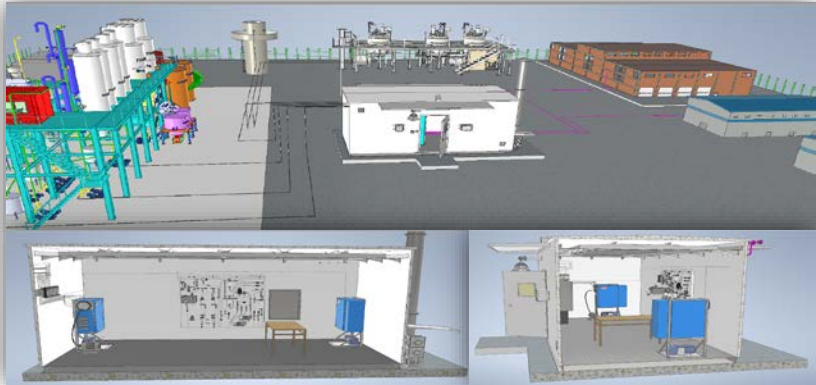


# Byproduct Gas Primary Sampler

- 부생가스 1차 처리 샘플러 -

Key Benefits

- Effective removal of tar, naphthalene, and condensable impurities
- Protection of downstream analyzers and sampling systems
- Stable long-term operation with minimized fouling
- Automated condensate discharge for safe operation
- Flexible purge and cleaning options (Steam, N<sub>2</sub>, Water)
- Improved maintenance accessibility and reduced downtime



Product Description

The Byproduct Gas Primary Sampler is a pretreatment system designed to efficiently remove impurities such as tar and naphthalene contained in byproduct gases, while safely separating and discharging generated condensate. By applying a **Cooler Module**, **Mist Eliminator**, and **Timer Purge Cleaning System**, the system ensures long-term stable operation and significantly improves maintenance convenience.



- Byproduct Gas Primary Sampler -



- Control System -

Applicable Gases

Byproduct Gas : COG,BFG,LDG,FOG

|                                 |                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| System Configurations           | Heat Exchanger, Solenoid Valves, Electric Gas Cooler, Filters, Scrubber/Washing Unit, Ball & Needle Valves, Press. & Temp. Gauges etc |
| Functional Power                | 110 or 220 VAC ±10%, 50/60 Hz                                                                                                         |
| Output Signal                   | Relay, AC and DC Volts, RTD, 4~20 mA, etc                                                                                             |
| Contacts                        | Fault, Normal Status                                                                                                                  |
| Ambient Oper. Temperature       | 5 to 50° C                                                                                                                            |
| Sample Condition Specifications |                                                                                                                                       |
| Sample Flow Rate                | 1000 ~ 10000 cc/min                                                                                                                   |
| Sample Pressure                 | 0.1 ~ 2.0 Kg/cm <sup>2</sup>                                                                                                          |
| Sample Temp.                    | 0 ~ 100 ° C                                                                                                                           |
| Utility Requirements            |                                                                                                                                       |
| Nitrogen                        | < 4 Kg/cm <sup>2</sup>                                                                                                                |
| Clean Water                     | : 2 Liter/min                                                                                                                         |
| Steam                           | : < 4 Kg/cm <sup>2</sup>                                                                                                              |
| Physical Specifications         |                                                                                                                                       |
| Mounting                        | 150 kilograms                                                                                                                         |
| Dimensions                      | 400mm (W) x 500mm(D) x 1250mm(H)                                                                                                      |

# Byproduct Gas Primary Sampler - 부생가스 1차 처리 샘플러 -

## Product Overview

This system cools the sample gas using a **Cooler Module**, allowing condensable impurities such as tar to be effectively condensed and removed together with the generated condensate.

An internally installed **Mist Eliminator** captures fine particles and mist, preventing contamination and fouling of downstream equipment.

The collected condensate is monitored by a **Level Switch (Float Switch)** and is automatically discharged to ensure stable and continuous operation.

In addition, a **Timer Purge System** enables internal purging and cleaning using **Steam and Nitrogen (N<sub>2</sub>) gas**. Depending on site operating conditions, a **Water cleaning option** can also be applied.

## Main Functions

### 1. Cooling and Condensation Separation

The Cooler Module lowers the temperature of the sample gas, condensing impurities such as **tar and naphthalene**.

The condensed mist and fine droplets are effectively captured by the **Mist Eliminator**.

The resulting condensate flows into the **Knock-Out Pot**, where it can be discharged automatically or manually according to operating conditions.

### 2. Automatic Drain System

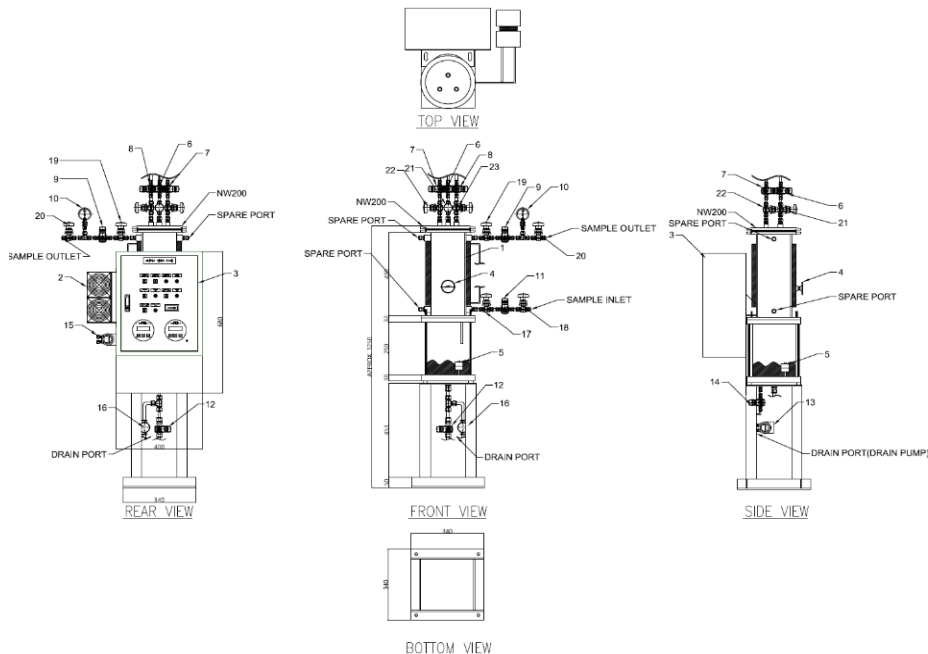
The **Level Switch (Float Switch)** detects the condensate level inside the Knock-Out Pot.

Based on the detected signal, the **Solenoid Valve** and **Drain Pump** are automatically controlled to discharge the condensate safely and reliably

### 3. Timer Purge Cleaning System

The system is equipped with a **Timer-controlled Purge Cleaning System** that uses **Steam and Nitrogen (N<sub>2</sub>)** to automatically purge and clean internal components.

If required, a **Water-based cleaning method** can be additionally applied to meet specific site conditions and operational requirements.



| BILL OF MATERIAL |                               |                          |
|------------------|-------------------------------|--------------------------|
| NO.              | DESCRIPTION                   | REMARK                   |
| (1)              | WATER PUMP                    | WATER-SOLUTION / -       |
| (2)              | WATER PUMP                    | WATER / STEAM-SOLUTION   |
| (3)              | WATER PUMP                    | WATER / STEAM-SOLUTION   |
| (4)              | EXHAUSTION VALVE              | WATER / STEAM / NITROGEN |
| (5)              | LEVEL SWITCH (FLOAT SWITCH)   | WATER / STEAM / NITROGEN |
| (6)              | WATER VALVE FOR SAMPLE INLET  | WATER / STEAM / NITROGEN |
| (7)              | WATER VALVE FOR SAMPLE OUTLET | WATER / STEAM / NITROGEN |
| (8)              | WATER VALVE FOR SAMPLE INLET  | WATER / STEAM / NITROGEN |
| (9)              | WATER VALVE FOR SAMPLE OUTLET | WATER / STEAM / NITROGEN |
| (10)             | WATER VALVE FOR SAMPLE INLET  | WATER / STEAM / NITROGEN |
| (11)             | WATER VALVE FOR SAMPLE OUTLET | WATER / STEAM / NITROGEN |
| (12)             | WATER VALVE FOR SAMPLE INLET  | WATER / STEAM / NITROGEN |
| (13)             | WATER VALVE FOR SAMPLE OUTLET | WATER / STEAM / NITROGEN |
| (14)             | WATER VALVE FOR SAMPLE INLET  | WATER / STEAM / NITROGEN |
| (15)             | WATER VALVE FOR SAMPLE OUTLET | WATER / STEAM / NITROGEN |
| (16)             | WATER VALVE FOR SAMPLE INLET  | WATER / STEAM / NITROGEN |
| (17)             | WATER VALVE FOR SAMPLE OUTLET | WATER / STEAM / NITROGEN |
| (18)             | WATER VALVE FOR SAMPLE INLET  | WATER / STEAM / NITROGEN |
| (19)             | WATER VALVE FOR SAMPLE OUTLET | WATER / STEAM / NITROGEN |
| (20)             | WATER VALVE FOR SAMPLE INLET  | WATER / STEAM / NITROGEN |
| (21)             | WATER VALVE FOR SAMPLE OUTLET | WATER / STEAM / NITROGEN |
| (22)             | WATER VALVE FOR SAMPLE INLET  | WATER / STEAM / NITROGEN |
| (23)             | WATER VALVE FOR SAMPLE OUTLET | WATER / STEAM / NITROGEN |

## - System Configuration -

HAAN SOLUTION

URL : <http://www.hana-solution.com>

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