

# CONFIND - PARTNER FOR PROJECTS WITH HIGH LEVEL OF COMPLEXITY

## LTS (LOW TEMPERATURE SEPARATION)



- As a consequence of constant accumulation in time of experience, specialists and technical equipment CONFIND began to engage the execution of projects as EPCC contractor. Such a complex project was LTS Plant(Low temperature separation), carried out by CONFIND between June 2012 and April 2013.
- The LTS pilot project was developed by the beneficiary in a program of rehabilitation of obsolete gasoline recovery plants, whose operation could have a negative impact on the safety and environment. The successful realization of this project opened the way of implementation of this technical solution in other locations.
- The project goal was that in the FEED study conducted by the Client, the contractor to carry out the execution of detailed design, procurement, installation and commissioning of a new gas conditioning plant for delivery in the national gas grid(SNT-Transgaz). The facility included also a gas suction compressor and installation of two pipelines to the local storage as well as training of operating personnel.

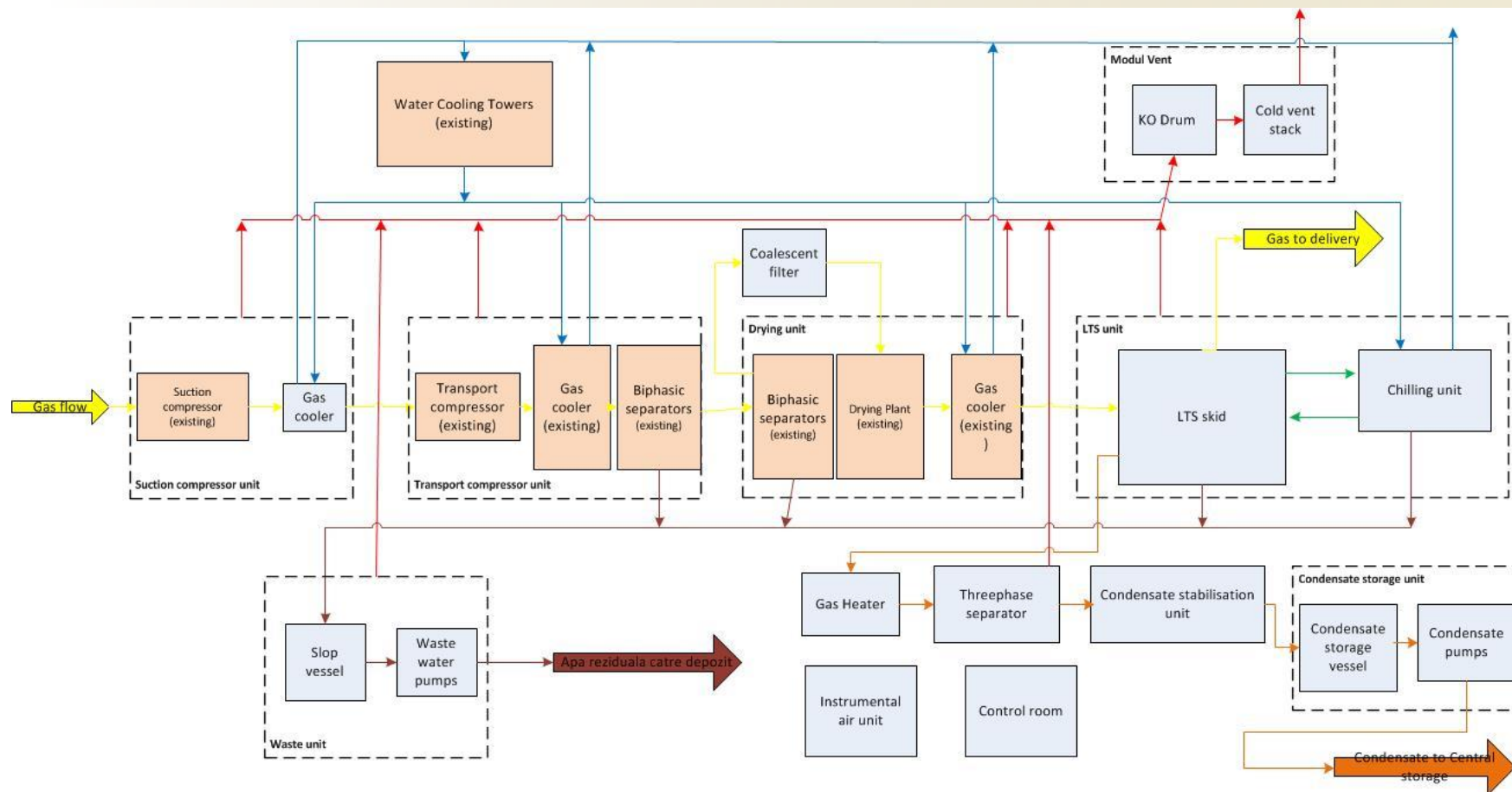
- The successful realization of this project was a challenge because:
  1. It was a pilot project for the Client;
  2. The new plant had to be integrated and installed into an existing process of an operating plant. This required a wide range of constraints for detailed design and for execution, as follows:
    - Accommodation of the new plant to existing process parameters;
    - Accommodating the location of the new plant in the existing space of the operational plant;
    - Design of interconnecting piping;
    - Exceptional safety measures for developing construction-assembly works in an operational facility;
    - Solutions for access and handling equipment during installation on site.
- The project was managed by CONFIND as general contractor, in cooperation with two main subcontractors, namely COMPROIECT-92 - general designer and ALCONEX - equipment supplier.



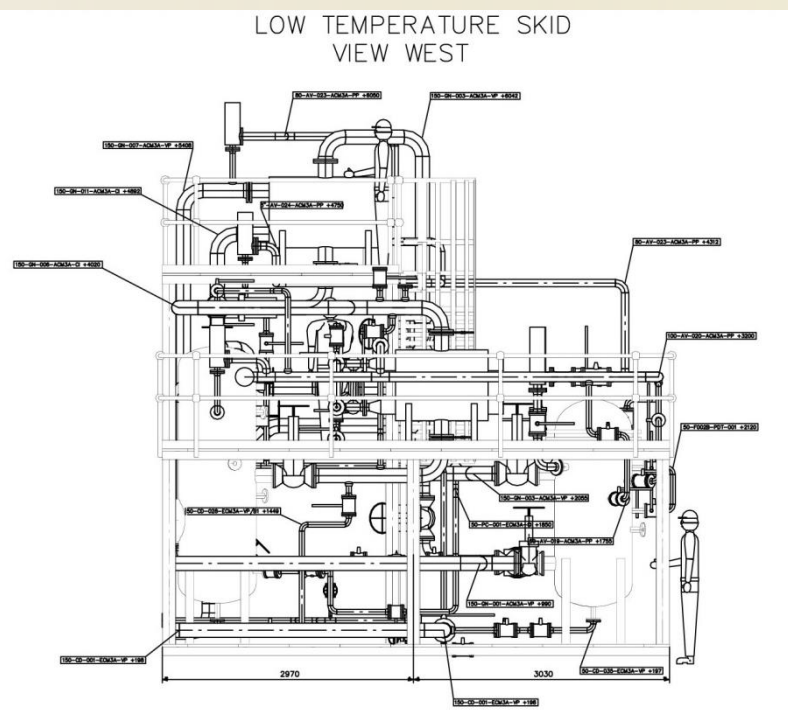
- The main objective of the project is to deliver into the national grid spec gas as well as to generate OPEX reduction. It is proposed to install a Low Temperature Separation Unit, a Condensate Stabilizer and to replace existing compressors (suction and transport) in order to achieve savings of OPEX with a minimum investment.



- Main components of the plant

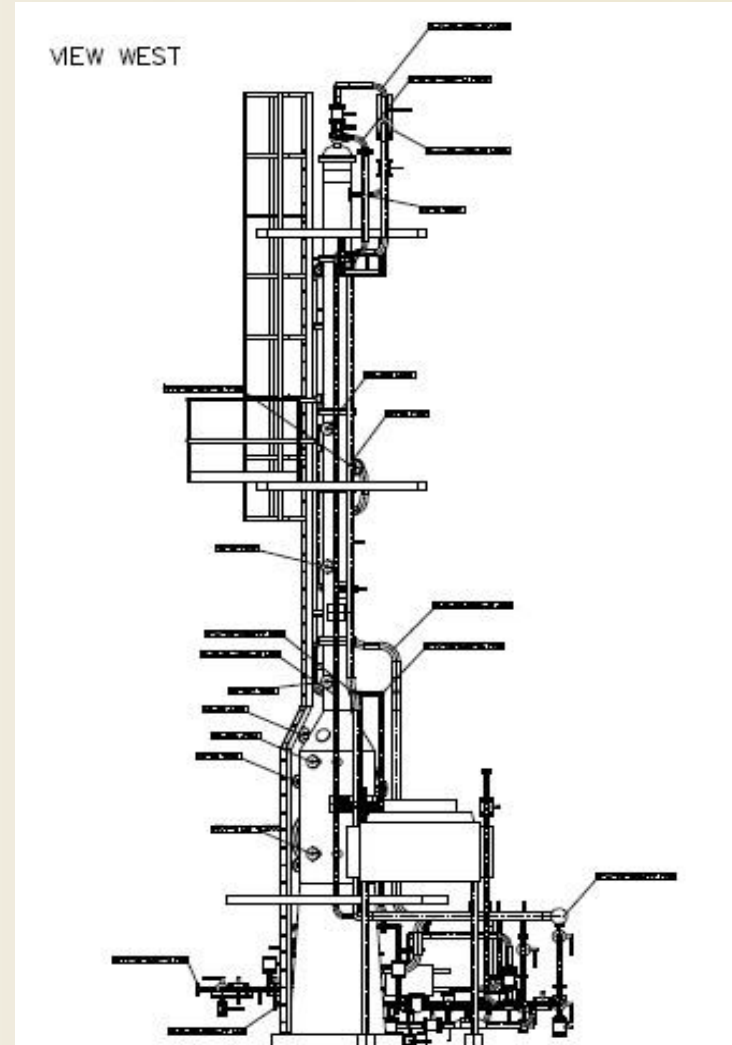


- LTS skid is a compact unit designed to separate the condensed gas products from rich dry gas



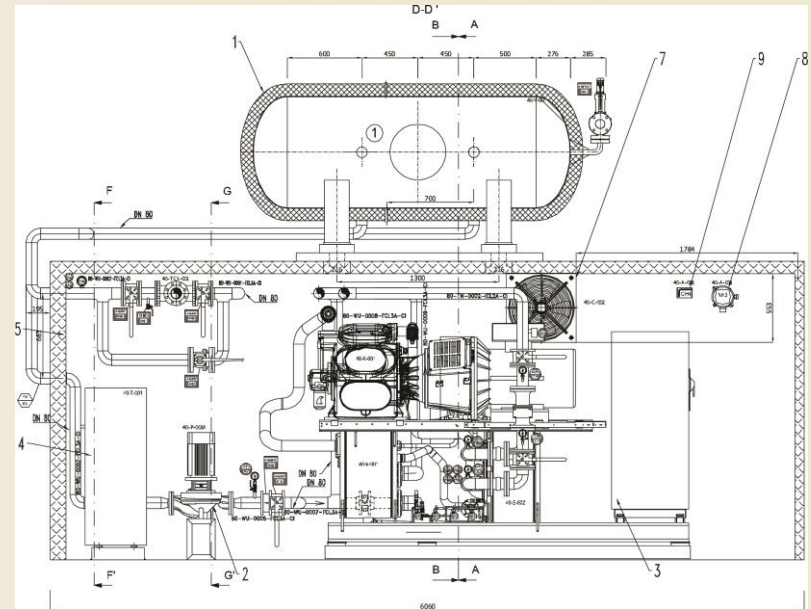


- Condensate Stabilization Unit separates the condensable product from the raw condensate. The condensate resulting from the process is stabilized at atmospheric pressure and temperature.



- Chilling Unit

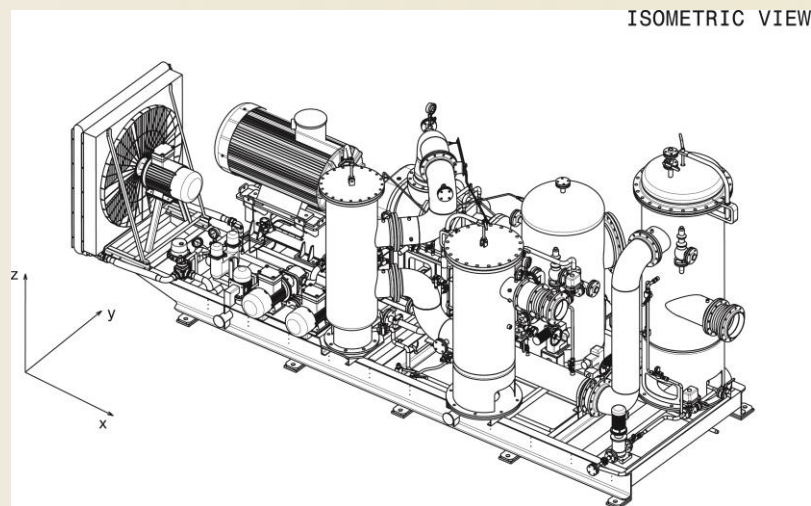
The Chilling Unit CHU-CHILLPAC 150-SFA produces and distributes chilled brine for cooling a plate heat exchanger necessary to gas drying and propane condensation technology of petroleum gases. The chilled brine is a mixture of 42% pasivized monoethylene glycol and 58% soft water, called forward **MEG**.





- Suction Compressor

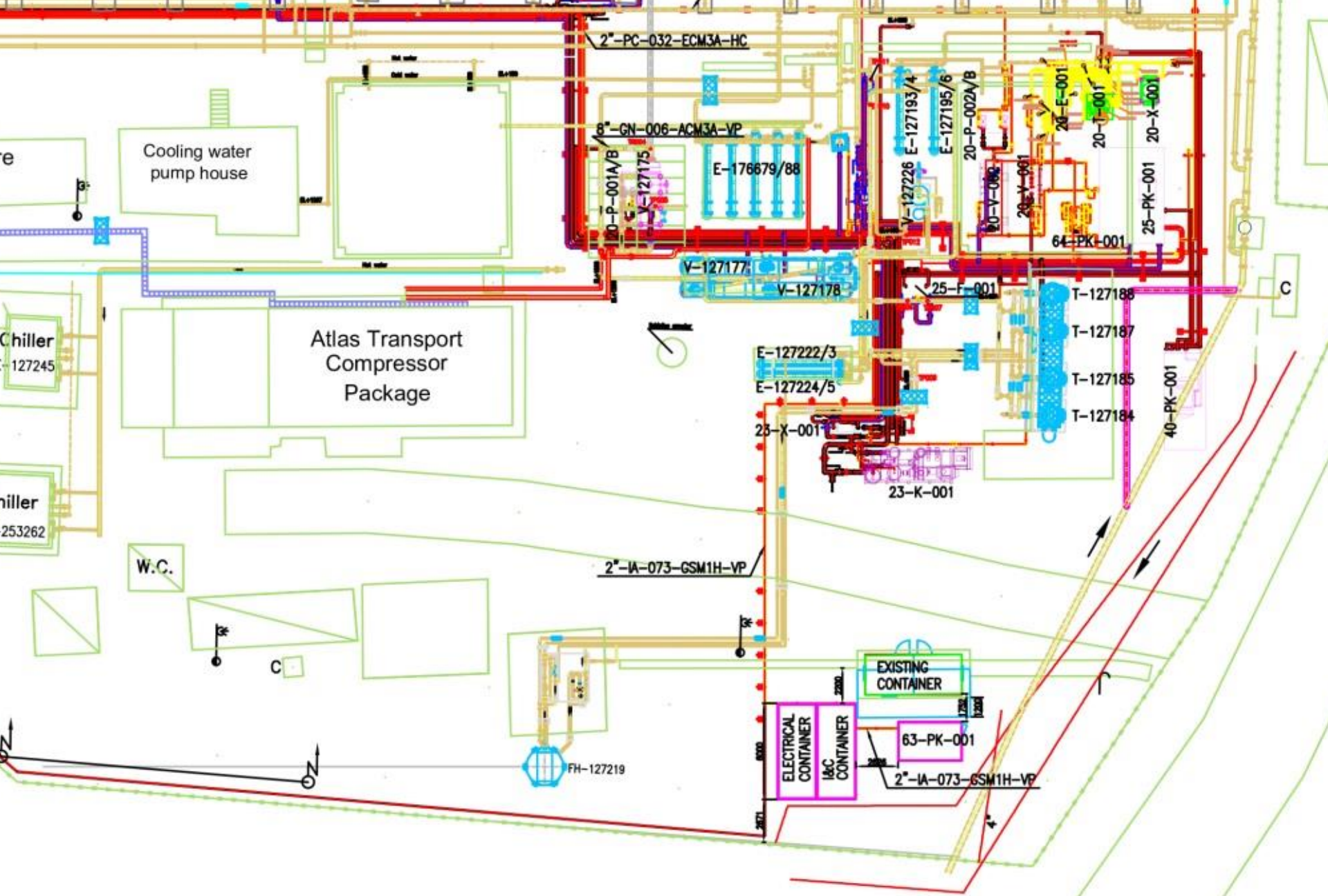
Confind ensured the integration of the new Suction Compressor in the existing plant.



- In this project CONFIND has conducted all activities such as: project management, civil works, manufacturing of main equipment.

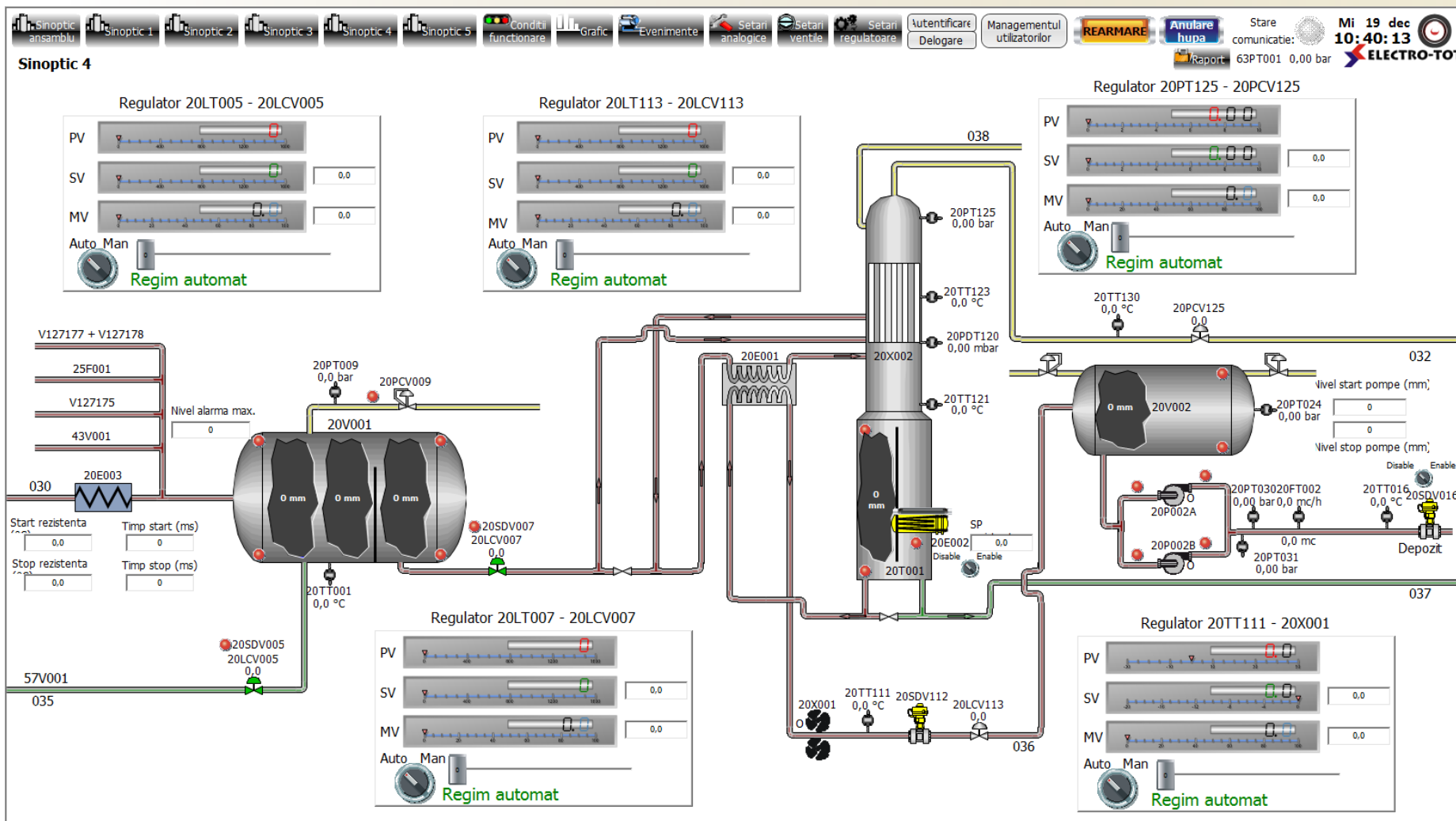









# Electrical, instrumentation and control works.



- Safety activities

# Simultaneous operations (SIMOPS) Matrices of permitted operations

|   |            |                     |          |             |           |
|---|------------|---------------------|----------|-------------|-----------|
| 2   |            |                     |          |             |           |
| 1   | 1.06.2012  | Issued for comments |          |             |           |
| 0   | 25.05.2012 | Issued for comments | Balan    | V Avramescu | D Bostina |
| Rev. n  | Date       | Description         | Prepared | Checked     | Approved  |
|  <p><b>PETROM</b><br/>Membru OMV Grup</p> <p>Document Title: <b>SIMULTANEOUS OPERATIONS MATRICES OF PERMITTED OPERATIONS</b></p> <p>Document Number :</p> <p>Rev.:</p> <p>Project Title: <b>LTS BOLDESTI</b></p> <p>Project No. <b>ROA 07114227006</b></p> <p>Page: <b>1 of 41</b></p> |            |                     |          |             |           |

| Field activities | Truck traffic | Crane operations | Welding | Excavation | Painting | Material transport | Installation work | Pressure tests | Cold tests | Hot tests | Drying station operation | Compressors station operation | Comments |
|------------------|---------------|------------------|---------|------------|----------|--------------------|-------------------|----------------|------------|-----------|--------------------------|-------------------------------|----------|
|------------------|---------------|------------------|---------|------------|----------|--------------------|-------------------|----------------|------------|-----------|--------------------------|-------------------------------|----------|

| Field activity   |    |    |    |    |   |   |    |   |    |   |    |    |  |
|--|----|----|----|----|---|---|----|---|----|---|----|----|--|
| Mounting LTS skid, stabilization column, SOT, gasoline buffer drum |    |    |    |    |   |   |    |   |    |   |    |    |  |
| Foundation trace   | Y  | -  | -  | -  | - | - | -  | - | -  | - | Y  | Y  |  |
| Demolition of the existing foundation                              | R1 | R2 | R3 | -  | - | Y | -  | - | -  | - | R4 | R4 |  |
| Digging / excavation (mechanized + manual)                         | -  | -  | -  | R5 | - | Y | -  | - | -  | - | R4 | R4 |  |
| Formwork / reinforcement   | -  | -  | -  | -  | - | Y | -  | - | -  | - | R4 | R4 |  |
| Pouring concrete foundation  | R1 | -  | -  | -  | - | Y | -  | - | -  | - | R4 | R4 |  |
| Mounting of equipment on foundations                               | R1 | R2 | -  | -  | - | Y | R6 | - | -  | - | R4 | R4 |  |
| Insulation work / pipeline connection                              | -  | -  | R3 | -  | Y | Y | R7 | N | R3 | N | R4 | R4 |  |
| Tests run  | -  | -  | -  | -  | - | - | -  | N | R3 | N | R4 | R4 |  |

# TOOLBOX MEETING

|          |                  |
|----------|------------------|
| Project  | LTS              |
| Location | BOLDESTI/ROMANIA |

| Participants       | Name/Surname/Function /Company                | Signature |
|--------------------|---|-----------|
| Valentin AVRAMESCU | Project Manager -LTS - CONFIND                |           |
| Date/ Place        | 21.04.2012                                    |           |
| Topics             | Location analysis prior to starting the works |           |

| No | Agenda   | Deadline | Responsible               | Status                  |
|----|--|----------|---------------------------|-------------------------|
| 1  | Budget approval. Opening internal orders.                                    | 4/9/12   | Avramescu                 | 4/6/12 Budget submitted |
| 2  | Clarification of piping insulation type.                                     | 4/6/12   | Soroiu                    | 4/2/12 Hard band Altene |
| 3  | Site hand over   | 4/25/12  | Avramescu                 | 4/15/12 done            |
| 4  | Check WPQRs and welder permits as per project requirements.                  | 4/14/12  | A.Burlacu                 | 4/6/12 done             |
| 5  | Site visit envisaging mobilization preparation and HSE document preparation. | 4/5/12   | Avramescu,Balan,Stoicescu | 4/4/12 done             |
| 6  | Prepare HSE & SIMOPs plan and submitting to Client                           | 4/14/12  | V.Balan                   | 4/12/12done             |
| 7  | Prepare Quality Plan and Inspection and Test Plans                           | 4/14/12  | Roman                     | 4/13/12 drafts ready    |
| 8  | Site organization  | 4/27/12  | Stoicescu                 | 80%                     |

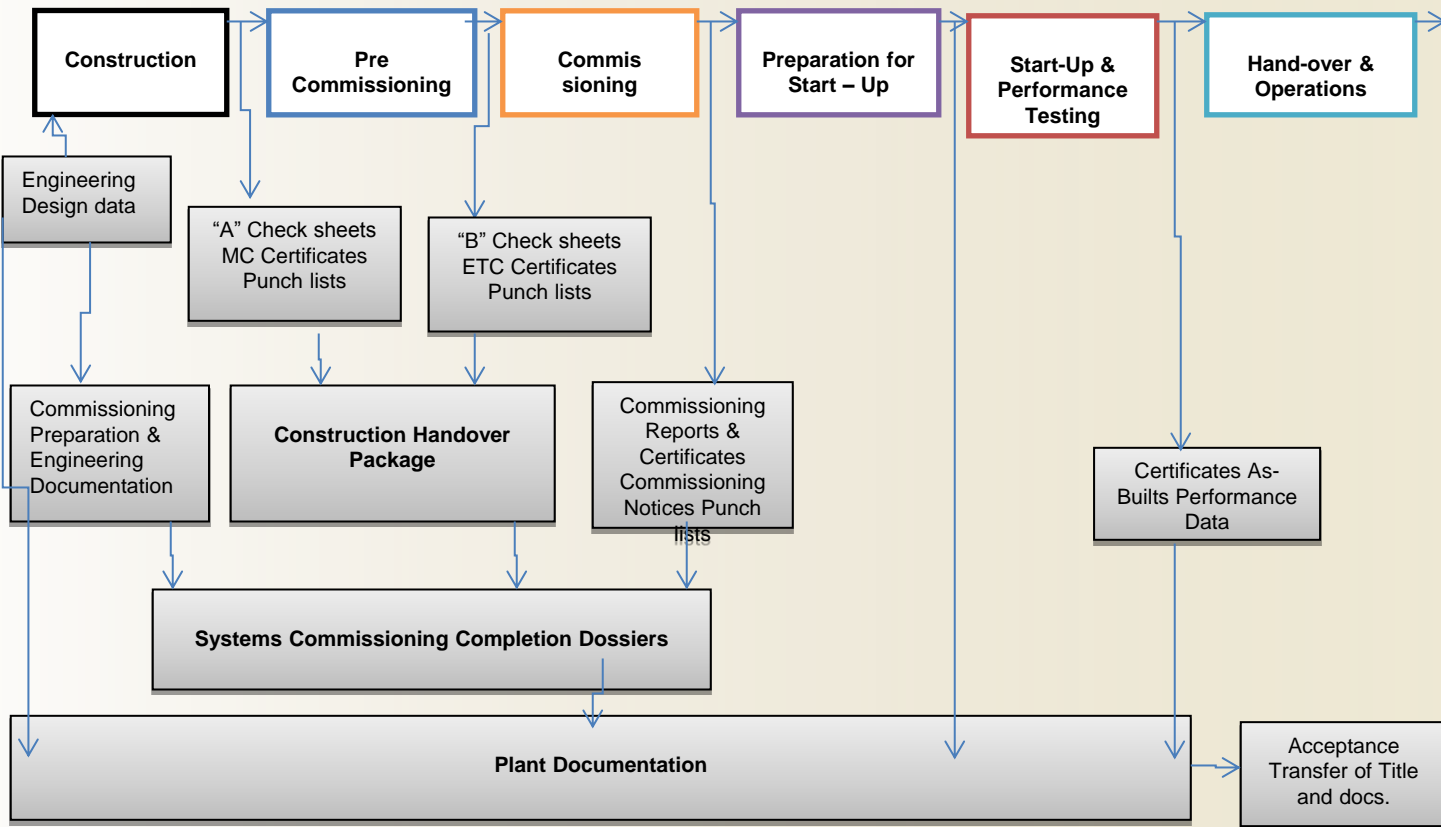


## TOOL BOX MEETINGS



- Commissioning and performance testing activities

## „Commissioning Flowchart”



# Commissioning and performance testing activities

|  |   |                                       |            |
|--|---|---------------------------------------|------------|
| <b>MECHANICAL COMPLETION CERTIFICATE</b>   |   |                                       |            |
| LTS PROJECT PILOT BOLDESTI   |   | Project No: A07114227006              |            |
| Document No.: MC 1   |   | Revision: 0                           |            |
| EMPLOYER:  | OMV Petrom S.A.<br>Petrom City Building<br>Corallor, no.22 sector 1<br>013329, Bucuresti, ROMANIA                   |                                       |            |
| Contract:  | EPCC LTS Boldesti   |                                       |            |
| Contract No:   | 8460014842  |                                       |            |
| Contract Date:   | 14.06.2012  |                                       |            |
| CONTRACTOR:  | SC CONFIND SRL  |                                       |            |
| <b>CONTRACTOR notices the Completion of the LTS Project Pilot Boldesti:</b>  |   |                                       |            |
| Station Name:  | Boldesti  |                                       |            |
| Station No:  | -   |                                       |            |
| Date of completion:  | 15.10.2012  |                                       |            |
| Referenced Documents:  | <input type="checkbox"/> IL-02-LTS Mechanical completion<br><input type="checkbox"/> Detailed design (and Red mark) |                                       |            |
| Availability for inspection completion of works for the installation LTS Boldesti Pilot Project is notified to the date 15.10.2012   |   |                                       |            |
| de catre:  |   |                                       |            |
| Contractant / Data   |   |                                       |            |
| <input checked="" type="checkbox"/> The completion of works for LTS Boldesti project Pilot is confirmed for the date 16.11.2012, with punch list attached.<br><input type="checkbox"/> Not confirmed |   |                                       |            |
| Reasons:   |   |                                       |            |
| Prepared by:   | Date:   | Reviewed by:                          | Date:      |
| Construction Manager<br>Ion Soroku   |   | Project Manager<br>Valentin Avramescu | 16.11.2012 |
| Construction Coordinator   |   | Project Manager<br>Zeeshan Mazhar     |            |
|  |   | EMPLOYER Representative               |            |

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|   |       |                                   |            |
|---|-------|-----------------------------------|------------|
| <b>DY FOR COMMISSIONING CERTIFICATE</b>                         |       |                                   |            |
| CT PILOT BOLDESTI   |       | Project No: A07114227006          |            |
| Revision: 0   |       |                                   |            |
| m S.A.<br>Building<br>no.22 sector 1<br>Bucuresti, ROMANIA      |       |                                   |            |
| Boldesti  |       |                                   |            |
| 42  |       |                                   |            |
| 2   |       |                                   |            |
| IND SRL   |       |                                   |            |
| <b>of the precommissioning LTS Project Pilot Boldesti:</b>      |       |                                   |            |
| Boldesti  |       |                                   |            |
| 30.11.2012  |       |                                   |            |
| TS Commissioning Procedure                                      |       |                                   |            |
| d design (and Red mark)   |       |                                   |            |
| IE L PE-P-ROA07114227006-GE-MAN-001-02-E_Pro-nig_commis_startup |       |                                   |            |
| ing of facilities LTS Boldesti Pilot Project:                   |       |                                   |            |
| Prepared by:  | Date: | Approved by:                      | Date:      |
| Project Manager<br>Valentin Avramescu                           |       | Project Manager<br>Zeeshan Mazhar | 16.11.2012 |
| Construction Manager  |       | EMPLOYER Representative           |            |

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|   |            |   |            |
|---|------------|---|------------|
| <b>INITIAL RUN (72 H PERFORMANCE TEST) CERTIFICATE</b>  |            |   |            |
| LTS PROJECT PILOT BOLDESTI  |            | Project No: A07114227006  |            |
| Revision: 0   |            |   |            |
| OMV Petrom S.A.<br>Petrom City Building<br>Corallor, no.22 sector 1<br>013329, Bucuresti, ROMANIA   |            |   |            |
| EPCC LTS Boldesti   |            |   |            |
| 8460014842  |            |   |            |
| 14.06.2012  |            |   |            |
| SC CONFIND SRL  |            |   |            |
| your confirmation concerning the Performance Test for the date  |            |   |            |
| Signature/date<br>17.12.2012  |            |   |            |
| ve checking tests, it was seen that the LTS Plant has produced gas d,continuous 72 hours to the designed parameters in line with the ance Test procedure. |            |   |            |
| e Test was carried out successfully from the date   |            |   |            |
| .....until the date of....21.12.2012... (see run)   |            |   |            |
| Signature/date<br>21.12.2012  |            |   |            |
| Prepared by:  | Date:      | Approved by:  | Date:      |
| Project Manager<br>Valentin Avramescu   | 12.12.2012 | Project Manager / Asset Representative<br>Marinus Clortan / Florin Bacanu | 17.12.2012 |
| Construction Manager  |            | EMPLOYER Representative   |            |

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|  |  |                                 |  |
|--|--|---------------------------------|--|
| <b>HAND OVER OF OPERATING RESPONSIBILITY CERTIFICATE</b>   |  |                                 |  |
| LTS PROJECT PILOT BOLDESTI   |  | Project No: A07114227006        |  |
| Revision: 0  |  |                                 |  |
| OMV Petrom S.A.<br>Petrom City Building<br>Corallor, no.22 sector 1<br>013329, Bucuresti, ROMANIA  |  |                                 |  |
| EPCC LTS Boldesti  |  |                                 |  |
| 8460014842   |  |                                 |  |
| 14.06.2012   |  |                                 |  |
| SC CONFIND SRL   |  |                                 |  |
| <b>as the Completion of the Performance Test of LTS Project Pilot Boldesti:</b>  |  |                                 |  |
| Boldesti   |  |                                 |  |
| -  |  |                                 |  |
| 21.21.2012   |  |                                 |  |
| <input checked="" type="checkbox"/> Performance Test Certificate<br><input type="checkbox"/><br><input checked="" type="checkbox"/> List of contractor's technical support team during next ~ 2 weeks (from 21.12.2012 to 07.01.2013)<br><input checked="" type="checkbox"/> Punch list Attached (6 pages)               |  |                                 |  |
| service following successful completion of the performance test of 72 hours. The e operation of the plant is handed over by the Contractor to the OMV-Petrom   |  |                                 |  |
| antes that the plant can be operated in good conditions and the open items from it have a negative impact on the plant operation or safety conditions, confirms that his technical support team will be available in the period from 013 to visit the site on short notice for resolving any problem in operation of the |  |                                 |  |
| DANGER (contractor)  |  | OPERATOR ASSET VII (OMV-Petrom) |  |
| drian  |  | Florin Bacanu                   |  |
| AGER (contractor)  |  | PROJECT MANAGER (OMV-Petrom)    |  |
| imescu   |  | Marinus Clortan                 |  |
| DATE: 21.12.2012   |  | 21.12.2012                      |  |

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- The key of this successful project is the team effort of all the participants involved in design, manufacturing, site activities, project management.
- LTS Boldesti project was managed by a dedicated team.

