LECOL Boiler steam and water sampling system

Sample Cooler

Back Pressure Relief Valve

Pressure Reducer
LECOL Luchan Enterprises Co., Ltd. has been the leading supplier of Boiler Water Sampling Systems in Taiwan for more than a decade, our product line includes Sample Coolers, Pressure Reducers, Back Pressure Valves and ION Exchange Resin Columns, all of which combine to form the main components for the sampling system. We can also provide Water Analyzers as a complete unit due to our vast experiences and knowledge from representing one of the largest analyzer manufacturer in the world. This expertise ensures our capability to design more accurate analyzers which are not only more convenient to use, but also easier to maintain.

LECOL can offer complete custom design for boiler water and steam sampling system and assembly or build according to your requirements, including OEM. From large complete units to small components, we can provide you the best quality products to help you ease maintenance, provide reliable measurement and reduce the total cost of ownership. Other than completing the whole products line, LECOL can also provide Chemical Dosing Systems which can be combined with the Sampling unit as a complete section in power plants.
Below you will find a typical P&ID drawing which shows a general design for Boiler Sampling System. It should be first equipped with a process inlet isolation valve which plays a very important part to isolate the dangerous high temperature and pressure process should someone need to interrupt the sampling process. After the isolation valve, a primary sample cooler is used to cool down the process temperature by cooling the water; a pressure reducer is placed next to reduce the pressure and flow rate of the process which flows through the sample cooler to reach the first step of temperature reducing. Before the process continues to the second sample cooler, two things needs to be considered. One is to install a safety relief valve to avoid any occasional upset conditions. The other is to consider a flush line here by using a three way valve. This three way valve here is used to switch between “flush” and “service” which will reduce the process sediment when start-up or upset conditions. The valve can be used in both manual or automatic actuated methods depending on user preference.

The secondary sample cooler here is to control the process temperature to around 25°C by using a chiller unit to provide cold water. Therefore, it is important to choose a proper chiller unit which can provide sufficient cooling capacity. The temperature and pressure gauge are next to the secondary sample cooler to indicate the current process conditions, users can use either the switch or the thermal shut off valve here to protect the downstream analyzers. The process flow right now is conditioned and is ready to flow through the analyzers, a back pressure relief valve here can provide sufficient back pressure and steady the flow rate. Meanwhile, inspectors can take the sample in the outlet of the back pressure relief valve for comparison between laboratory and on-line analyzers.
Sample system components

**Sample Cooler LECOL** provides many types of sample coolers for primary and secondary cooling section, whether in steam or drum water process, from 0.1 ~ 0.4 square meter heat exchange surface to 1/4” ~ 3/8” tube outside diameters all of which can be suitable for most applications. LECOL standard type coolers comprise of an outer shell with welds at both end, this helps lessen the weight and prevents the possibility of leakage. Other removable shell types are also available upon request.

**Pressure reducer** Lecol’s patent high pressure reducer to be used in steam or drum water applications with operating pressures from 30 kg/cm² up to 350 kg/cm² max. This rugged designed 316ss body and its internals are suitable for most boiler sampling systems. 3/8”o.d. inlet & 1/4” o.d. outlet tube connection is standard, other connections are available upon request.

**Back pressure relief valve** is a critical component in the sampling line. It can provide steady back pressure to all analyzers. Most analyzers require a steady flow rate for a more accurate reading while being measured. LECOL back pressure relief valves can be provided with adjustable pressure settings from 1 to 2.5 kg/cm² to suit the requirements of most applications and analyzers. An optional pressure gauge can be equipped with the valve to read the setting pressure directly.
Sample system components

Resin column **LECOL** resin column is the most convenient and easiest to operate. The 316ss quick release connectors can provide the operator to remove the column effortlessly without causing any leakage. The Polycarbonate pipe body provides a clear view of the resin conditions, the rugged 316ss covers at both ends ensures longer lifespan than other materials. The optional Tygon flexible tube can be suitable for most of application and can provide flexible installation of the column. LECOL also offers column regeneration panels to make the regeneration of resin more easy and convenient.

**Chiller Unit** utilizes cold water to cool down the process temperature to around 25°C which makes the analyzers more reliable and accurate when compared with laboratory.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Unit</th>
<th>C-01</th>
<th>C-02</th>
<th>C-05</th>
<th>C-10</th>
<th>C-15</th>
<th>C-20</th>
<th>C-25</th>
<th>C-30</th>
<th>C-40</th>
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<tbody>
<tr>
<td>Control Temperature</td>
<td>°C</td>
<td>8 ~ 30</td>
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<td></td>
<td></td>
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<td>Power</td>
<td>VAC</td>
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<tr>
<td>Cooling capacity</td>
<td>50 Hz (BTU/HR)</td>
<td>9600</td>
<td>19,350</td>
<td>48,380</td>
<td>96,760</td>
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<td></td>
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<td>120,000</td>
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<td>5</td>
<td>5 x 2</td>
<td>7.5 x 2</td>
<td>10 x 2</td>
<td>12.5 x 2</td>
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<tr>
<td>Pump</td>
<td>HP</td>
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<td>0.5</td>
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<td>160</td>
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<td>Process Connection</td>
<td>Cooling water</td>
<td>3/4&quot; inlet</td>
<td>3/4&quot; outlet</td>
<td>3/4&quot; inlet</td>
<td>3/4&quot; outlet</td>
<td>11/2&quot; inlet</td>
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<td>2&quot; inlet</td>
<td>2&quot; outlet</td>
<td>21/2&quot; inlet</td>
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<tr>
<td></td>
<td>Chilled water</td>
<td>3/4&quot; inlet</td>
<td>3/4&quot; outlet</td>
<td>3/4&quot; inlet</td>
<td>3/4&quot; outlet</td>
<td>11/2&quot; inlet</td>
<td>11/2&quot; outlet</td>
<td>2&quot; inlet</td>
<td>2&quot; outlet</td>
<td>21/2&quot; inlet</td>
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</table>
Water analyzers

The following are the most common water analyzers.
1. pH analyzers
2. Conductivity analyzers
3. Low Level Dissolved Oxygen analyzers
4. Silica analyzers
5. Sodium analyzers
6. Hydrazine analyzers
7. Chloride analyzers

LECOL combines ABB water analyzers to our own sampling system products offering a complete sampling system with water analyzers. Unlike other sampling system suppliers, LECOL being ABBs water analyzers representative in Taiwan for many years, have numerous experienced engineers who can provide turn key based service and commissioning for the analyzers and also sampling system. “To provide good quality sampling system and good service/commissioning for water analyzers” are both our most important policy.

We can also combine other brand analyzers with our sampling system products if you prefer. LECOL sampling systems are the most suitable unit for all analyzers due to our many years of experience in water analyzers field.
Simple single line sampling system

The simple single line sampling system with analyzers is becoming increasingly popular in small boiler unit. Such as the boiler water blow down control, the steam condensate recycling, chemical dosing in small boilers and condenser leakage detector unit. All these small single line sampling panels require for a sample cooler, pressure reducer and one water analyzer, such as pH, conductivity (or Cation conductivity) analyzer. For the water that goes to the drain and waste after measurement, LECOL provides a complete collection tank with level control to restore them and automatically pump all the water back to recycling tank or other useful tank. This helps save hundreds of tons of water every year.

LECOL Luchan Enterprises Co. Ltd as a sampling system supplier provides all the units in the boiler water analysis applications such as a complete panel of sampling system for power plant, single line analysis for boiler, leakage detector for steam condensate, Cation ion conductivity for boiler drum and boiler drum water chemical dosing control etc. Our experienced engineers and system designers can help you find the solution and provide a more efficient way suitable for process and control.

Our many years of experience in water analyzers have also helped us to design more convenient units with the consideration of the operators or maintenance personnel's. We also manufacture our own sampling components such as sample cooler, pressure reducer, back pressure relief valve and Ion exchange column which are all based on the consideration of operating convenience and reducing the cost of operating ownership.

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Sample Cooler
Pressure Reducer
Back Pressure Relief Valve
Resin Column
Chiller Unit

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Conductivity analyzers
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Know More About Us
Please Visit : www.lecol.com.tw

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