

TITLE OF THE INVENTION

GAS STATION SYSTEM

Field of the Invention

[0001.] The present invention relates to a system in a gas station for feeding fuel to vehicles and the like.

Description of the Related Art

[0002.] In order to maintain fair commercial transactions, fueling devices mounted in gas stations are required to be subject to flow rate verifications every seven years, and instrumental errors of flowmeters are required to be less or equal to $\pm 0.5\%$. In this regard, the present applicant has provided a fueling device for surely preventing an instrumental error from being falsified as described in Japanese patent publication No. 2014-43244 gazette. In recent years, information on the gas stations are freely sent and received as data via servers and networks, so that it becomes possible to collect a large amount of data (big data). Then, it is desired that the big data is timely analyzed to create new value and the value is made useable to correspond to social environment. From this point of view also, it is desired that the data on the gas stations are surely managed to be usable when required.

[0003.] QR codes (registered trademark) attached on conventional fueling devices and devices therein manage device information thereof. However, the device information managed by the QR codes are data at shipment of the devices (at the first verification) such as model numbers and serial numbers, and do not include data after operation of the devices. Particularly in the fueling device, updating expiration date after reverification and managing history of maintenance including parts replacement take a long time for a data collation, so that verification, inspection, maintenance and the like require much labor and time. The QR code memorizing data at shipment is not useful for the update and the management. Accordingly, it is difficult that the data on the gas stations are surely managed to be usable when required.

[0004.] The content of Japanese patent publication No. 2014-43244 gazette is incorporated herein by reference in their entirety.

SUMMARY OF THE INVENTION

Problems to be Solved by the Invention

[0005.] The present invention has been proposed in consideration of the above problems in the prior art, and the object thereof is to provide a gas station system capable of easily grasping update data and history of maintenance including parts replacement for devices, and reducing labor and time required for the maintenance.

Means of Solving the Problems

[0006.] In order to attain the object described above, a gas station system 200 according to the present invention is characterized by including a fueling device 100 having a flowmeter mounted on a fueling pipe, a fueling hose whose one end is connected to the fueling pipe and another end has a fueling nozzle, and a display 25 for displaying fueling amount obtained by multiplying a measured value from the flowmeter by an instrumental error adjusting value memorized in instrumental error adjusting means (a part of a fuel controller (18), including instrumental error adjusting switch (23)); and a management server (40) for

memorizing data on the fueling device (100), wherein the fueling device (100) includes a detected part (10) for accessing the data memorized in the management server (40).

[0007.] In the present invention, it is preferable that a URL of a web site (first web site) for accessing the data memorized in the management server (40) is memorized in the detected part (10).

[0008.] In the present invention, the data memorized in the management server (40) may be device information such as model numbers and serial numbers of devices on the fueling device (100).

[0009.] In the present invention, the data memorized in the management server (40) can be maintenance information such as updated expiration date and history of maintenance including parts replacement on the fueling device (100).

[0010.] In the present invention, it is preferable that the data memorized in the management server (40) is rewritten with approved data inputted from instrumental error adjusting means.

[0011.] In addition, in the present invention, it is preferable that the fueling device (100) includes a second detected part (26), and a URL of a second web site having a function of accessing a part of the data, such as an expiration date until the next verification only, memorized in the management server (40) is memorized in the second detected part (26).

[0012.] When the present invention is carried out, it is preferable that an instrumental error adjusting switch (23) for adjusting instrumental error of the flowmeter is covered with a cap (7), and the cap(7) is sealed with resin. Then, it is preferable that the sealed part includes an IC chip (1-1) and an antenna (2-1), and the antenna (2-1) exists throughout entire region of the sealed region. Or, it is preferable that the sealed part including an IC chip (1-2) and an antenna (2-2) and another sealed part can be divided with each other. Or, a sealed IC chip (1-3) is preferably connected to the cap (7) through a flexible member (3-3) such as a wire.

Effects of the Invention

[0013.] With the gas station system (200) with the above construction according to the present invention, data on the fueling device (100) such as device information and maintenance information are electronically managed in the management server 40, so that not only data at shipment such as model numbers and serial numbers but also updated expiration date by reverification, history of maintenance including parts replacement and the like are electronically managed thereby. Therefore, when verification, inspection and maintenance or the like is performed, data on update and history can be immediately approved through the detected part (10) of the fueling device (100), which can greatly reduce labor and time required for the maintenance. Further, data on the fueling devices (100) is memorized in the management server (40), so that the data can be easily updated.

[0014.] In the present invention, when a URL of a web site (the first web site) with a function of accessing data on the fueling device 100 memorized in the management server (40) is memorized in the detected part (10), reading the data memorized in the detected part (10) can correctly specify a device that maintenance should be performed among the fueling devices (100) in early stage, and can check the update and history. Here, when only data approved by the weighing manager (41) is memorized in the management server (40), data reliability improves, and precision of services utilizing the data improves. In

addition, it is surely prevented that data memorized in the detected part (10) are abused by leakage in comparison with a case memorizing data on the fueling device (100) in the detected part (10). As a result, reliabilities of the fueling devices (100) improve.

[0015.] In the present invention, when the data memorized in the management server (40) are written with approved data inputted from instrumental error adjusting means, it can be prevented to falsify an instrumental error adjusting value, and reliability of weighing accuracy of the fueling device (100) can be maintained.

[0016.] In the present invention, when the fueling device (100) includes a second detected part (26), and a URL of a second web site having a function of accessing a part of the data (for example, term of usage until next verification only) memorized in the management server (40) is memorized in the second detected part (26), users (general consumers) can judge whether the gas station from which the users receive services is properly managed or not by accessing the second web site and confirming the data, and the users can feel safe when the gas station is properly managed.

[0017.] In the present invention, when a cap (7) covering instrumental error adjusting means is sealed with resin, a resin sealed part is broken when the cap (7) is opened to operate instrumental error adjusting means for falsifying an instrumental error value. Then, the breakage of the resin sealed part immediately informs a possibility that the instrumental error value is falsified. Here, when a part sealed with resin includes an IC chip (1-1) and an antenna (2-1) thereof, and the antenna (2-1) exists throughout entire region of the sealed region, cutting the sealed part causes the detected part (10-1) such as the antenna (2-1) of the IC chip (1-1) to be cut without fail, so that it becomes impossible to read and falsify data in the detected part (10-1). On the other hand, when a resin sealed part including an IC chip (1-2) and an antenna (2-2) thereof can be divided from another resin sealed part, a region not including the detected part (10-2) is cut from a region including the detected part (10-2) to reuse the region including the detected part (10-2).

[0018.] Or, when an IC chip (1-3) sealed with resin is connected via a flexible member (3-3) such as a wire to the cap (7), the detected part (10-3) and a base (8) in instrumental error adjusting means are integrated and the replaced flexible member (3-3) is inserted into the detected part (10-3), which can reuse the detected part (10-3) including the IC chip (1-3).

[0019.] In addition, with the present invention, information such as update data on devices on the gas station (GS) is electronically managed, so that information on inspection and parts replacement is converted into data by the management server (40) to be utilize via a network as a large amount of data (big data). Then, it is possible that the big data is timely analyzed to create new value and the value is made useable to correspond to social environment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020.] Figure 1 is a block diagram showing a gas station system according to an embodiment of the present invention.

Figure 2 is a block diagram showing sending/receiving of data among a weighing manager, a fueling device, a management server and a centralized monitoring device shown in Fig. 1 in detail.

Figure 3 is a flowchart showing processing steps of the fueling device according to the embodiment.

Figure 4 is a flowchart showing processing steps of the weighing manager according to the embodiment.

Figure 5 is a flowchart showing processing steps of the management server according to the embodiment.

Figure 6 is a flowchart showing processing steps of users according to the embodiment.

Figure 7 is a front view showing a main part of a sealed part of an instrumental error adjusting switch according to the first example.

Figure 8 is a side view of the main part of the sealed part of the instrumental error adjusting switch according to the first example.

Figure 9 is an explanatory view showing a main part of a sealed part of the instrumental error adjusting switch according to the second example, wherein (A) is a front view and (B) is a side view thereof.

Figure 10 is a front view showing the main part of the sealed part of the instrumental error adjusting switch according to the second example when the sealed part is reused.

Figure 11 is a front view showing a main part of a sealed part of the instrumental error adjusting switch according to the third example.

Figure 12 is a front view showing the main part of the sealed part of the instrumental error adjusting switch according to the third example when the sealed part is reused.

DESCRIPTION OF THE EMBODIMENTS

[0021.] Hereinafter, an embodiment of the present invention will be explained with reference to attached drawings. In Fig. 1, a gas station system 200 is provided with three fueling devices 100 and a management server 40 for memorizing data on the fueling devices 100. Here, the data on the fueling device 100 are device information and maintenance information thereof, and the information can be accessed via the first and second web sites described below. In the embodiment shown in the drawings, the gas station GS is provided with the fueling devices 100, a centralized monitoring device 20 for monitoring and controlling the fueling devices 100, underground tanks 22, a POS terminal 29 and so on.

[0022.] The fueling device 100 has a detected part 10 (refer to Fig. 2) memorizing a URL of the first web site, and the device information and the maintenance information on the fueling device 100 are memorized in the management server 40. On the first web site are displayed the device information and the maintenance information on the fueling device 100. The informations are memorized in the management server 40 as INFs 1, 2 in Fig. 2. Although not clearly shown in the drawings, each fueling device 100 is provided with a flowmeter mounted on a fueling pipe, a fueling hose whose one end is connected to the fueling pipe and another end has a fueling nozzle, and a display 25 (refer to Fig. 2) for displaying fueling amount obtained by multiplying a measured value from the flowmeter by an instrumental error adjusting value memorized in instrumental error adjusting means. The instrumental error adjusting means includes an instrumental error adjusting switch 23 shown in Fig. 2 and is a part of a fueling controller.

[0023.] Only when approved by a weighing manager 41, the device information and the maintenance information on the fueling device 100 are inputted and memorized in the management server 40, and become accessible via the first web site. Here, the weighing manager 41 is a manager of the management server 40 and is a so-called third party for the gas station GS. Like this, since only information approved by the weighing manager 41 is memorized in the management server 40, reliability of information memorized in the management server 40 and safeties of the management server 40 and the first and second web sites described below improve.

[0024.] The weighing manager 41 functioning as an operator of the management server 40 also may be a natural person with an authority for instance, but an automatically controlled information processing mechanism may be the weighing manager 41. Here, arrows in Fig. 1 indicate information signal lines, and data sent and received via the information signal lines will be explained with reference to Fig. 2 in detail.

[0025.] In Fig. 1, a support center 50 has a function of supporting each gas station GS, and can support data registration and the like in the management server 40. The numeral 30 indicates not only a portable terminal (a portable information processing device including a smartphone) of a worker, but also the worker in the explanation described below. With the portable terminal 30, the worker 30 in the gas station GS sends a reverification result to the weighing manager 41, or accesses the maintenance information memorized in the management server 40 for instance.

[0026.] In Fig. 1, the fueling devices 100 in the gas station GS are managed in liquid amount by a liquid amount management device 21 and the GS centralized monitoring device 20. In the underground tank 22 of each fueling device 100 is arranged oil level gauge 23 and a liquefying recovery device 24. The numeral 27 indicates means for switching a managed object in liquid amount management, and the numeral 28 indicates a car washing machine. The gas station GS includes a POS system, and the POS terminal 29 is connected to the GS centralized monitoring device 20.

[0027.] In Fig. 2 showing sending and receiving of information among the weighing manager 41, the fueling device 100, the management server 40 and the GS centralized monitoring device 20, to instrumental error adjusting means not shown of the fueling device 100 is mounted the detected part 10, and the detected part 10 includes an IC chip or an IC tag. Adjacent to the detected part 10 is mounted the instrumental error adjusting switch 23, which has a function of switching instrumental error adjusting means into an instrumental error controlling mode. In Fig. 2, the numeral 25 indicates a display for displaying fueling amount.

[0028.] Although not clearly shown in the drawings, the instrumental error adjusting switch 23 and the detected part 10 are sealed with resin. When the seal is broken, there is a possibility that the instrumental error adjusting switch 23 acts and an instrumental error varies. The detected part 10, the instrumental error adjusting switch 23 and seals thereof position inside a casing of the fueling device 100, so that they cannot be handled without a key for opening and closing the fueling device 100. In other words, the casing must be opened to operate instrumental error adjusting means.

[0029.] In the detected part 10 is memorized a URL of the first web site, and the

device information, the maintenance information and the like on the fueling device 100 accessible via the first web site are memorized in the management server 40. In Fig. 2, the symbols INF1, 2 indicate the device information, the maintenance information and the like of the fueling device 100 memorized in the management server 40. Here, in the detected part 10 can be memorized individual number and the like of the flowmeter other than the URL.

[0030.] In addition, the fueling device 100 includes an identification code (second detected part) 26 in which a URL of the second web site is memorized. In the second web site are memorized information at shipment of the fueling device 100 such as model numbers and serial numbers and term of usage until next verification as information on the fueling device 100 visible by users. Meanwhile, information other than the URL can be memorized in the identification code 26. Information accessible via the second web site are memorized in the management server 40 also, and are shown in the symbol INF 2 in Fig. 2. Here, accessing via the second web site cannot rewrite information in the management server 40. In addition, as the identification code 26 can be used another QR code, barcode or IC tag that is not used for the detected part 10.

[0031.] In Fig. 2, at reverification for example, the worker 30, who has performed the reverification, outputs information on terminated verification such as reverification data and worker's name as the maintenance information to the weighing manager 41 of the management server 40 (information signal line A). The weighing manager 41 confirms the maintenance information outputted from the worker 30, and when approving the information, the weighing manager 41 inputs it to the management server 40 (information signal line B). On the other hand, when not approving the maintenance information, the weighing manager 41 does not input it and outputs a reason for not approving the maintenance information to the worker 30 (information signal line G).

[0032.] The reverification data such as reverification date, instrumental error adjustment log (instrumental error adjusting value) and password required for instrumental error adjusting work (or maintenance work) are outputted as the maintenance information via the GS centralized monitoring device 20 to the weighing manager 41 (information signal line C). Here, when the password is daily changed, that is, a daily password is used, for instance, it is prevented that a person who gets a password from a retiree abuses the password. The weighing manager 41 confirms the maintenance information outputted from the GS centralized monitoring device 20, and when approving the information, the weighing manager 41 inputs it to the management server 40 (information signal line B). On the other hand, when not approving the maintenance information, the weighing manager 41 does not input it and outputs a reason for not approving the maintenance information to the GS centralized monitoring device 20 (information signal line E). When the maintenance information and the like approved by the weighing manager 41 are inputted to the management server 40, data in the management server 40 is updated to be the newest, and the instrumental error adjusting value and the like displayed on the first web site are also updated.

[0033.] At inspection and parts replacement also, among the maintenance worker 30, the GS centralized monitoring device 20, the management server 40 and the weighing manager 41 are performed sending/receiving of information as described above, and the maintenance information such as maintenance date, maintenance

content and replaced parts approved by the weighing manager 41 are memorized in the management server 40. Details in steps at the inspection and the maintenance will be described later.

[0034.] In Fig. 2, in the management server 40 are memorized the device information and the maintenance information on each fueling device 100 of the gas station GS after the weighing manager 41 approves them. The informations are accessible via the first and second web sites. Information accessible via the first web site are the device information such as model numbers, serial numbers and manufacturing date, maintenance information such as updating and recording of verification deadline, updating and recording of instrumental error adjusting value and histories of maintenance and parts replacement such as replacements of a fueling nozzle and a pump filter (INF 1 shown in Fig. 2), and the information can be accessed and utilized by person concerned with the gas station GS such as employees, owners and persons in charge of the maintenance. In order to utilize the maintenance information memorized in the management server 40 by accessing the first web site is required data inquiry authority such as password. Information accessible via the second web site are a part of the device information such as model numbers, serial numbers and manufacturing date and a part of the maintenance information such as verification deadline (INF 2 shown in Fig. 2), and it is expected that users access the second web site to utilize the information.

[0035.] At the inspection and the parts replacement, the worker 30 reads the URL memorized in the detected part 10, and accesses the maintenance information such as histories of replaced parts via a management web site (the first web site) (information signal line D). In order to read the URL of the detected part 10, the worker 30 uses a reader exclusively used in the gas station GS. In other words, in the embodiment shown in the drawings, the reader exclusively used in the gas station GS is essential to read the URL of the detected part 10. The maintenance information obtained by accessing the first web site allows the worker 30 to immediately grasp histories of updating and parts replacement. As a result, labor and time for the inspection work is reduced.

[0036.] The worker 30, who has performed maintenance work with reference to the maintenance information in the management server 40 (the first web site), outputs information on maintenance termination such as maintenance date and maintenance worker's name as maintenance information to the weighing manager 41 of the management server 40 (information signal line A). The weighing manager 41 confirms the maintenance information outputted from the maintenance worker 30, and when approving the information, the weighing manager 41 inputs it to the management server 40 (information signal line B). When not approving the maintenance information, the weighing manager 41 does not input it to the management server 40, and outputs a reason for not approving it to the maintenance worker 30 (information signal line G).

[0037.] Maintenance information such as maintenance date and maintenance content such as parts replacement and a password required for utilizing the maintenance information are outputted as maintenance information via the GS centralized monitoring device 20 to the weighing manager 41 (information signal line C). The weighing manager 41 confirms the maintenance information outputted via the GS centralized monitoring device 20, and when approving the information, the weighing manager 41 inputs it to the management server 40 (information signal line B). When not approving the maintenance information,

the weighing manager 41 does not inputs it to the management server 40 and outputs a reason for not approving it to the GS centralized monitoring device 20 (information signal line E). In the embodiment shown in the drawings, when the reverification data, the inspection data or the maintenance data is sent to the weighing manager 41 of the management server 40, contents such as reverification date and a person performing the reverification, maintenance content sent from the worker 30 and content such as reverification content and maintenance content sent from the GS centralized monitoring device 20 exist, and a part of the both contents sent therefrom duplicates. But, the reverification data, the inspection data and the maintenance data may be sent from the worker 30 only to the weighing manager 41, or these data may be sent from the GS centralized monitoring device 20 only thereto.

[0038.] The management server 40 outputs verification deadline (reverification deadline) to the GS centralized monitoring device 20 (information signal line F). In addition, the management server 40 outputs the verification deadline (reverification deadline) to the weighing manager 41 also (information signal line I). When the reverification deadline on each fueling device 100 in the gas station GS is outputted based on reverification history from the management server 40 to the GS centralized monitoring device 20, reverification of each fueling device 100 can be surely performed. Similarly, based on memorized maintenance history, from the management server 40 to the GS centralized monitoring device 20 are sent the maintenance deadlines (information signal line F), and information signal line I indicates the deadlines that are sent from the management server 40 to the weighing manager 41. In addition, the information signal line J indicates a case that the centralized monitoring device 20 inquires the maintenance information or the device information as required.

[0039.] Although not clearly shown in Figs. 1 and 2, users read the URL memorized in the identification code 26 to access the second web site via an information processing network such as the internet. In Figs. 1 and 2 is omitted the information processing network. Users can judge whether the gas station GS where they are going to receive services is correctly managed or not by accessing information accessible via the second web site.

[0040.] In the embodiment shown in the drawings, processing steps in the fueling devices 100 will be explained with reference to Fig. 3 mainly. Figure 3 shows the processing steps when the reverification of the fueling devices 100 is performed, and at inspection or maintenance are performed the same processing steps shown in Fig. 3. In Fig. 3, in step S31, it is judged whether the instrumental error adjusting switch 23 (Fig. 2) is pressed or not. In step S31, when the instrumental error adjusting switch 23 is pressed (step S31; Yes), the processing advances to step S32. On the other hand, in step S31, in case that the instrumental error adjusting switch 23 is not pressed (step S31; No), the processing returns to step S31.

[0041.] In step S32, the worker inputs password required for performing instrumental error adjusting work, maintenance work and the like to a predetermined part. Then, the processing advances to step S33. In step S33, it is judged whether the password inputted in step S32 is correct or not. When the password is correct (step S33; Yes), the processing advances to step S34. On the other hand, in case that the password is not correct (step S33; No), the processing finishes.

[0042.] In step S34, the instrumental error adjusting value is updated, and the processing advances to step S35. In step S35, after the reverification, maintenance record such as updating and recording of verification deadline, updating and recording of instrumental error adjusting value and parts replacement, which has performed at the same time, and password are sent as reverification data via the GS centralized monitoring device 20 to the weighing manager 41 of the management server 40 (information signal line C shown in Fig. 2). Then, the processing finishes. These data sent in step S35 are sent to step S41 of the processing steps by the weighing manager 41 shown in Fig. 4. At inspection and maintenance, the worker reads the URL of the detected part 10, accesses the first web site and starts work after grasping maintenance information such as history of parts replacement.

[0043.] Next, processing steps by the weighing manager 41 will be explained with reference to Fig. 4 mainly. In Fig. 4, in step S41, it is judged whether reverification data is received or not. As the reverification data, for instance, date and worker's name that the reverification is carried out from the worker 39 are sent (via a portable terminal (information signal line A shown in Fig. 2)). In addition, as the reverification data, via the GS centralized monitoring device 20, are sent maintenance record such as updating and recording of verification deadline, updating and recording of instrumental error adjusting value and parts replacement, which has performed at the same time, password and so on (information signal line C shown in Fig. 2). As described above, reverification data, inspection data and maintenance information may be sent from the worker 30 only to the weighing manager 41, or from the GS centralized monitoring device 20 only to the weighing manager 41.

[0044.] In step 41, when the reverification data is received (step S41; Yes), the processing advances to step S42. On the other hand, in step S41, in case that the reverification data is not received (step S41; No), the processing returns to step S41 and continues the processing steps. In step S42, the weighing manager 41 judges whether the reverification data is correctly updated. When the weighing manager 41 judges that the reverification data is correctly updated (step S42; Yes), the weighing manager 41 approves the reverification data, and the processing advances to step S43. On the other hand, when the weighing manager 41 judges that the reverification data is not correctly updated (step S42; No), the processing returns to step S42. Although not shown in Fig. 4, in case of "No" in step S42, the weighing manager 41 informs that the reverification data is not approved to the gas station GS or the worker (information signal line G shown in Fig. 2) and promotes resubmission of reverification data.

[0045.] In step S43, the weighing manager 41 inputs the approved reverification data to the management server 40, and updates reverification data (information signal line B). Then, the processing finishes. The reverification data in step S43 is sent in step S51 in the processing steps in the management server 40 shown in Fig. 5. In addition, Fig. 4 illustrates processing steps at reverification, and the processing at inspection or maintenance is performed in the same manner as shown in Fig. 4.

[0046.] Processing steps in the management server 40 will be explained with reference to Fig. 5 mainly. In Fig. 5, in step S51, it is judged whether the reverification data is inputted from the weighing manager 41 to the management server 40 or not. The reverification data is sent from step S43 in Fig. 4. In step

S51, when the reverification data is inputted (step S51; Yes), the processing advances to step S52. On the other hand, in case that the reverification data is not inputted in step S51 (step S51; No), the processing returns to step S51 and continues the processing steps.

[0047.] In step S52, the reverification data in the management server 40 is updated. With the update of the reverification data are updated last verification date, next verification deadline, last instrumental error adjusting value and reverification workers' name. With the update are updated data on the reverification accessible from the first and second web sites also. Meanwhile, Fig. 5 exemplarily illustrates processing steps at the reverification, and processing at the inspection or the maintenance is performed in the same manner as shown in Fig. 5.

[0048.] In the embodiment shown in the drawings, not only person concerned with the gas station GS, but also users can access the management server 40 and confirm necessary data. In step 61 in Fig. 6 showing processing steps by users, users read the URL memorized in the identification code 26 by an information appliance and access the second web site via an information processing network such as the internet. In step S62, data accessible via the second web site that is a part of the data on the fueling device such as model numbers, serial numbers, which are data at its shipment, last verification date and verification deadline are displayed on the information appliance, and users confirm them and can receive services at ease in the gas station GS. When step S62 finishes the processing shown in Fig. 6 finishes.

[0049.] In Fig. 2, on the fueling device 100 is mounted the instrumental error adjusting switch 23 that is handled to adjust instrumental error of the flowmeter. In order to prevent the instrumental error from being falsified, the instrumental error adjusting switch 23 is covered with a cap 7 (refer to Figs. 11 12), and the cap 7 is sealed with resin. Hereinafter, structure of sealing cap (not shown), which covers the instrumental error adjusting switch 23, will be explained with reference to Figs. 7 to 12 mainly. In the embodiment shown in the drawings are illustrated three kinds of structures of the detected part 10 as examples. In IC chips 1-1 to 1-3 configuring the detected parts 10 are memorized the URLs of the first web site for accessing information on the fueling device 100 and others.

[0050.] At first, the first structural example of the detected part 10 will be explained with reference to Figs. 7 and 8. In Figs. 7 and 8, an IC chip 1-1 and an antenna 2-1 configuring a detected part 10-1 are covered with resin. Although not clearly shown in Figs. 7 and 8, by the resin sealed parts is sealed a cap 7 (refer to Figs. 11 and 12) of the instrumental error adjusting switch 23. As the resin for covering or sealing can be used PBT, PPS, epoxy, vinyl chloride, nylon, polyethylene, polypropylene, ethylene ethyl acrylate, ethylene-vinyl acetate copolymer or the like. The antenna (2-1) of the IC chip 1-1 exists throughout the entire region of the region sealed with the resin. An antenna side resin sealed part 10-1B with a round shape covering the antenna 2-1 is continuously formed on an IC chip side resin sealed part 10-1A covering the IC chip 1-1.

[0051.] In Fig. 8, on a round antenna side resin sealed part 10-1B is drilled a through hole 10-1BA, and wires 3-1 as flexible members are inserted into the through hole 10-1BA. The antenna 2-1 for the IC chip 1-1 is disposed while avoiding the through hole 10-1BA. End portions (lower ends shown in Fig. 7) of the two wires 3-1 are entangled with each other, and the entanglement is not

easily loosened.

[0052.] Next, the second structural example of the detected part 10 will be explained with reference to Figs. 9 and 10. In Fig. 9 showing a condition at shipment, an area sealed with resin is a detected part resin sealed part 10-2A including an IC chip 1-2 and an antenna 2-2 therein, and a round-shaped sealed part 10-2B without them, and the round-shaped sealed part 10-2B is continuously formed with the detected part resin sealed part 10-2A.

[0053.] The detected part resin sealed part 10-2A is integrally formed a wire attachment part 4a with U-shape. Although not clearly shown in the drawings, by the round-shaped sealed part 10-2B is sealed the cap 7 (refer to Figs. 11 and 12) of the instrumental error adjusting switch 23. The IC chip 1-2 and the antenna 2-2 thereof exist in the detected part resin sealed part 10-2A only, and do not exist in the round-shaped sealed part 10-2B. Then, the detected part resin sealed part 10-2A and the round-shaped sealed part 10-2B can be divided along a dividing line LC.

[0054.] In Fig. 9(B), on the round-shaped sealed part 10-2B is drilled a through hole 10-2BA, and through the through hole 10-2BA pass wires 3-2 as flexible members. End portions (lower portions in Fig. 9(A)) of the plurality of wires 3-2 (two wires in Fig. 9(A)) are entangled with each other, and the entanglement is not easily loosened. In order to reuse the IC chip, the detected part resin sealed part 10-2A sealing the IC chip 1-2 and the antenna 2-2 thereof is departed from the round-shaped sealed part 10-2B. Then, as shown in Fig. 10, the wire 3-2 is caused to pass through an inner opening of the wire attachment part 4a with U-shape of the detected part resin sealed part 10-2A, and end portions 5E1, 5E2 of the wires 3-2 are entangled with each other so as not to be easily loosened. Other construction and action effect of the second structural example shown in Figs. 9 and 10 are the same as those of the first structural example shown in Figs. 7 and 8.

[0055.] Figures 11 and 12 show the third structural example of the detected part 10, and the detected part and resin sealed part are integrated with a base 8. Figure 11 shows a condition at shipment, and a detected part 10-3 with an IC chip 1-3 is sealed with a resin to be a detected part resin sealed part 10-3A. The detected part resin sealed part 10-3A is connected to the cap 7 covering the instrumental error adjusting switch 23 through a wire 3-3 as a flexible member.

[0056.] In Fig. 11, the detected part resin sealed part 10-3A is arranged along the base 8 and is fixed thereon through a plug 9. One end of the wire 3-3 is connected to a head part (a triangular part in Fig. 11) of the plug 9 through a hollow part thereof, and another end of the wire 3-3 is connected to a folded portion 7A of the cap 7 on the rear side of the base 8. In the third structural example, when the instrumental error is adjusted, the cap 7, the wire 3-3 and the plug 9 are thoroughly replaced, but the detected part resin sealed part 10-3A sealing the IC chip 1-3 is not replaced.

[0057.] In Fig. 12 showing a condition that the IC chip 1-3 is reused, the cap 7, the wire 3-3 and a plug 9A shorter than the plug 9 are replaced from those at shipment shown in Fig. 11. On the other hand, as the IC chip 1-3 and the detected part resin sealed part 10-3A are reused those at shipment shown in Fig. 11. In Fig. 12, one end of the replaced wire 3-3 is connected to the head part of the plug 9A in the same manner as shown in Fig. 11, and another end thereof is connected to the folded portion 7A of the cap 7 on the rear side of the base 8.

[0058.] Through the detected part resin sealed part 10-3A (IC chip 1-3) that is replaced passes the wire 3-3. Other construction and action effect of the third structural example shown in Figs. 11 and 12 are the same as those of the first and second examples shown in Figs. 7 to 10.

[0059.] With the embodiment shown in the drawings, information on the fueling devices 100 are electronically managed by the management server 40, so that not only information at shipment but also updated information are electronically managed thereby. Therefore, when verification, inspection, maintenance or the like is performed, update and history data can be immediately collated, which can greatly reduce labor and time required for maintenance.

[0060.] In the embodiment shown in the drawings, in the detected part 10 is memorized the URL of the first web site with a function of accessing information memorized in the management server 40 on the fueling device 100, so that reading the URL of the first web site memorized in the detected part 10 at maintenance can correctly specify a device which should be maintained among the fueling devices 100 in early stages and can approve the update and history. Then, the data approved by the weighing manager 41 only are memorized in the management server 40, so that reliability of the data is considerably high. Therefore, the worker can refer the data at ease even the data is through a web site. In addition, it can be prevented to falsify instrumental error adjusting value, and reliability of weighing accuracy of the fueling device 100 can be maintained. Further information on the fueling device 100 is memorized in the management server 40, so that the data can be correctly and easily updated.

[0061.] In the embodiment shown in the drawings, information memorized in the management server 40 can be updated with the information, which is approved by the weighing manager 41, from instrumental error adjusting means, so that the newest data can always be stored in the management server 40. Further, in the embodiment, the fueling device 100 includes the identification code 26, and in the identification device 26 is memorized the URL for accessing the second web site, which has a function of accessing a part of information memorized in the management server 40, so that users can access the second web site from the URL memorized in the identification device 26 and can confirm the term of usage until next verification on the fueling device 100. With this, users can obtain information whether the gas station GS from which the users receive services is properly managed or not and can achieve a feeling of safety.

[0062.] The embodiment described in the drawings is just example, and does not limit the technical scope of the present invention. For example, although the gas station GS in the embodiment described in the drawings has three fueling devices 100, the present invention is applicable to a gas station with one fueling device or any other number of fueling devices.

Description of the Reference Numerals

[0063.]

10 detected part

18 fueling controller

20 GS centralized monitoring device

23 instrumental error adjusting switch

25 display

26 identification code

40 management server

41 weighing manager
100 fueling device
200 gas station system

WHAT IS CLAIMED IS:

1. A gas station system comprising:
 - a fueling device including a flowmeter mounted on a fueling pipe, a fueling hose whose one end is connected to the fueling pipe and another end has a fueling nozzle, and a display for displaying fueling amount obtained by multiplying a measured value from the flowmeter by an instrumental error adjusting value memorized in an instrumental error adjusting means; and
 - a management server for memorizing data on the fueling device,wherein the fueling device includes a detected part for accessing the data memorized in the management server.
2. The gas station system as claimed in claim 1, wherein a URL of a web site for accessing the data memorized in the management server is memorized in the detected part.
3. The gas station system as claimed in claim 2, wherein the data memorized in the management server is device information on the fueling device.
4. The gas station system as claimed in claim 2, wherein the data memorized in the management server is maintenance information on the fueling device.
5. The gas station system claimed as one of claims 2 to 4, wherein the data memorized in the management server is rewritten with approved data inputted from the instrumental error adjusting means.
6. The gas station system claimed as claimed in one of claims 2 to 5, wherein the fueling device includes a second detected part, and a URL of a second web site having a function of accessing a part of the data memorized in the management server is memorized in the second detected part.