management reports for macro-management decisions, and more importantly, to be able to apply government decisions regarding rationing and implementation of various methods of fuel distribution nationwide. For this reason, the country's integrated fuel system has been launched as a desirable and optimal model since 2006. and now, after 16 years since its inception, it is considered as one of the outstanding models of managing national systems in the supply channels of uncontainerized petroleum products. The establishment of the intelligent fuel system system in the Islamic Republic of Iran, in addition to the role of monitoring fuel consumption in the country, has caused a significant reduction in the consumption of petroleum products and has also created valuable management experiences in the field of information and communication technology at the macro level.

Keywords: intelligent systems, fuel distribution management, fuel smart card

Introduction:

In general, the use of new techniques and technologies in the way of managing various processes and operations has caused that, while benefiting from the multiple benefits of this technology, it also presents significant challenges and problems to managers, which is an integral part of this platform. . Therefore, in this article, the aim is to deal with the role of intelligent systems in fuel distribution management, in this regard, firstly, the definitions of intelligent systems and their functions are discussed, and in the next part, there is a review of the fuel distribution literature, and then the role of the intelligent fuel system system and its operational process is discussed in the control of fuel consumption management.

1-Smart systems

Since it is necessary to know and examine intelligent systems, to know several definitions and phenomena, which are the basis for the emergence of such systems, so in this section I will give a brief definition of some of what was said.

1-1 business intelligence

Perhaps the greatest dynamic driver in the expansion of management is modern data storage and the democratization of business intelligence. Since business intelligence is one of the topics discussed by expert business analysts, therefore, for this purpose, it uses high-level software to divide very complex data sets and Facilitating the use of multidimensional analytical applications, business intelligence extends to the point of analyzing possible risks. (2003, Holmes et al.)

In various areas of business, real-time, sudden access to data is often considered an ideal stimulus to understand competitive pressures towards a desired goal or even a described goal. Most applications

and almost all business intelligence tools can perform their tasks with periodic or near-instant data. (Casati et al. 2003)

1-2 decision support systems

Decision support systems are a branch of operations research science that have been created due to quantitative techniques of complex management problems. Decision support systems include the application of research in operations and supporting management decision-making processes. (Safdari et al. 2013)

In particular, computer-based decision support systems are only focused on software that is designed to assist in decision-making, in addition to electronic records, the Internet, joint decision-making processes, and new rules that facilitate decision-making support systems. (Hunt et al. 1998)

Today, in many private companies that are pioneers in the field of information and communication technology, there is an effort to equip and add decision support systems to the structure of the systems.

There is information in the organization and recently the importance and efficiency of such systems are being recognized and realized.

1-3 expert systems

Expert systems (knowledge-based systems) are also called rule-based systems. The analyzes and programs of these systems are based on if-then. The algorithm designed for expert systems can be programmed or designed in the form of shells, in which rules and knowledge must be created and implemented. Expert systems preserve knowledge in the organization, increase productivity, increase the quality of services and products, Performing work and activities in a dangerous work environment, high reliability, knowledge distribution through its quick transfer and cost reduction. (Elahi & Rajabzadeh. 2020)

1-4 intelligent system

Many people have this question in their minds that (What is an intelligent system?) Many are trying to include its concept in one sentence, the reality is that it is not possible to define the intelligent network in one sentence. An intelligent system is not an object that can be given meaning in a sentence. Rather, it is an evolving vision, this vision includes computer networks, information flow, deployment of appropriate hardware and software, sensors and smart measurements, etc. Smart structures are systems that sense stimuli (disturbances) applied from inside or outside and measure and according to an appropriate control algorithm, they give an appropriate response. These structures can be considered in any physical system such as: a building, an airplane or any other system. Research in the field of intelligent structures has faced a lot of growth in the last few years. This research is very extensive due to the very complex confrontation between different sciences and expertise involved in the discussion of intelligent structures (Chandar et al. 2004)

1-1-4 nationwide intelligent systems

As it is evident, the old mechanisms of management information are not responsive to the present complex conditions. Managing affairs in effective and efficient ways requires processing a large amount of various information, which grows at a fast rate and accelerates their analysis. Considering the development of information and the role of information in modern organizations, the role of management information systems has become more important. So that planning, organization, guidance and motivation, coordination and control have no meaning without the help of the staff of this system. (Engineering et al. 2019)

Therefore, due to the dispersion of information in different departments, organizations, companies and factories and the need for quick and up-to-date access to information, the existence of a mechanized information system is necessary, so different parts of societies in the field of services and activities Relying on the ability of information technology and information system to use the system Electronic devices are adapted to the field of activity, which are mentioned below in a few cases of this group.

2-1-4 Intelligent fuel system

the rational use of energy resources and planning in the fields of energy consumption optimization is of particular importance due to the heavy financial burden of government subsidies in this sector. The excessive consumption of energy carriers in the country is not a secret to anyone. The low price of energy carriers and factors such as the lack of use of modern technology in automobile production factories have caused the per capita energy consumption of the country compared to other developed and developing countries. be very high, which in addition to destroying the environment and slowing down sustainable development, imposes a huge cost on the national economy, and considering that the country's energy consumption is mainly from hydrocarbon sources, so that 98.5% of the primary consumption of hydrocarbon energy is paid The main energy carriers in our country include: gasoline, kerosene, gas oil, heating oil, natural gas, and liquefied gas, which are consumed in various sectors of the country's economy, and in the country's transportation sector, perhaps, due to the massive import of gasoline, it is the most controversial part of product consumption. oil and has become the most important issue of the country's energy. Fuel smuggling and the excessive increase in gasoline consumption and, as a result, the increase in the amount of imports and the decrease in energy efficiency in the country, have been

one of the most important challenges facing governments in the past decade, and despite the presentation of various plans and bills in the budget seasons to solve the problem of fuel consumption management, There was no solution, until the 7th parliament in the year's budget¹³⁸³ obliged the government to create an intelligent system for gasoline distribution. Accordingly, a working group was created in the government and in parallel with that, a group in the Ministry of Petroleum and especially in the National Iranian Oil Products Distribution Company designed an efficient and powerful intelligent information system. In order to control consumption based on the use of cars, he put it on the agenda in order to prevent the negative economic and social consequences of consumption control, to create a kind of culture and consumption planning among consumers. Based on this, the use of information technology in this project was recognized as very important and attention was paid to the use of smart cards in order to provide suitable services to citizens in this field. The history of the first type of memory cards in the Iranian market dates back to the early 70s returns, however, the use of these cards in Iran, compared to developing countries, had not spread as much as expected until the last decade; In such an atmosphere, the implementation of the smart fuel card project with the statistical coverage of about 15 million people of the population began in the geographical area of the whole country and marked a new chapter in the history of information and communication technology in Iran and in the field of promoting the use of smart cards. That this plan was originally not motivated to take a step towards promoting the use of smart cards, but as an inevitable solution to solve the biggest problem of the Iranian economy in recent decades, that is, solving the problem of fuel subsidies and optimizing the consumption of petroleum products in Iran, hence, In addition to the mentioned issues, the

implementation of this plan has been a big step in the emergence of electronic government and the modernization of economic relations. The smart fuel system was initially launched as an electronic fuel coupon and was able to successfully implement the first phase of the targeted law show subsidies; so that it can be safely said that if it were not for this system, the fuel needed by the transportation sector would have faced serious problems because this system was the only system that could deliver oil, gas and gasoline throughout the country at a certain time. To convert a single rate to a three rate system, this system was able to implement the law of targeting subsidies in about 3 thousand points of pipeline supply of petroleum products and 30 thousand pumps. (Moradi 1392).

Currently, the number of 6500 oil product pipeline supply points including: (gasoline, oil gas, natural gas, CNG) under the supervision of Iran's National Oil Products Distribution Company in the country as fuel supply pipelines plays an important role in the transportation network. They are serving customers whose economic justification is a support for continuing their activities.

Based on this, the application of information technology was recognized as very important in this project, and the use of smart cards in order to provide suitable services to the citizens was given attention in this context, and all the equipment to set up the intelligent fuel system in dual-purpose stations (gasoline, oil gas) The National Petroleum Products Distribution Company of Iran, with the support of experts, launched the intelligent fuel system system, and similar to this system has not been implemented anywhere in the world, and only in China, a similar system was built to collect taxes from fuel consumers is that the fuel tax is deducted online from the person's account.

2-2-4 Objectives of the intelligent fuel system

Regarding the launch of the intelligent fuel system, the governments have usually sought the following goals in this direction, so that they can be effective in achieving the macroeconomic goals in their period.

1-Collecting accurate and fast information from the operation of fuel delivery to the transportation department of petroleum products and how it is distributed in the supply channels of the petroleum products without containers.

2- Preventing the smuggling of gasoline and oil gas abroad by controlling the amount of fuel delivered to the country's transportation sector.

3-Electronic sales and reducing the amount of cash in circulation at the supply channels of containerized petroleum products

4-Increasing the security factor of the supply channels by the credit sales system through electronic card reader devices located in the refueling platforms

5-Preventing the early erosion of banknotes, which imposes a heavy cost on the country's economy.

6- Creation of a necessary platform for decisions based on the economic policies of the government by the National Iranian Oil Products Distribution Company in the field of fuel distribution through the information center and telecommunications systems in a centralized manner to the range of card readers installed on the refueling dispensers at the same time in the country.

7- Targeting the subsidy for carriers of uncontrollable petroleum products

8- Saving and preventing excessive consumption and creating a suitable pattern to optimize fuel consumption

The intelligent fuel system system, which is currently installed in the supply channels of uncontainerized petroleum products and is in constant operation, and is available to the owners and operators of the stations, in the matter of distributing petroleum products to the people, is designed based on the flowchart below.

Structure First

1-Initial configuration of the position

2- Technical reports

3- Inquiring about the location settings

4- Management of product reservoirs

5- Position settlement

6-shift management

7-Management of repairs and warnings

8-Supplementary reports

9-Regional reports

1-Initial configuration of the position

- 1/1 Basic location information
- 1/2 Information related to all types of products
- 1/3 Information about all types of products
- 1/4 Tariff table information
- 1/5 Pump information
- 1/6 Blacklist information
- 1/7 White list information
- 1/8 Repository information
- 1/9 Tank volume information
- 1/10 Nozzle information

2- Technical reports

- 1/2-operator management
 - ▲ Registration of operator information
 - ▲ Registration of user rights
 - ▲ Correcting operators' passwords
- 2/2-Inquiry about the transferred data
 - ▲ Whitelist history query
 - ▲ Query report of product types
 - ▲ Query the history of tariff tables
 - ▲ Query the version of the sent data

2/3-Transaction management

- Query and print transaction
- Inquiry of recorded events of transaction alerts

4/2- Data transfer management

- Inquiry of the recorded events of the data received by the poller such as the office

3- Inquiring about the location settings

3/1-Location information inquiry

3/2- Repository information query

3/3- Reservoir volumetric information query

3/4- Query nozzle information

3/5- Pump information query

4- Management of product reservoirs

4/1-Product storage management

- Inventory inventory inquiry
- Inventory inquiry of various products
- Reconciliation of inventory of tanks
- Inquiring records of inventory matching of tanks

4/2- Product import and export management

- Registration of incoming product information
- Registration of output product information

⬆ Report of withdrawals

⬆ Receipts report

4/3- Product type testing management

⬆ Record quantitative test data

⬆ Record quality test information from the tank

⬆ Record quality test information of the pump

⬆ Query quantitative test information

⬆ Inquiry of quality test information from the reservoir

⬆ Inquiry of quality test information of the pum

5- Position settlement

⬆ Pump financial report

⬆ Report some pump

⬆ Report of product types

⬆ Querying the amount of fuel difference in the pump

⬆ Balance report

⬆ Road and deficit report

6-shift management

6/1- The start and end date of the shift through the station computer

6/2- shift settlement

6/3- What is the settlement status with the pump?

6/4- shift settlement inquiry

6/5-Inquiry about the difference in refueling in the shift

7-Management of repairs and warnings

7/1-Recording repair information

7/2- Repair report inquiry

7/3- Inquiring about emergency cases at the station

8-Supplementary reports

8/1-Sales report based on settlement

➤ Daily settlement report

➤ Decade report

➤ Shift report

8/2-Sales report based on date

➤ Decade report

➤ Hourly sales report

➤ Sales report

➤ General information

8/3control report

➤ View refueling of unauthorized cards

➤ Selling more than..... liters

➤ Refueling more than three times a day

➤ Status of transactions received from the terminal

➤ Status of transactions sent to the center

- ▲ Refueling blacklist cards
- ▲ Days without settlement operations

9-Regional reports

9/1- cards allowed to refuel

- ▲ Registration and viewing of cards authorized for refueling
- ▲ Change password of area users
- ▲ Removal of old inactive authorized card

9/2- Blacklist reports

- ▲ Request blacklist information
- ▲ Blacklist history query
- ▲ Deleted problematic transactions
- ▲ The total number of problematic transactions removed

The operation process of the intelligent fuel system system

1-User/operator of the intelligent fuel system

2 /1- User ddefinition:

The user of the system is a trusted person who is assigned by the owner of the location and responsible for handling the affairs, who obviously has all the necessary documents, records, passwords, location stamps and keys at their disposal.

The hours of presence and absence of the user are according to the contract between him and the employer, but the mentioned person is obliged to carry out the actions mentioned in the duties of the user of the intelligent fuel station system in this instruction and to be accurate and diligent in its implementation. In the absence of the system user

and the fuel station manager, one of the As a designated user, the senior plumber should supervise all the affairs of the site, including the health of the system and perform repairs, and be responsible for responding to the clients.

Note: The absence of the user or her substitute in the fuel station is not a reason to remove the responsibility and the owner of the station is responsible for all cases based on the location

2-2 Description of operational duties of the user (The Explanation Operational Duty)

- ▲ Full familiarity with the principles of HSE safety in oil facilities and their compliance in the work environment**
- ▲ Regular and daily registration of the details of fuel remittances received in the system according to the hours of receiving the cargo and the sales office (process no. 1)**
- ▲ Registering test reports (quantitative, qualitative) of fuel products in the system (process number 2)**
- ▲ Continuous and daily closing of the position account at the appropriate dip time even on holiday**
- ▲ Closing the fuel station account at the end of the first, second, and third decades (every month at midnight).**
- ▲ Close the morning shift preferably (8 am) and activate the evening shift (in positions whose shift schedule is three shifts morning, evening and night). (Process No. 3)**
- ▲ Preparation of daily systematic reports according to the instructions issued by the National Oil Products Distribution Company and filing them regularly in the station office for one year and analyzing the results of the station activity in the last 24 hours and investigating the causes and factors leading to unjustified discrepancies compared to**

the manual system with the coordination of district officials. (Process No. 4)

▲ Completing the fuel station mechanical and electronic gauge number discrepancy form daily (Form 1 No. 09FM1502) and taking necessary measures to resolve in case of unauthorized discrepancy and reporting to the relevant authorities and in case of repeated discrepancy, stopping sales until the problem is resolved.

▲ Cooperation and presence during the activities of the support groups at the fuel station or sales in order to ensure the correctness of the system and prepare the relevant documents

▲ Registration of all important system events and events, including the following in the system and the book that is considered for this purpose in the fuel station

◀ Problems encountered in the system and measures taken to solve them with time and date

◀ Repairs or changes made by the support group at the place of supply with time and date

◀ Inspections and controls carried out by company officials through the site

2-3 Description of the user's supervisory duties: The Explanation Administer Duty)

◀ Careful monitoring of repairs and accuracy in replacement of parts and confirmation of health and safety in the reports of the support teams and recording the description of the operation and the result of the work in a special office and in the GS system.

◀Supervising quantitative and qualitative tests, decontamination processes, drawing water from reservoirs and feeding information to the system according to the notified operational methods.

◀ Continuous control of the system in terms of solving user problems within the limits of the defined powers and timely notification of technical problems created in the station system to the Call Center of the support service and receiving the tracking code, in case the system support does not refer or solve the problem within 24 hours, the cases Notify the smart fuel system unit of the region or the system manager in the region via fax and follow up on its resolution until the result is achieved, and if the problem leads to the closure of the station, immediately inform the district guard through the relevant phone during office hours. (Form No. 2)

◀ UPS control and testing of intelligent station fuel system equipment

◀ Control and check list of equipment seals including terminal, rack (if the rack has a seal), flags and totalizers of pumps at least once a day and report any tampering and tampering with them and record in the offices. (Form No. 3)

◀ Monitoring the correct performance of replaced seals at each stage of repairs and delivery of cracked seals, if there are any special cases and contrary to the instructions issued by the level, report to the district (in charge of the smart system) in a letter.

◀ The data center connection control with the location should be controlled regularly through the dashboard software and the last time of information transfer to the data center should not be more than 2 hours.

◀ **Overseeing the continuous control of the process of selling petroleum products from the location of free cards at the fuel station at the end of each day.**

◀ **Accurate and continuous monitoring and control of CCTV footage and checking the performance of pump operators and the equipment room of the intelligent fuel system.**

◀ **Control the compliance of the IPC and PT clock of the system with the official time of the country continuously (a difference of 3 minutes more or less is acceptable) and if there is any unauthorized discrepancy, contact the supporting company of the smart system and correct it. (Form No. 4)**

◀ **Monitoring of the fuel cards left at the station, which must be filled in the relevant form at the same time the fuel card is found and exposed to the clients, and in case the clients are not present to receive the fuel card through the relevant form along with the decade reports to the delivery area and a copy of It (the list of cards left to the area) should be installed in the place of the notice board of the place for the visitors. (Form No. 5)**

◀ **Earth control connected to IP and electrical sockets of the smart system operator's office**

3- Operational processes of the intelligent fuel system operator

Process 1: How to register fuel remittances

Process 2: How to record product tests fuel

Process 3: Settlement operation

Process 4: preparation of reports

Process 1: How to register fuel remittances

After the correct unloading of the fuel sent by the oil company in the tanks of the fuel station during the last 24 hours, the above bill of lading should be registered in the smart system by the relevant operator according to the following steps.

- 1- First, click the Login button to open the main page.
- 2- Registration of the fuel bill of lading is done in the menu (Management of product tanks ➤ Management of entry and exit of products ➤ Registration of information of incoming products)
- 3- After registering the relevant bill of lading, the report of the above bills of lading can be viewed in (product warehouse management ➤ product entry and exit management ➤ receipt report)
- 4- The time of registering the bill of lading in the intelligent fuel system increases according to the type of fuel of the registered bill of lading, which can be seen in (Management of product tanks ➤ reconciliation of tank inventory).

◀ **Note: Wrong registration of product type and quantity**

➤ If the operator notices that the type or quantity of the bill of lading has been wrongly registered in the system before the settlement of the account, he should record the product as leaving the warehouse in the output product registration section and register the bill of lading again with the correct type and quantity of the product. Write the description of the action taken to the relevant district.

➤ If the operator finds out after the settlement that the type or amount of the bill of lading product is wrongly registered in the system, unfortunately, no corrections are possible in the system and the operator is required to prepare the relevant meeting minutes and file

them in the location. Send a copy of it along with the report of receipts and output received from the station system to your relevant area for information.

➤ **Note:** In order to distinguish the amended registration of the bill of lading from its initial registration in the system, when re-registering the bill of lading with the correct information, the word {A} must be added at the end of the bill of lading number to mean correction.

Process 2: How to record product tests fuel

In case of conducting any test (quantitative and qualitative), the return from the test and the exit of the contaminated product, as well as the entry of the exposed product into the fuel station, should be done by the operator according to the following steps.

1 Quantitative tests or the amount of fuel nozzles performed by the relevant experts according to the type of product (gasoline/petroleum gas) in the relevant form should be specified according to the nozzles and the amount of literage.

2- Before settling the position, the relevant tests must be recorded in the system

3- First, click the Login button to open the main page.

4-Registration of tests of a certain amount of fuel is done in the menu (Management of product tanks ➤ Management of entry and exit of products ➤ Registration of information of incoming products).

❁ **Note:** Quantitative tests should be recorded in the menu (input product information registration) and in the output section, because the tested amount is automatically calculated in the free-standing sales column by the system and is hidden in the daily sales balance form,

there is no need to record a test amount in There is no menu (recording information of output products).

Process 3: Settlement operation

- All locations are required to settle the location account in daily/decade time frame (first*second*third) and monthly.
- The daily settlement of the position should be done regularly at the right time and at a fixed time interval.
- The settlement of the first, second, third, and third decades of the month must be done by 12 midnight on the relevant day.

✿ Necessary and important points before performing the operational settlement of the location system

- 1- Registration of all fuel bills
- 2- Record the return values from the test
- 3- At the time of closing the pump shift, in order to ensure the complete transfer of the transactions stored in the PT to the station system, the operator can by applying the code 8999 on the terminal keyboard (the MASTER side) in any situation by viewing the five numerical fields that can be seen individually, number 11 of the two-way communication between the card reader and Make sure the server
- 4- When the operator feeds the real balance amount of the tank after dipping in the system to close the account and clicks the matching option, he should pay attention to the fact that if the calculated balance in the system changes at any moment, it means that the relevant transactions PTs have not been fully transferred to IPC or it is being transferred. Therefore, until the amount of the calculation balance has not reached a stable condition, the approval of the separate account settlement shall be avoided.

- 5- When the hard drive of the intelligent system of the station is damaged after restarting it, the operator is required to perform an invalid account settlement. In these cases, when using the end of shift menu, the mechanical counter value of the nozzles is not entered on the system, so the operator is forced to manually enter zero for the counter. The mechanic of the nozzles should take action, or before finishing the shift, manually finish the shift of all nozzles through the main menu of the card reader - shift management - end of shift by entering the code 1597.**
- 6- Observing the disconnection of all nozzles at the same time when there are no intentional factors at work indicates the failure of the hard system of the intelligent system of the station, IPC or switch, therefore, in addition to informing the relevant area and the person in charge of the system, as soon as possible The call center of the support contractor should be reflected to solve the problem.**
- 7- In cases where the fuel station has not settled the account through the smart system for a long time, when the operator does this, the large amount of information causes the settlement operation to be prolonged, and the operator, with the image of a problem in the settlement, acts on RESET and the activity other unnecessary items in the system and the problem becomes more complicated. Therefore, such cases should be given enough time to the system to complete the settlement operation through the system.**
- 8- When the fuel station with one product is connected to the system and is active, and the station management intends to add another product to the system (for example, gasoline is connected to the system and we want to add oil and gas to the system as well) first, the station account with the status The current is completely closed and settled through the system.**

9- In cases where the supply of a product is removed from the activities of a station, after restarting the station and in the first settlement, it is mandatory that the inventory of the products' tanks is removed and the system is set to zero

10-In order to ensure the correctness of the system communication of the intelligent system, and in order to control the disconnection of the pusher nozzle with the IPC, the user must go back to the station dashboard software (GS) from the technical reports menu | select the pump status report and set the time interval for pressing the inquiry button to view the pump communication status. start of shift, end of shift and disconnection)

11-It should be noted that if the application observes the situation of disconnection, especially the disconnection of all nozzles in a certain hour, it should follow the steps to find out the cause of the disconnection until the result is achieved.

12-If the letter D is seen on the PT display, or during any operation of the settlement process, the user with the smart system has a system problem or System Subset in the internal set of the smart fuel system, the existing network must be reviewed and the necessary tests must be carried out. From the station dashboard software (GS) from the status menu |troubleshooting| options (Fluck test, PT communication status, IPC, phone line of the station, RPM version can be controlled and observed and the defect can be fixed.

13-It is recommended to avoid turning off the pumps during the day and night (turning off the pump will cause the card reader to fail and the error message of the system will be manipulated).

14-At the time of entering the DEEP of the fuel stock of the tanks after closing the shift in the product tank management menu | Managing the storage of products | matching the tank stock, you must

DEEP the tank stock and the LevelGauge monitor (tank level gauge) and the fuel tank stock in the tank stock matching menu of the intelligent system the same with each other and the discrepancy is minimal and the operator must enter the correct balance, otherwise he will witness an unusual balance and deficit in the smart system, and if after the settlement operation it is found in the balance reports that there is an abnormal deficit or balance, he must correspond with the Preparation of sales balance reports should be announced to the district on the same day.

Operational settlement procedures

- 1- First, the station must be closed.**
- 2- All nozzles must be on.**
- 3- First, click the Login button to open the main page.**
- 4- All bills of lading and tests are recorded.**
- 5- Shift management ➤ Confirm the beginning and end of the shift through the station computer ➤ (all pumps must be green) ➤ Click on the table then at the bottom of the screen ➤ mark the option (select all) | then select the option (end of shift) | click The exit icon and with this action the pumps shift through GS in the shift management section in the graphics section is off and the color of all the pumps will be red.**
- 6- The previous shift is closed, the mechanical counter of each nozzle is inserted in the system.**
- 7- Registration of code 8999 by gasoline and oil gas operators and seeing the number 11 on the MASTER page in order to ensure the complete transfer of transactions stored in PT to the server of the station's intelligent system.**
- 8- Register the number of totalizers in the pumps by the relevant operator in a special book (totalizer number of the station fuel nozzles) legibly and accurately**

- 9- Accurate manual DEEP of fuel tanks of petroleum products by the station operator and recording the inventory of LevelGauge tanks and recording the inventory of smart system tanks in a special office (Deep registration table of tanks, LevelGauge, intelligent system) of the station**
- 10- Accurate registration of DEEP of tanks according to (manual DEEP inventory, LevelGauge and inventory of fuel tanks in the inventory adjustment menu of the intelligent system system) in the product tanks management menu ➤ adjustment of inventory of tanks and storage in the intelligent system system.**
- 11- Then in the menu (position settlement ➤ daily settlement reports ➤ daily settlement) and click the (create) button, in this case the system will show the shift number of the previous day which is being settled, and after seeing the correct shift number, click the confirmation button About 15 seconds later, you should see the message (Daily settlement has been successfully completed!) on the screen, you must click on the icon (Daily settlement has been successfully completed!) again, which will complete the daily settlement.**
- 12- Opening a new shift through the GS program: Shift management menu ➤ Confirming the start and end of the shift through the station computer ➤ From the table in the adjacent column, mark the operator code 0001 for all pumps one by one ➤ Mark the option (select all) ➤ Now We select the option (start shift) ➤ click the exit button. Open the new shift and go to the graphic section and all the pumps should be green, which is a sign that they are active and on.**

Process 4: preparation of reports

4/1- Daily reports

4/2- Reports of the decade (first*second*third)

4/3- Monthly reports

4/1- Daily reports

1- Balance report

2- Quantitative and financial report of the pump

2/1- Discrepancy of mechanical and electronic numbering

2/2- The daily sales report of the station dashboard software

2/3-Daily hourly sales report of the station dashboard software

2/4- Report on the repairs of the intelligent fuel system and the installation of seals

1- Receiving and maintaining the balance report daily, decade, monthly based on the following format:

1/1- First, click the Login button to open the main page.

1/2- Click the position settlement menu

1/3- Click the daily settlement reports menu

1/4- Click the balance report

1/5- Select the date and type of product and get a printout

1/6- Filing of balance reports on a daily basis and separately by type of product in zone number 1 or red with the label of balance reports

2- Obtaining and reporting the quantity-financial system of the pump on a daily basis according to the following format:

2/1- First, click the Login button to open the main page.

2/2- Click the position settlement menu

2/3- Click the periodic settlement reports menu

2/4- Financial reports and some pump

2/5- Select the date and type of product and get a printout

2/6- Filing of financial and quantitative reports on a daily basis and separately by product type in the corresponding zone of the financial and quantitative reports label to calculate the daily sales of the product.

3- Completing the mechanical and electronic gauge number discrepancy form (form number 09FM1502)

In order to complete the relevant form, first, the inquiry report on the amount of fuel difference in the pump must be obtained from the smart system based on the following steps.

3/1- First, click the Login button to open the main page.

3/2- Click the position settlement menu

3/3- Click the periodic settlement reports menu

3/4- Click on the menu to inquire about the amount of difference in refueling at the pump.

3/5- Select the date and type of product and get a printout

How to register mechanical and electronic number discrepancy form

After receiving the relevant form from the smart system, you should enter the fuel supply ducts in form No. 09FM1502 according to the type of product, the mechanical number of the first time and the time that corresponds to the previous shift and the mechanical number of the last time that is the new shift from the special book for registering the numbers of totalizers that are settled before the operation. The account of the position at the time of closing the shift is written by the relevant operator in the relevant column to record the sales

according to the mechanical counter (M) and in the sales column according to the electronic counter (E) from the inquiry report, the amount of fuel difference in the smart system pump is recorded and the allowed difference and Unauthorized sale of each nozzle should be specified.

☛ Note: for every 10,000 liters of product sales, the amount of 5 liters of permitted discrepancy (0.05%) and the difference of more than 5 liters is considered as unauthorized discrepancy, and the operator is obliged to follow up and resolve the relevant discrepancy in the shortest possible time and reflect to the relevant officials and in case of repeated discrepancies Stop selling until the relevant problem is resolved.

4-Daily sales report of the station dashboard software

4/1- Click User Management

4/2- Click area reports

4/3- daily sales

4/4- Select the date and get a print

5-Daily hourly sales report of station dashboard software

5/1- Click User Management

5/2- Click for detailed reports

5/3- Hourly sales click

5/4- Enter the start and end time of the shift and the date accurately and get a printout

☛ First point: The total amount of sales in the hourly sales report is equal to the sum of the amounts entered in the total sales with subsidized and free card columns of the same day's balance report

✿The second point: daily calculation of the deposit of funds for the difference between free and subsidized sales in the supply channels

According to the instructions issued by the National Oil Products Distribution Company, after obtaining the daily hourly sales report of each shift from the GS station dashboard software (detailed reports | hourly sales), divide the gasoline sales amount at the rate of 30,000 Rials by 2 and transfer the above amount to the relevant account of the National Oil Products Distribution Company Oil should be paid in cash and in case of electronic deposit, it should be registered in the bank option (fuel purchase system at www.sell.niopdc.ir) so that the financial officer of the relevant district will be informed about the deposit of the free difference of the government gasoline fuel of the station and the failure to make the deposit on time. The above amount has unpleasant consequences for the position management.

6- Repair report of intelligent fuel system

In case of repairs by the Call Center, the support contractor must first fill in the system repairs form Smart fuel (repair form) is registered and then registered in the smart system by the operator according to the following steps.

6/1- First, click the Login button to open the main page.

6/2- Click Manage Repairs and Alerts

6/3- Click to register repair information

✿Note: After registering the repairs based on the above items, you can view the registered items from the repair report inquiry menu.

6/1- Jaw and installation of seals

In case of repairs of jaw seals and installed, after registering in the specifications book of jaw seals and installed in the supply ducts by the

Call Center of the support contractor and registering in the pump seal checklist form and filing of technical reports and repairs in Zonen No. 2 or green With the label of technical report and repairs

4/2- decade reports (first*second*third)

- 1- Comparison form report of manual balance and fuel station system of the first*second*third decade (preparation by station accounting)**
- 2- The balance report of the smart fuel system according to the date of the first decade (1 month to 11 months), the second decade (11 months to 21 months), the third decade (21 months to 1 month after)**
- 3- Report form No. 09FM1502, the difference between mechanical and electronic gauge numbers on the last day of each decade**
- 4- Daily report of the deposit of funds for the difference of free and subsidized sales in fuel supply channels**
- 5- GS Dashboard Software Decade Sales Report (User Management➤Area Reports➤Decade Sales)**
- 6- GS dashboard software hourly sales report (user management ➤ detailed reports ➤ hourly sales**
First decade: registration (00:00:00 on the 1st of every month until 23:59:59 on the 10th of every month) Second decade: Registration (00:00:00 on the 11th of every month until 23:59:59 on the 20th of every month) The third decade: Registration (00:00:00 on the 21st of every month to 23:59:59 on the 31st of every month)
- 7- Report of the remaining fuel cards based on the relevant form**

3/4- Monthly reports

- 1-The report of the comparison form of the manual monthly balance and the fuel station system (prepared by station accounting)**

- 1- The balance report of the intelligent fuel system by date (1 month from the current month to 1 month from the next)**
- 2- Hourly sales report of the station dashboard software (user management ➤ detailed reports ➤ hourly sales)**
Monthly: Registration (00:00:00 on the 1st of every month until 23:59:59 on the 31st of every month)

3- Application forms

Form No. 1: Report on the difference between electronic and mechanical counters 09FM1502

Form No. 2: Follow-up form for repairs of the smart station system

Form No. 3: daily check list of the station seal

Form No. 4: Form for delivery and conversion of residual fuel smart cards

Form No. 5: daily checklist of the position

Conclusion:

According to the above content, the implementation of the intelligent fuel system system implementation plan as one of the scientific, technical and management achievements in the direction of fuel distribution management in the Islamic Republic of Iran is looking for results in the direction of the future perspective regarding the control and management of fuel consumption as follows. Is:

1- Foreign exchange savings: from the beginning of Simiyebandi to the end of 1400, about four billion dollars have been made in the country's foreign currency budget due to the reduction of gasoline imports.

- 2- Organization of transportation: separation of gasoline-burning cars and private cars that are active in public transportation (personal passenger and agency)**
- 3- Prevention of gasoline smuggling: With the launch of the intelligent fuel system, gasoline smuggling abroad has been significantly reduced**
- 4-Project Management: Carrying out the project on a large scale has brought unique management experience to the country.**
- 4- Database: creating a database of active cars in the country and identifying stolen cars**
- 5- Personalization: personalization of fuel cards due to the specific volume and architecture required, causes the collection of information for other health and national card plans, etc.**
- 6- Flexibility: the possibility of applying any policy in order to supply uncontrollable petroleum products based on the decisions of the country's economy in all regions of Iran simultaneously and equally.**
- 7- Security: Creating an information security management system with the approach of reaching the optimal level of security based on the ISMS standard is one of the other achievements of the**
- 8- intelligent fuel system system project.**

Offers:

- 1- Examining the challenges in the intelligent fuel system until reaching complete and systematic maturity**
- 2- Information security in the intelligent fuel system for hacking by cyber agents**
- 3- Solving system problems that sometimes arise during operation based on unexpected factors.**
- 4- Supplying parts and accessories available by fundamental and expert companies**

- 5- Using experienced experts and professionals to support the intelligent fuel system in the event of information disturbances**

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Good luck