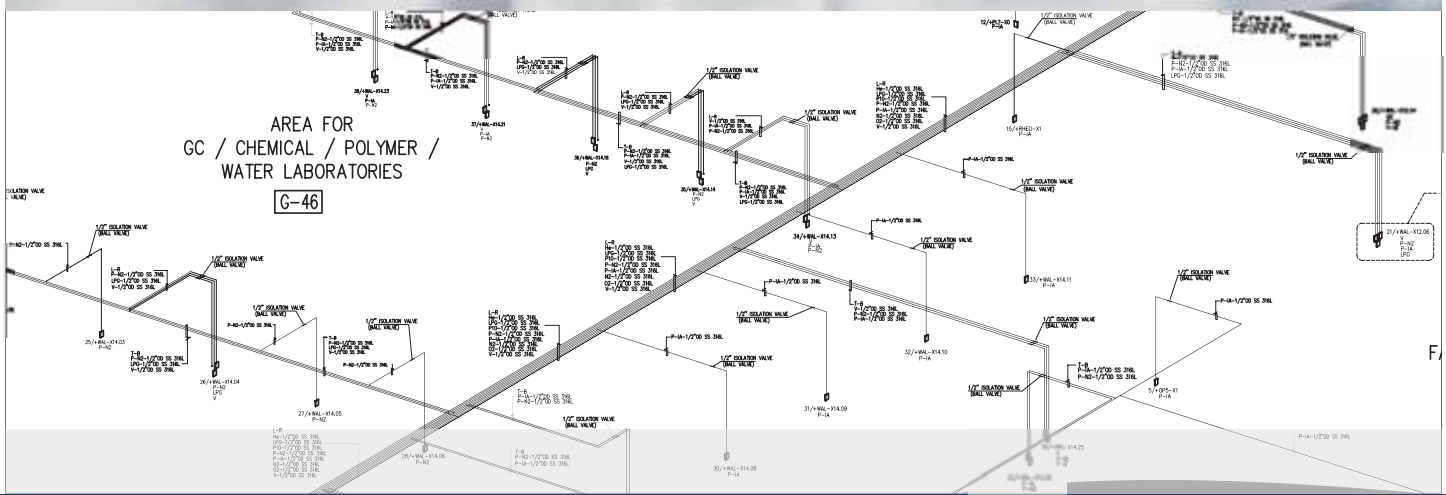


The solution for a new laboratory establishment

Turn-key Laboratory Solutions

High performance laboratories for the polymer and petrochemical industries



OCS Turn-key Laboratory Solutions

When planning and constructing a total laboratory package, many aspects are involved and have to be considered. The optimal selection and combination of lab equipment, the management of vendors activities, the difficulty to coordinate their commissioning dates and their potentially delay in delivery are all tasks that should be coordinated properly to present a complete laboratory within the given timeline.

Dealing with OCS as only one company in charge of coordination increases efficiency, assists in attaining the desired outcome and smoothes the progress of the project as a whole.

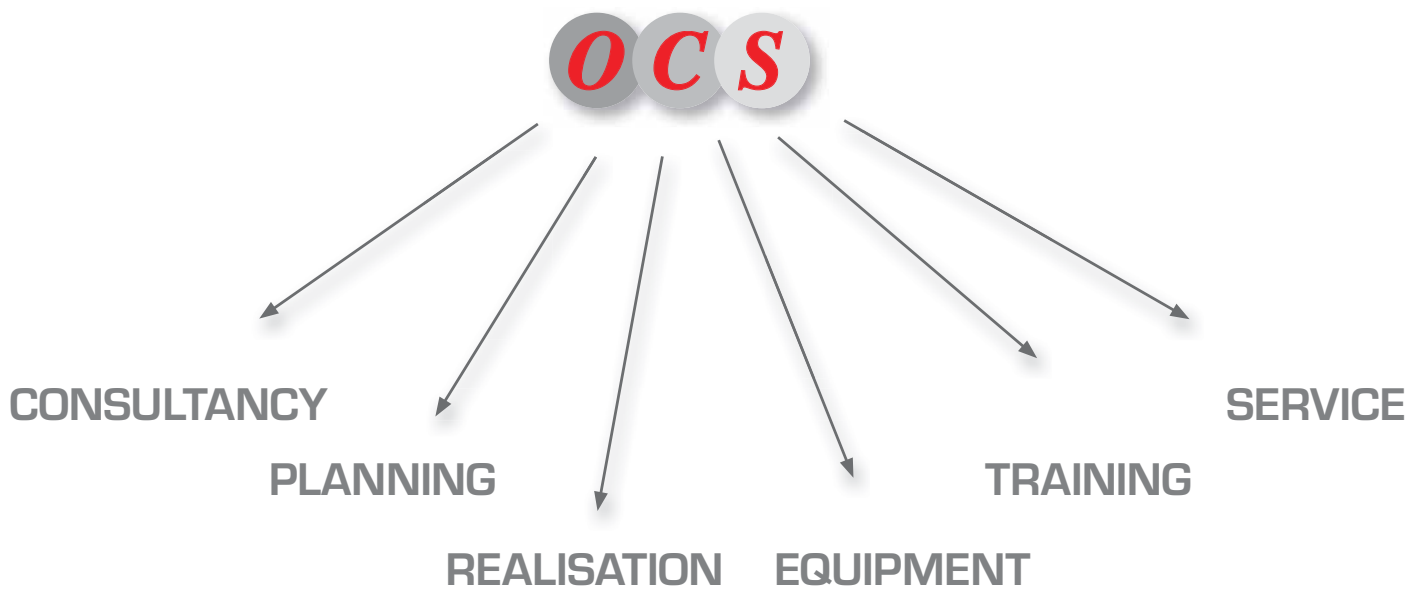
All vendors have to meet the same high standards of OCS in quality and reliability. The advantages for the end-users are evident: Observance of milestones and finish date as well as the appointed budget, regular updates from one hand and reliable information about the project from an experienced company in the polymer and petrochemical industries that is directing the work efforts.

OCS Turn-key solutions are the best choice for customers that aim to have a safe and efficient laboratory with an excellent reputation.





One single contact: overall responsibility

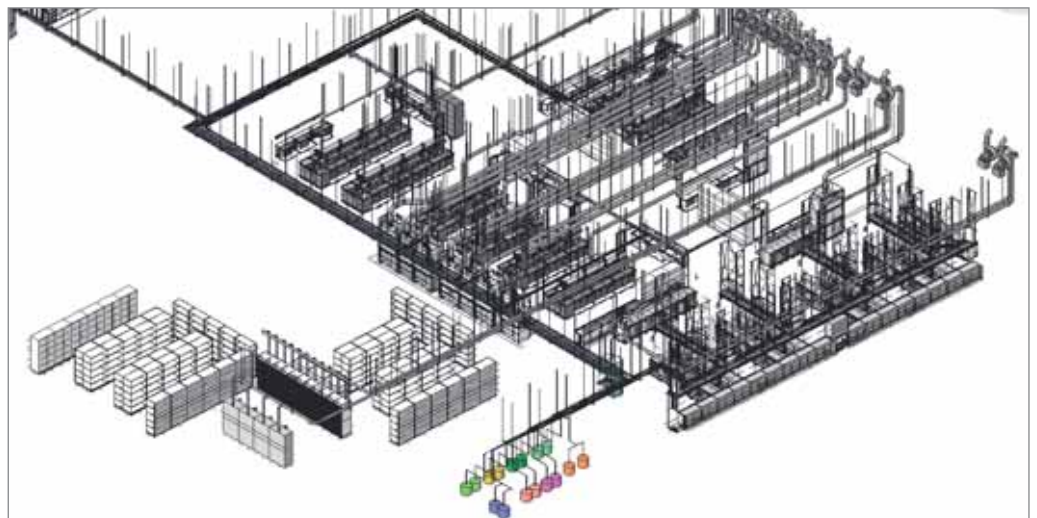
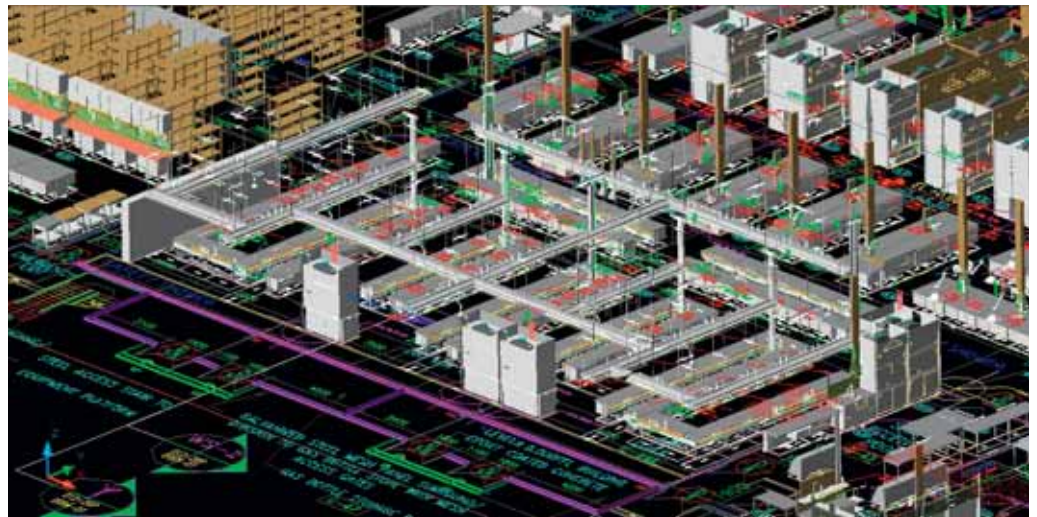


Step 1: Consultancy

Defining the clients needs and targets is the important topic in OCS consultancy. The configuration of laboratory organisation and the optimisation of the workflow -short ways, thematically linked laboratory parts which are geared to the processes and sampling sequences- are discussed with highly competent experts, who have many years of experience in fitting out some of the biggest laboratories world-wide.

The optimisation of equipment, consumable utilities and all necessary spare parts are part of this step.

For any petrochemical laboratory project OCS creates a tailored package in accordance to the clients needs and strives for an ideal solution of significant technologies, with consideration to laboratory purpose and in accordance with the international safety standards.



Step 2: Planning

While planning, OCS optimises the relation between laboratory divisions (gas chromatography, physical lab, clean room, fabrication lab, etc.) and defines its best location for an optimal sample preparation and sequence. The safety of laboratory employees is one of the highest targets in the planning of each area of the laboratory.

It is very convenient to use visualisation tools, allowing both parties to simulate the final layout. OCS experts work with state of the art software packages for this purpose.

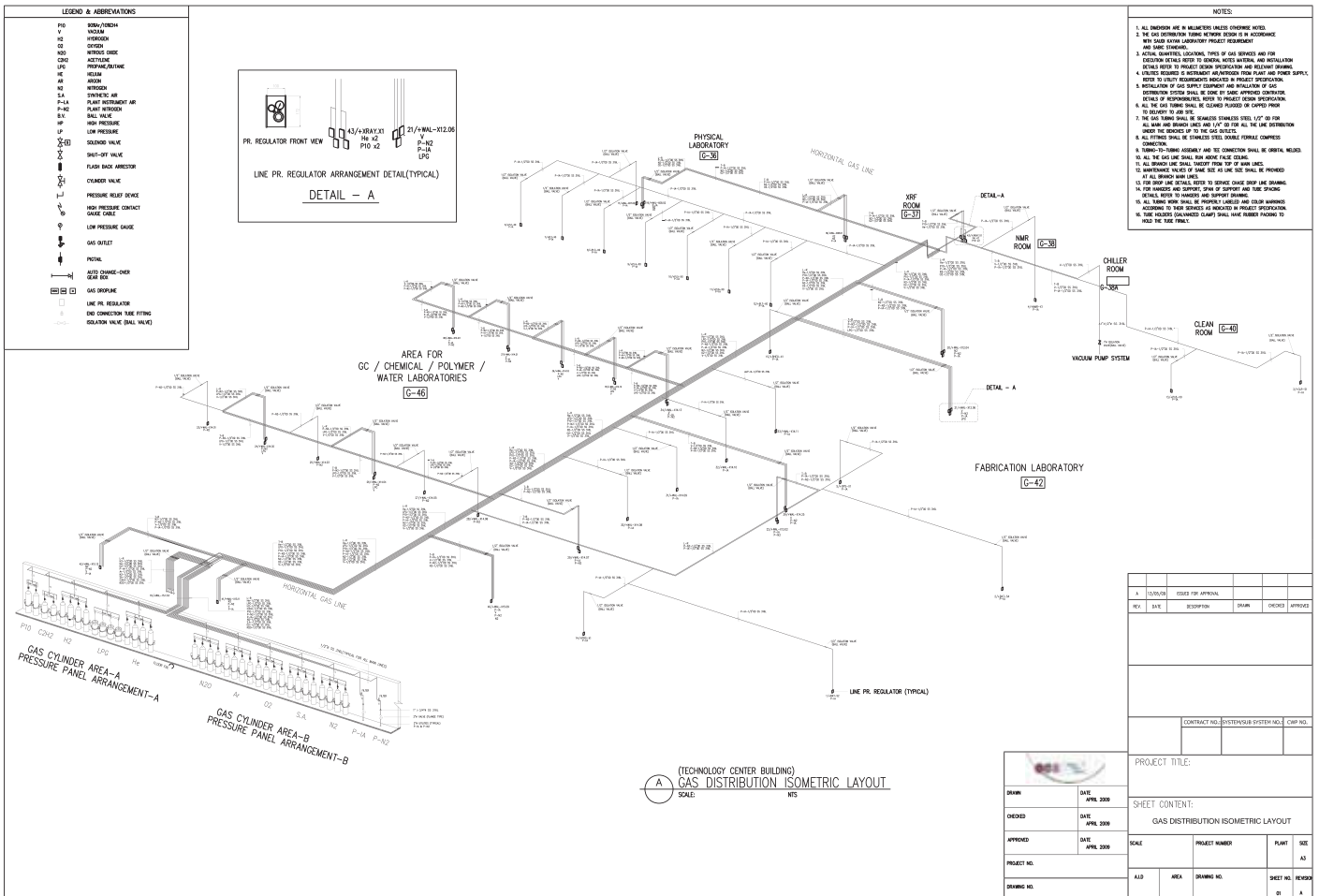


Step 3: Utilities

The optimal supply of the laboratory with power, light, water, electricity, ventilation, instrument and plant air, technical gases, chemicals, drainage or vacuum supply lines is carried out in the next step. The organisation of the supply requires experience and know-how to avoid delays and unnecessary expenses through time lag or high material consumption.

OCS experts plan all necessary utilities as well as safety showers, extraction system, waste and storages. Furthermore, they control the smooth realisation of their plans on site that guarantees a great deal of time saving.

Being aware that a good working place is most important for the clients' success, OCS aims to provide laboratory utilities at differential and high standards (Environment, Health, Safety - EHS), while taking into consideration all of the clients needs: in relation to quality, health-safety and laboratory furniture.



Gas line supply

Step 4: Realisation

The execution phase characterises the period from the shell of building to the commissioning of all systems. In this highly sensitive step of consolidation of all involved parties, a huge of coordination is needed in order to ensure that the project ends smoothly.

OCS supervises all main parts of realisation on-site: building, interior equipment, -installation and commissioning as one company in charge of the management to foresee problems and overcome them.

Analytical equipment, interior and system installation

The optimal selection of laboratory equipment and systems depends on the clients` needs and on its budget. OCS works together with leading and well-known manufacturers of laboratory equipment. The long-lasting cooperation allows rapid customer specification, but OCS is not supplier bounded. In every case the efficient and effective clients` solution is strived.

Nearly every system passes OCS headquarter for quality control. This procedure avoids a majority of uncertainties and unforeseeable problems due to packing and transport.

OCS arranges for smooth utility connection, laboratory furniture and equipment.

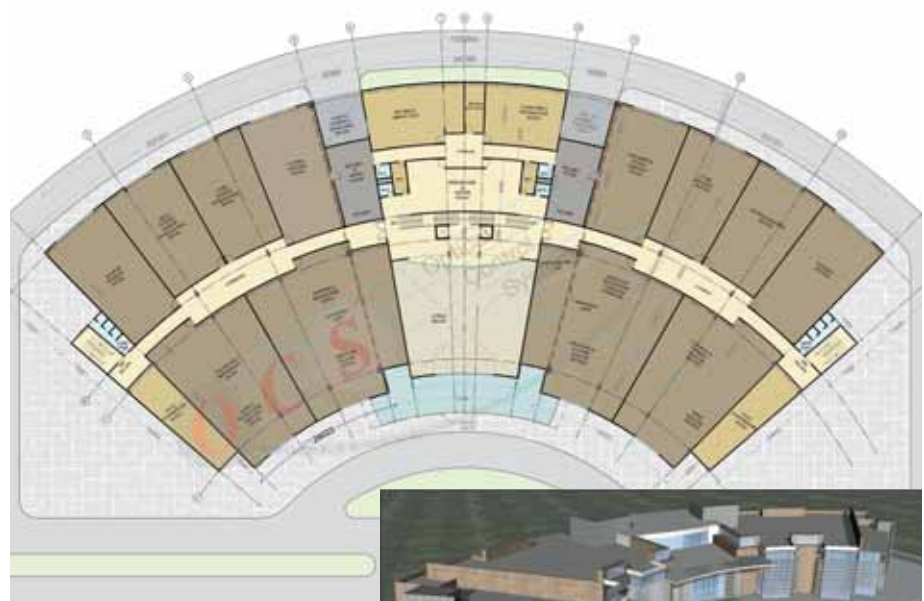
Commissioning

OCS organises and arranges the assignment according to given timetable for traveling of all specialists. All machines are run by OCS and experts of the respective companies. The first sample tests are simultaneously used as first course of instruction for the future operators.



Building

It is important to adjust the aim and the assembly of the laboratory according to the structure for cost saving and optimising the sample sequence. On option OCS adopts the consultancy of an architect and a building enterprise to coordinate the whole construction of the building.





Equipment

OCS provides complete tailored analytical packages for any plastic licence. Borealis, Dow, Equistar, ExxonMobil, Ineos, LyondellBasell, Mitsui Chemicals, Novolen Technology

A package can include the following techniques:

Spectroscopy and Chromatography

- Flame Photometry
- Thermal Analysis
- Surface Analysis
- TOC Analysers
- Oil and Grease content Analysis
- Fluorescence
- Atomic Absorption (AAS)
- Nuclear Magnetic Resonance (NMR)
- UV/VIS
- Fourier Transform Infrared Spectroscopy (FT-IR)
- Fourier Transform Near Infrared Spectroscopy (FT-NIR)
- X-ray Fluorescence (XRF)
- Differential Scanning Calorimeter (DSC)
- Gas Chromatography (GC)
- Gas Chromatography with Mass-Spectroscopy (GCMS)
- High Performance Liquid Chromatography (HPLC)
- Liquid Chromatography Mass-Spectroscopy (LCMS)
- Multi Purpose Analysis

Polymer Analysers on/offline

- Extruders
- Cast Film Lines
- Blow Film Lines
- Chill Rolls & Winder Units
- Film Analysis (Gels, Contamination, etc.)
- Pellet & Powder Analysis (Contamination, Blackspects, Degradations, etc.)
- Pellet Size & Shape Analysis
- Pelletizer

- Infrared Spectroscopy for Additives & Density Measurement
- Haze/Gloss Measurement
- Colour Measurement
- Rheology Technique

Analytical Instruments

- Melting Point Determination
- pH/Ion Meters
- pH Control
- Conductivity Analysis
- O₂-Analysis
- Humidity Analysis
- Moisture Determination
- Distillation Analysis
- Titration
- Filtration
- Temperature Measurement
- Liquid Analysis
- Evaporation
- Flash Point Tester
- Microscopes
- Ultrasonic Technique



Material Testing and Polymer Testing Equipment

- Universal Testing Machines
- Lab-Presses
- Friction-/Peel Testing
- Tensile Testing
- Blocking Force
- Injection Moulding
- Melt Flow Indexer
- HDT/VICAT
- Hollow Die Punch
- Density Gradient Columns
- Falling Dart Instrument
- Pendulum Impact Testing
- Hardness Tester
- Density Measurement
- Viscosity Measurement
- Manual and Pneumatic Specimen Punch
- Notching Machine (manual and motorized)
- Sample Preparatio
- Heating and Drying Chambers
- Vacuum Furnaces
- High Temperature Furnaces
- Muffle Furnaces
- Microwave Ovens
- Clean-Room Ovens
- Safety Ovens
- Drying Ovens
- Compact Laboratory Dryer
- Incubators
- Laboratory Refrigerators and Cryostats
- Analytical Balances
- Precision Balances
- Micro + Ultra Micro Balances
- Balances for special purposes



Step 5: Training

Training is provided by experts in the field. The first training takes place after commissioning in the laboratory is completed. Operators learn more when they are given "hands on" training on their own equipment.

People with many years of experience will guide the operators of the client through all the related procedures and help them to acquire the new technology. Usually it is advised that training takes place in small groups in order for the participants to gain the most knowledge. Training sessions include theoretical as well as practical training, whereas the main focus is on the practical exercise. Further training courses for equipment operators and chemists can be provided at company headquarters for the purpose of broadening the scope of knowledge.

Service

After the completion of the training phase OCS provides the client with support during start up. This support includes the following:

- **All documentation is reviewed**
- **Procedures are fine tuned**
- **Follow up and communication is maintained**
- **Feed-back and improvement processes to drive for continuous improvement**
- **Training in operation, maintenance and trouble shooting**

This backup is to ensure that the client gains the most out of each session from the processes in the laboratory and help the laboratory start-up become more resourceful and smooth.



Your advantages

OCS Turn-key Laboratory Solutions have fitted out some of the biggest polymer and petrochemical laboratories world-wide.

- Excellent personal know-how and many years of experience in planning turn-key solutions and trouble shooting
- Global player with global network
- One single contact with overall responsibility: One partner at any time at any place
- Smooth, effective and efficient realisation with high quality equipment and elaborate solutions for cost effective and excellent operation

INDIAN OIL CORPORATION IOCL

IBN ZAHR

YANSAB

HUNTSMAN/SABIC

**AMIR KABIR PETROCHEMICAL
COMPANY AKPC**

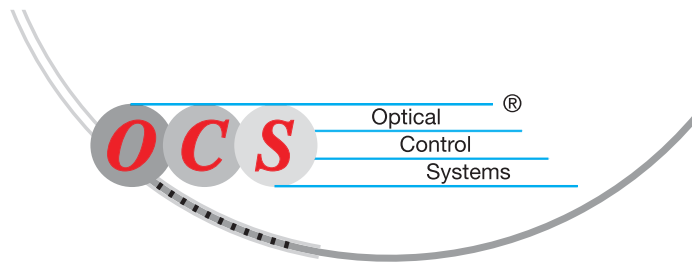
SAUDI KAYAN

TASNEE

OMAN POLYPROPYLENE

»Inspired synergy«

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