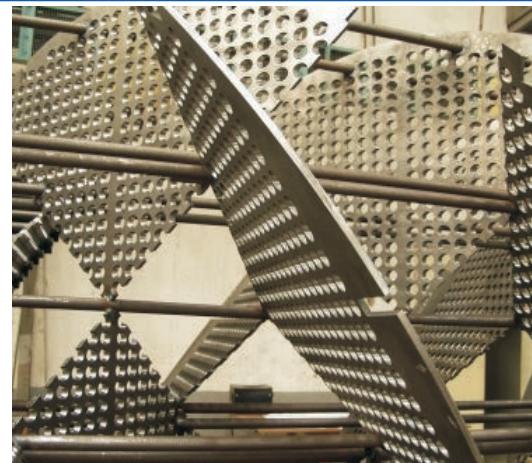


## PRODUCT OFFER

**Helixchanger** is the specific design of shell & tube heat exchanger where the baffles in the shell side are placed along the helical line. This arrangement of baffles creates the smooth medium flow resulting of smaller pressure drop with reduction of fouling and elimination the need of periodical cleanings. Because of that, **Helixchangers** are particularly suitable for services with high viscous and contaminated fluids where the fouling reduction in the shell side is of great importance for the operators.

Compared to the shell and tube heat exchangers, where baffles are placed perpendicularly to the exchanger axis, for the same heat duty the **Helixchangers** are smaller and cheaper giving the considerable advantages:

- no fouling
- no need of periodical cleanings
- increased heat exchange rate
- lower pressure drop
- lower energy consumption
- elimination of vibration hazards
- longer lifetime of exchanger relatively
- lower investment costs
- lower maintenance costs
- lower LCC



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**Helixchangers** are applied in the refineries in the offshore-plants, petrochemical, paper, food and power plants. There are many examples of application for vacuum residues cooling, reactor effluents cooling, oil-oil heat exchangers, gas-gas heat exchangers, water-water coolers, compressor after coolers, gas-liquid heat exchangers, condensers and reboilers.

Helixchangers are advantageous both in new projects and revamps of existing units. For revamps it is possible to replace tube bundle only, yielding increased capacity and/or thermal efficiency, at the same time reducing the frequency of periodical cleanings.

**HEAT EXCHANGERS OF “HELIXCHANGER” TYPE**

| End User Company Name                                | Year | Quantity [pcs] | Name                         | Temp. [°C] | Pressure [bar] | Material          | Weight [kg]    | Code Inspection       |
|--|------|----------------|------------------------------|------------|----------------|-------------------|----------------|-----------------------|
| PKN Orlen POLAND                                     | 2016 | 1              | AEU Helixchanger tube bundle | 385/250    | 36/25          | CS/CS             | 13 960         | PED + WUDT 2003       |
| Grupa LOTOS S.A. POLAND                              | 2016 | 1              | AES Helixchanger tube bundle | 200/350    | 25/14          | CS/CS             | 9 100          | PED + ASME VIII Div.1 |
| Grupa LOTOS S.A. POLAND                              | 2016 | 2              | AES Helixchanger tube bundle | 190/220    | 35/24          | CS/CS             | 26 800         | PED + ASME VIII Div.1 |
| PKN Orlen POLAND                                     | 2016 | 1              | AES Helixchanger tube bundle | 150/150    | 21,6/16,9      | CS/CS             | 9 000          | PED + WUDT 2003       |
| CB&I Nederland B.V. BASF Antwerp BELGIUM             | 2013 | 11             | AEU HELIXCHANGER             | 200        | 34             | CS                | 5 460 / 42 500 | PED +AD 2000          |
| LOTOS ASFALT Sp. z o.o. Gdańsk - POLAND              | 2010 | 1              | AES Helixchanger tube bundle | 300/300    | 11/11          | CS                | 2.500          | PED + WUDT UDT        |
| Grupa LOTOS S.A. Gdańsk, POLAND                      | 2010 | 3              | BEU Helixchanger tube bundle | 330/396    | 30,7/26        | CS+ 20MN5         | 7.800          | PED+WUDT UDT          |
| LURGI S.A. - LOTOS S.A. Gdańsk, POLAND               | 2008 | 7              | AES Helixchanger             | 200/260    | 35             | CS                | 20 000         | ASME + PED UDT        |
| LOTOS S.A. Oil Refinery Gdańsk, POLAND               | 2005 | 1              | AES Helixchanger             | 100/150    | 8,0/3,0        | C-Steel           | 3.500          | PED+WUDT2003 UDT-CE   |
| LOTOS S.A. Oil Refinery Gdańsk, POLAND               | 2004 | 1              | AES Helixchager              | 62/276     | 23,7/18,2      | C-Steel           | 9.000          | PED+WUDT UDT          |
| LOTOS S.A. Oil Refinery Gdańsk, POLAND               | 2004 | 1              | AES Helixchager              | 165/197    | 27,5/16,5      | C-Steel           | 16.900         | PED+WUDT UDT          |
| LOTOS S.A. Oil Refinery Gdańsk, POLAND               | 2004 | 1              | AES Helixchager              | 130/167    | 23,7/16,5      | C-Steel           | 18.000         | PED+WUDT UDT          |
| ABB Lummus Global GERMANY Oil Refinery Płock, POLAND | 2004 | 1              | AJS Helixchanger             | 120/65     | 12/10          | SS-1.4541 C-Steel | 22.200         | UDT UDT               |
| ABB Lummus Global GERMANY Oil Refinery Płock, POLAND | 2004 | 1              | AJS Helixchanger             | 120/65     | 7,1/10         | SS-1.4541 C-Steel | 18.300         | UDT UDT               |
| ABB Lummus Global GERMANY Oil Refinery Płock, POLAND | 2003 | 1              | BES Helixchanger             | 120/65     | 41,8/27,9      | SS-1.4541 C-Steel | 18.700         | UDT UDT               |
| ABB Lummus Global GERMANY Oil Refinery Płock, POLAND | 2003 | 2              | AJS Helixchanger             | 120/65     | 21/14          | SS-1.4541 C-Steel | 16.300         | UDT UDT               |
| ABB Lummus Global GERMANY Oil Refinery Płock, POLAND | 2003 | 1              | AJS Helixchanger             | 120/65     | 11,2/10        | SS-1.4541 C-Steel | 20.800         | UDT UDT               |
| ABB Lummus Global GERMANY Oil Refinery Płock, POLAND | 2003 | 1              | AJS Helixchanger             | 120/65     | 6,2/10         | SS-1.4541 C-Steel | 16.300         | UDT UDT               |
| ABB Lummus Global GERMANY Oil Refinery Płock, POLAND | 2003 | 1              | AJS Helixchanger             | 120/65     | 4,6/10         | SS-1.4541 C-Steel | 22.000         | UDT UDT               |

