real weight of liquid flowed through the flowmeter, wherein the liquid flowed through the flowmeter must be outputted for weighing at the actual point-of-use (endpoint) due to the different liquid-flow rate in a pipe and pressure as compared with a point located near the flowmeter. If the real weights are weighed at a flowmeter-installing point and the actual point-of-use, there will be a deviation as comparing the real weights obtained from the two points, even if a display at a control system is equal from the same counts and the same used parameters. In general, if the flowmeter calibration is required to be performed at another point, which is not the point-of-use, a valve used for adjusting the liquid pressure in the pipe must be adjusted, or the flow rate in the pipe must be adjusted, so that the pressure is equal to the pressure at the point-of-use in order to obtain the correct and accurate calibration.

However, said calibration method has disadvantages, namely, it takes a relatively long time for calibration preparation, because the production line may have to be stopped for a long time, and the liquid subjected to the calibration cannot be immediately utilized, therefore it can cause difficulty and waste. Furthermore, the existing calibration methods may also easily cause an error, because environmental factors of the calibration are not the same as the environmental factors during the actual operation, such as wear and tear of machines, namely, a pressure pump, pressure loss in a conveying pipe at various heights of measuring points, and the like, such that it results in that the conventional calibration method may have an error and lack of efficiency.

Thai patent application number 0801005493, published as Patent Application Publication number 115985 on August 31, 2012, discloses a calibration system for a fuel-conveying system in a fuel manufacturing process, namely, an injection system of a fuel catalyst or a fuel additive, etc., the fuel contained in a tank is weighed by at least one load cells. The calibration is performed by delivering the fuel of a directly- or indirectly-known weight to the load cells, and measuring the delivered-fuel weight. Then a comparison of the measured weight acquired from the load cells and the known weight is conducted in order to calculate a deviation between the two weights, so that the measurement is adjusted therefrom.

US patent number US 8,307,692 B2, entitled “Calibration of Dust Load Flow Measuring Systems”, issued on November 13, 2012 by Siemens Aktiengesellschaftt, Germany, shows a method for calibrating a dust load flow measuring system, wherein the pulverized fuel dust is pneumatically driven. In said method, the pressure between a receiving container and a metering container is controlled to be a constant value of the actual-operating pressure throughout the

CLAIMS

1. A calibration method for a liquid flowmeter comprising the steps of:

providing a first tank (**12**) for receiving said liquid to be measured and a liquid storage tank (**14**) connected to said first tank (**12**);

providing a liquid delivering line (**9**) for conveying the liquid from said liquid storage tank (**14**) to an external device;

providing a weighing sensor (**22**) for weighing the liquid contained in either the first tank (**12**) or the liquid storage tank (**14**),

during performing the calibration for the flowmeter (**20**):

disconnecting the liquid delivering line (**9**) in a conveyance direction downstream of the liquid flowmeter (**20**) from the external device;

connecting said liquid delivering line (**9**) in the conveyance direction downstream of said liquid flowmeter (**20**) to a calibrating line (**7**) connected to said first tank (**12**) so that the liquid from said liquid storage tank (14) is delivered through the liquid delivering line (9) so as to pass through the flowmeter (20) back to said first tank (12); and

determining an estimated flow rate of the conveyed liquid by calculating the change in weight of the conveyed liquid measured by said weighing sensor (**22**) during a predetermined time interval,

the method being characterized in that, during performing the calibration, the flow rate of the liquid from said liquid storage tank (**14**) to said first tank (**12**) passing through the flowmeter (20) is controlled by a controller so as to be substantially constant and substantially equal to the flow rate during the actual operation, throughout the calibration, using a feedback signal from the flowmeter (20) and in that the reading from the flowmeter is adjusted so that it is conformity with said estimated flow rate.

2. The method according to claim 1, wherein, during the calibration for the flowmeter, disconnecting of the liquid delivering line (**9**) from the external device and connecting of said liquid delivering line (**9**) to said calibrating line (**7**) are conducted by two 2-way valves (**32, 34**) or a 3-way valve which is controlled either manually, or electrically, or pneumatically.

3. The method according to any one of the preceding claims, wherein said calibration method is a single-point calibration or a multi-point calibration.

4. The method according to any one of the preceding claims, wherein the liquid flows from the first tank (**12**) to the liquid storage tank (**14**) by either gravity feed or a driving force from a pump (**39**) installed interposedly in a flowing line between the first tank (**12**) and the liquid storage tank (**14**).

5. The method according to any one of the preceding claims, wherein a setpoint used for controlling of said liquid flow rate so as to be substantially constant is calculated from an average of the actual-operating flow rates within a specific period of time before performing the calibration.