Flexible and competitive electronic filling machine
Kosan Crisplant’s electronic filling machine type UFM epitomizes our development philosophy: To deliver genuine value to our business partners in the form of competitive, high-tech quality products.

The UFM is controlled using a CUC (Crisplant Universal Controller)

The electronic UFM filling machine is an extremely versatile, reliable, flexible and competitive filling machine based on either the electronic weighing principle or the massflow principle. It has become a success all over the world as the natural choice for both new filling projects and as a replacement for worn-out mechanical filling machines.

We have incorporated and improved the best properties from some of our most valued and thoroughly tested products. This has made it possible to produce a modular product at a competitive price – a highly flexible product with a number of advanced facilities such as data communication, where required.

The UFM has a standard feature for communication with a PC system for collecting, processing and presenting data from the filling process.

The UFM can be supplied either with an ex-proof central power supply (CPI-Ex), or an ex-proof 7 Ah battery supply (CBP-Ex) and accompanying battery charger.

The battery (CBP-Ex) is ideal as a temporary solution when phasing out old filling machines, or as a permanent solution in areas with unstable power supply.

The CBP-Ex has an operational life of approx. 240 hours per charge per filling machine, or approx. 240/n hours for n number of connected filling machines to the same battery.

The power supply (CPI-Ex) functions as an insulation barrier between power coming from a main power supply in a non-hazardous area and distributed power to equipment in a hazardous area.

The internal separations inside the CPI-Ex are galvanic (for power) and optical (for data), which means that there is no physical connection between the input side and the output side of the CPI-Ex (nothing coming from the input side can damage any components on the output side). The CPI-Ex also has a built-in transient protection, which protects it against excess voltage.

Power and data from the CPI-Ex to equipment in a hazardous area are transferred in the same cable, thereby reducing installation costs to a minimum.

System solutions

The UFM can be integrated into complete network solutions with direct data communication between e.g. central encoding, filling and control processes. All process data can be collected, processed and presented if a PC is connected.

The central encoding station can be built up as an operator controlled station – complete with keyboard or bar code board with a reading pen – or as a fully automatic station with a scanner.

Kosan Crisplant a/s
Easy, intelligent and accurate filling

A built-in electronic control/weighing computer, which calculates at internal intervals of 10 grams, controls and checks the filling process itself. It carries out somewhere in the region of 20,000 calculations during the course of a filling process lasting 45 seconds, ensuring an optimum filling result every time.

The correct mechanical design for weighing technique and intelligent software give the UFM the best possible filling accuracy with very small tolerances, which reduces the number of overfilled cylinders (no giveaways). The below filling report is generated at a filling plant with 24 of the more than 12,000 UFM’s we have put into operation all over the world. The filling accuracy (98% of all filled cylinders are not overfilled cylinders (no giveaways). The value can easily and quickly be changed, according to the cylinder type.

Safety features

For instance it is possible to program a fixed maximum tare value. This eliminates wrong entries and ensures against dangerous overfilling of cylinders, since the operator gets an error message in case he enters a value higher than the preset value. The value can easily and quickly be changed, according to the cylinder type.

Competitive price

The UFM is a thoroughly tested product, both as an independent unit and as an integrated unit in a filling system. All components have been tested and are manufactured to stand up to long-term operation in harsh industrial environments, and generally they need no maintenance or adjustment.

The UFM has become a world-wide success due to the positive price development in electronic equipment relative to both previously known electronic equipment and traditional mechanical equipment.

We should be pleased to prepare a quotation with accompanying specifications, customised to individual requirements. And for comprehensive projects involving the replacement of a large number of filling machines by UFM’s, we will evaluate alternative solutions to make projects even more cost-effective.

Example of a filling report

Accuracy and safety

The UFM is operated and programmed by means of an adjustable CUC control box with built-in keyboard, display, and start/stop push-button.

The CUC control box is very easy to operate, no matter whether it is to be used for preprogramming of the filling process (fully automatic operation) or for manual keying in (semi-automatic or manual operation).

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Example of a filling report

The following series of photos shows how easy it is to e.g. mount a UFM on an existing filling carrousel.

Dangers gas leaks are avoided through automatic closing of the gas stop valve in case a rupture occurs on a gas hose or if the filling head is not correctly connected.

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Adjustable CUC control box – easy to use and to program

Example of a filling report

The UFM is the natural choice for new projects, but it is also extremely attractive on the replacement market, as it can be installed rapidly and easily on existing filling carrousels replacing worn-out mechanical filling machines. And installation on an existing carrousel takes very little time, keeping production loss at a minimum.

Example of a filling report

Rapid and easy replacement

The following series of photos shows how easy it is to e.g. mount a UFM with an ex-proof battery supply on an existing filling carrousel.

Example of a filling report

((1) After dismantling the filling machine to be replaced, a customer-designed adapter plate (included in the supply) is mounted on the carrousel.

(2) The new UFM is placed on the adapter plate.

(3) The existing or a new filling head is mounted on the new hoses from the filling machine.

(4) The new gas stop valve (included in the supply) is mounted on the existing ball valves on the carrousel, and the gas and compressed air hoses from the filling machine are connected.

(5) The UFM is levelled and height-adjusted so that it is in level with the existing introduction and ejection units.

(6) The ex-proof battery is placed on the carrousel plane, after which the plug connection from the filling machine is connected.

(7) Now the UFM is ready to be gassed. The control box is adjusted to the desired position, and the filling machine is easily calibrated on the key-board. The net values of each cylinder type to be processed are also easily keyed in and stored in the control box.

(8) Finally the cylinder stops are adjusted on the weighing plate of the filling machine to the actual cylinder type, so that the cylinders are placed correctly on the weighing plate at each introduction.

(9) You are now ready to fill with your new battery-driven, electronic filling machine!

Example of a filling report
The modular design allows us to tailor-make the UFM to any individual need and desire. We have already designed and supplied more than 45 different models, which makes the UFM the world’s most flexible filling machine.

The UFM works both as an independent filling unit or as part of an integrated filling system. The machine can be installed directly on the floor, in-line in a chain or roller conveyor system or be mounted on a filling carousel. The UFM can be supplied complete with filling heads for all types of valves and cylinders.

The UFM is approved as a check scale and so it is available with a software configuration for automatic checkweighing of the cylinder immediately after the filling process.

Available models

Installation:
The UFM can be installed as a stationary unit on the floor, built into a chain or roller conveyor system or mounted on an existing or new filling carousel.

Filling heads:
The UFM can be equipped with fully automatic, semi-automatic (self-decoupling) or manual filling heads for both centre and screw valves.

Cylinder types:
The UFM is a universal modular filling machine for all cylinder types.

Optional functions:
• Single or double centring unit
• Massflow meter
• More filling heads on one machine
• Fully automatic opening and closing of the hand wheel on cylinders with screw valves

Necessary connections

LPG installation:
Filling pressure: Max. 2.1 MPa (21 bar)
Test pressure: Max. 3.0 MPa (30 bar)

Compressed air installation:
Working pressure: Min. 0.6 MPa (6 bar) Max. 1.0 MPa (10 bar)

Electrical power installation (via the central power supply or the battery):
Voltage: 1-phase + neutral + earth (voltage variation from 85 to 264 V AC)
Frequency: Variation 50/60 Hz

Earth net:
Max. transition resistance between earth wire and earth: ≤ 2.0 Ohm

Consumption data

Compressed air:
Depending on the model (type of filling head, with or without centring unit, etc.)

Electrical power:
< 1.0 W

Weight
Approx. 90-200 kg depending on the model

Approvals

The filling machine is designed for use in hazardous areas classified as Zone 1 according to IEC 79-10 and Class I, Division 1 according to NEC (USA), article 500. The UFM is also EC approved and designed in accordance with current EU directives, incl. the ATEX Directive (94/9/EC).

The weighing accuracy of the load cell is according to OIML R 60, NTEP 3000d, accuracy class C3.

Other data

The weighing computer calculates and shows the weight in kg or lbs.

Weighing range:
Min. 2 kg - Max. 120 kg

Display division:
100 g (e.g. 15.1 kg, 15.2 kg, 15.3, etc.)
Kosan Crisplant is a project-oriented corporation supplying equipment, plants and systems for filling and maintenance of LPG cylinders and offering after-sales and engineering services, facility management, and a one-stop shop for gas equipment including equipment for ammonia and cryogenic gasses.

We are continuously working on developing new systems, products and services to meet the customers’ and the market’s future demands for increased capacity, efficiency and, above all, safety.

Profiting from more than 65 years of experience in the gas business, Kosan Crisplant has also entered the market for small-scale LNG projects, introducing a unique fully automatic zero-emission LNG bunkering facility for ships.

Since 1951, Kosan Crisplant has supplied 2650 LPG plants in more than 130 countries all over the world.