CLAIMS

1. A distillation column comprising:

a column comprises a top section and a bottom section, wherein the top section has a vertical dividing wall that divides the top section into a first section and a second section, wherein the first section comprises an absorption unit, and the second section comprises an distillation unit, wherein top section of the column is configured to be operating at a pressure of 1.8 kg/ cm^2 g to 2.7 kg/cm^2 g and at a temperature of 40°C; a partial condenser in fluid communication the absorption unit of the first section;

a total condenser in fluid communication with the distillation unit of the second section;

an overhead receiver in fluid communication with the total condenser;

wherein the first section is a feed side that is configured to receive a feed stream and to separate the feed stream into light, non-condensable components and heavier components, wherein light, non-condensable components are removed from the column through the partial condenser as an overhead vapor product;

wherein the second section is configured to recover condensable components from the heavier components resulted from the first section through the total condenser;

wherein the bottom section configured to recover heavy components from the feed stream.

2. The distillation column of claim 1, wherein the column is used as a stabilizer that removes non-condensables lighter components, C_1-C_4, from mix aromatics feed, when the top section of the column is operating at a pressure of 2.7 kg/cm^2g, and at a temperature of 40°C.

3. The distillation column of claim 1, wherein the column is used as a deheptanizer that removes non-condensable lighter components, C_1-C_6, from mix aromatics feed, when the top section of the column is operating at a pressure of 1.8 kg/cm^2g, and at a temperature of 40°C.

4 The distillation column of claim 1, wherein the distillation unit of the second section generates a bottom product that is sent back to the first section as an absorption medium for removal of lighter non-condensable components.

5. The distillation column of claim 1, wherein the reflux of the bottom product reduces loss of C_5/C_6 to vapor.