

NOVEMBER 2017

SOCAR Polymer Newsletter / Issue 11 / 2017

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11,415,799

Man-hours LTI Free

442

Employees

96.1%

PP Total progress in November

84.1%

HDPE Total progress in November



SOCAR Polymer's green policy targets



At SOCAR Polymer LLC, Health, Safety and Environmental protection (HSE) are at the very heart of our business. The number of LTI-free hours accomplished to date demonstrates our commitment to protecting our employees, while our environmental policy manifests our awareness of and close attention to any aspects that may be affected by our activities.

SOCAR Polymer is committed to minimizing the environmental footprint and social impact for influencing people's well-being by improving upon the standard for sustainable management practices in project delivery. The Environmental and Social Impact Assessment Report was generated by world recognized environmental consultancy "Golder Associates" to identify the potential environmental and social impacts of the HDPE and PP projects, evaluate alternatives and further design appropriate mitigation, management and monitoring measures by implementing the Equator Principles. All the environmental and social issues raised in the assessment process were addressed in the Environmental Management Plan and Environmental Action Plan, with the required actions incorporated to comply with the related IFC (international finance corporation) Performance Standards.

Our responsibilities are to respect national laws and international standards, match or exceed global best practice and adopt our own rigorous environmental standards.

The efforts you have witnessed made both in office and on site to reduce waste and pollution to the environment and to promote our employees' involvement in our HSE programs are the reflection of our conscientious attitude to the issues of ecological and community wellness.

We are looking to integrate HSE into all of our business activities, further promote a proactive culture and healthy lifestyle, identify risks arising from all our activities and reduce them to an as low scale as reasonably practicable by setting challenging goals, monitoring our performance, adopting the best practices and taking action to continually improve.

Let us together make SOCAR Polymer an unprecedented project not only in economic and financial model terms, but also in adherence to HSE standards calling upon our community to be environmentally aware, proactive and friendly.

A handwritten signature in blue ink, appearing to read 'Farid Jafarov', with a stylized flourish at the end.

Farid Jafarov



November 2017

Site Photos



PROGRESS ON SITE DURING NOVEMBER

HDPE plant

October

Progress over November

November



HDPE: Blending Silos.

Cable tray erection started. Secondary & Support steel erection ongoing



HDPE: Organoleptic Structure and Effluent Treatment.

SS erection and cable tray installation ongoing





HDPE: Extrusion Structure.
Black resin unit equipment's installation ongoing.
Columns casted.
SS and piping erection in progress



HDPE: Polymerization.
Equipment erected. Piping & Support erection ongoing.
SS, junction box, lighting installation in progress



HDPE: Electrical Substation.
Natural & Black PLC cabinet panels installed.
Smoke detectors installed over Transformer area



HDPE: Pellet blower package space for logistic conveying.
Pipe erection in progress





HDPE: Reactors
Dump tank.
Electrical and
instrumentation
works in
progress



HDPE: Catalyst Activation.
SS erection in progress



HDPE: Low Pressure Solvent Recovery.
SS erection in progress. Paving completed

PP plant and U&O area

October

Progress over
November

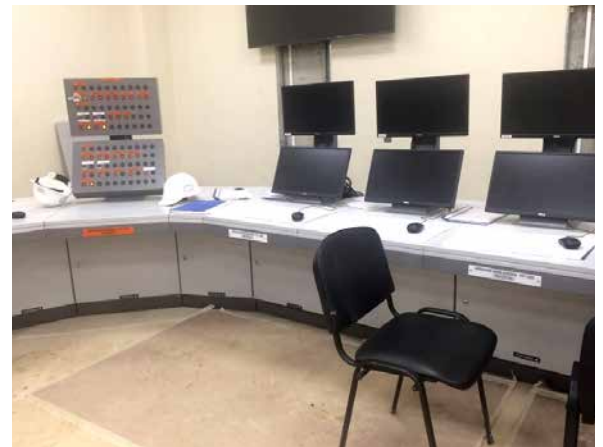
November



PP/U&O:
Electrical
substation.
Complete
energization
activity in
progress



PP/U&O:
Common Control
Room.
Pre-
commissioning
activities in
progress



PP/U&O:
Chemical
& Additives
Storage
Building.
Roof sheeting
works
completed.
Façade
sheeting works
in progress



PP/U&O:
Laboratory.
Most finishing
works are
completed



October

Progress over
November

November



PP/U&O:
Administration
building.
Finishing
works ongoing



PP/U&O:
Workshop.
Finishing
works ongoing.
Roof sheeting
works almost
completed



PP/U&O:
Bagging
& Packing
Building.
SS installation
ongoing



PP/U&O:
Fire water
Retention
Basins and
Pump House.
Pre-
commissioning
and repairing
works in
progress



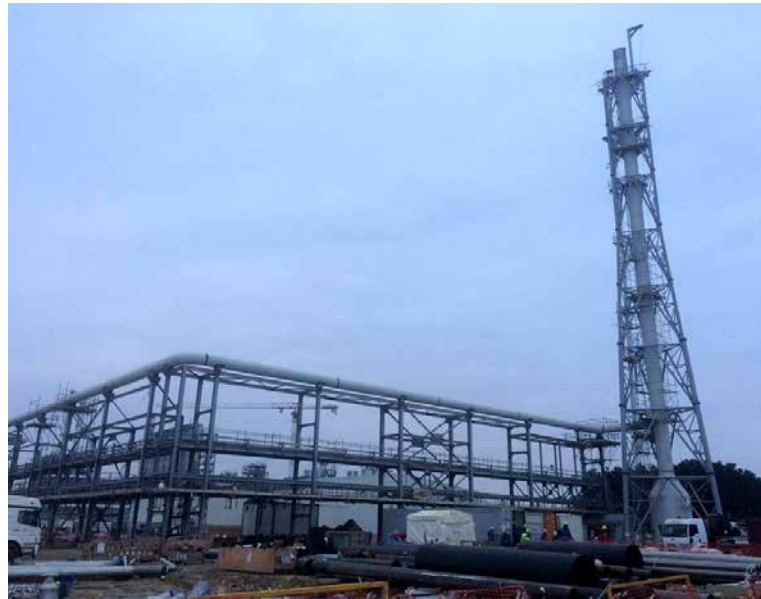
October

Progress over
November

November



PP/U&O:
Cooling Tower.
Pre-commissioning activities in progress. Façade painting completed



PP/U&O: Flare Stack.
Piping test completed



PP/U&O: Valve house.
Pre-commissioning works commenced





PP/U&O: PP-Wet section / Polymerization. Equipment installation and alignment ongoing. Installation of electrical instrumentation ongoing. Piping test in progress



PP/U&O: PP Dry Section / Extrusion building. Equipment installation and alignment ongoing. Electrical and instrumentation works ongoing. Most cladding work completed. Lift erection in progress



PP/U&O: PP Dry section / Powder Silos. Pre-commissioning activities in progress



PP/U&O: Homogenization / Blender Silos.
Pre-commissioning activities in progress



PP/U&O: Raw
Water Storage
Tank.
Pre-
commissioning
activities in
progress



PP/U&O: DM Water Storage Tank.
Pre-commissioning in progress



PP/U&O: Isobutane Sphere.
Sprinkler system installation in progress



PP/U&O:
Interconnecting
Pipe Racks.
Pipe erection
ongoing. Cable
pulling ongoing



PP/U&O: Pipe
Sleepers.
Pipe erection
and cable tray
installation
ongoing. Cable
pulling ongoing





Nitrogen package.
Equipment, pipe and steel structure installation works ongoing. Electrical and instrumentation works in progress



Warehouse.
Ventilation Deflectors insulation works commenced. Electrical instrumentation and Fire system works in progress. Cladding works completed



Roads.
Internal roads' construction ongoing. Laying of the first asphalt layer ongoing. Area lighting works in progress



Project progress status

PP Plant Progress

Disciplines

Cumulative Progress

Detailed Engineering



99,9%

Procurement Orders



100%

Subcontracting



100%

Material Supply – Manufacturing and Delivery



99,24%

Construction



92,1%

Overall



96,1%

HDPE Plant Progress

Disciplines

Cumulative Progress

Detailed Engineering



99,7%

Procurement Orders



99,7%

Subcontracting



100%

Material Supply – Manufacturing and Delivery



95%

Construction



66,8%

Overall



84,1%

First power from SCIP received



On 3 November 2017, first power from SCIP's permanent substation was received and energization of 6.3kV switchgear was successfully completed. Voltage level was as expected around 6.5kV, phase sequence positive. Energization was followed by a preliminary start-up of the PP extruder motor by Kinetics Technology specialists. The start-up was successful; the rotation direction of the motor was correct. The complete 4-hour-solo run test on the extruder motor was conducted on 5 November. While the motor was running, a relay protection specialist from the ABB company adjusted/tested differential protection of incoming line at both substations.



Baku State University representatives visited SOCAR Polymer's Plant



On 7 November 2017, the Baku State University representatives visited SOCAR Polymer's construction site. A lead scientific fellow of the Institute of Physics, PhD in Chemistry, Associate Professor Gazanfar Bayramov; the Dean of Ecology and Earth Sciences Faculty, Doctor of Chemistry, Professor Nazim Shamilov; Head of the Polymer Chemistry department, Doctor of Chemistry, Professor Ogtay Akbarov; professor of the Polymer Chemistry department, Doctor of Chemistry Elchin Akbarov, professor of the Polymer Chemistry department, Doctor of Chemistry Rasim Alosmanov; and Chief Specialist of the Marketing and Coordination department of the Scientific Research Institute of Economic Reforms under the Ministry of Economics Izzat Salmanova were among the guests. The guests were received by the representatives of SCIP and SOCAR Polymer LLC.

SOCAR Polymer's Deputy Financial Director Rauf Guliyev gave an electronic presentation on the company and the achievements made. Interested in the process technologies, the guests inquired after possible cooperation opportunities. The meeting participants also discussed developmental and competitive areas of the industry, attractive ideas for investors, scientific inventions made by the faculty members of the Baku State University (such as absorbing polymeric materials), waste recycling techniques, formation of industrial clusters, and internship opportunities available at SOCAR Polymer plants for BSU students. At the end of the meeting, a small bus tour was organized to show the guests the plant.

OPS Trainings



OPS (operations) trainings are offshore/onshore trainings conducted for SOCAR Polymer's operation/maintenance/laboratory staff to expand their theoretical knowledge and practical skills regarding the technical aspects of operating/maintaining various types of equipment/facilities installed at the PP plant. Trainings are arranged by Tecnimont, SOCAR Polymer or Fluor, and are delivered at vendors' facilities abroad or at appropriate institutions in Azerbaijan.

On-the-job training sessions at the SOCAR Polymer plant site

The EPC contract with the Tecnimont company includes trainings which the Kinetics Technology (KT) company has provided on daily basis since 28 August. The extensive Training Program scheduled for the period from August 2017 till mid-February of 2018 covers all aspects of plant operations and envisages both Classroom training (480 hours total) by various specialists and vendors, and On-job training (1050 hours total) to be led by experienced technicians until the end of the project to ensure complete grooming of SOCAR Polymer operators to efficiently handle the Plant. The trainings are listed under four major disciplines/categories: electrical, instrumentation, mechanical and operation. Thus, the SOCAR Polymer plant personnel gets a better understanding of the principles of equipment operation, and grows better informed of the basic maintenance and troubleshooting processes.

More detailed information on some of the training sessions conducted on site in November is provided below:

Training title	Training vendor	Duration	Dates	Participants' positions
Distribution Control System (DCS)	YOKOGAWA	3 days	06-08 Dec	10 trainees: 2 shift supervisors and 8 operators
ISO 14001:2015 Lead auditor course	Intertek	5 days	27 Nov - 12 Dec	2 trainees: an environmental coordinator and an environmental advisor

SOCAR Polymer attends to environmental issues at the Caspian Ecology exhibition



On November 14-16, SOCAR Polymer was among the 53 exhibitors of the 8th Azerbaijan International Environmental Exhibition "Caspian Ecology 2017" organized at the Baku Expo Center by Caspian Event Organisers (CEO). This exhibition is the only significant event for ecology and environmental protection in the Caspian and Caucasus regions that is supported by the Ministry of Ecology and Natural Resources of the Azerbaijan Republic and the IDEA Public Association. The exhibition attracts people's

attention to environmental issues and solutions, as well as demonstrates the latest developments towards more efficient use of natural resources, systems for solid waste collection and disposal, etc.

Our company was represented by Matin Huseynli, Gullar Taghiyeva, Islam Asadov, Elshan Garayev, Shamsiyya Guliyeva and Agil Balayev.



Gullar Taghiyeva
HSE Advisor/ Environmental Specialist

Our HSE policy is communicated to all our staff and implemented with regular monitoring of its effectiveness through management meetings and site inspections.

To fulfill our commitments and achieve the desired effect we are developing, continuously evaluating, improving and implementing a comprehensive HSE Management System. Over the past years we have actively aimed at preventing environmental pollution from the construction phase of the project. Monthly environmental monitoring is conducted

to control the status of environmental performance. The scope of environmental monitoring embraces the main environmental aspects, such as air, soil, water, etc. determined by environmental objectives and legislation. Such systematic studies that reveal the state of the environment, provide us with the actual environmental pattern and changes during the construction phase. The findings of monitoring are important in the environmental management system to prioritize the environmental targets, undertake preventive measures and eliminate any negative consequences.

Another environmental impact from construction is generated waste. Industrial waste represents a valuable resource in its own right. Well-defined classification of the waste is one of the core factors for proper segregation and further reuse and recycling. Our aim is to reduce waste production and find innovative ways to turn waste into raw materials and utilize them on site. Currently generated construction waste, such as timber, metal, some plastics are recycled and reused on site. Effective waste management is critical for conservation of natural resources, so, recycling, re-use and recovery are the focus for sustainable development.

We evaluate the potential environmental and social consequences of the project to highlight ways in which we can contribute to local communities and the environment, as well as reduce our negative impacts and risks during the construction and further operation phases of the project.

Winning the 2nd round of finals in a Knowledge Bowl game



SOCAR Polymer's team became the winner in the second set of four teams from among the total of 22 teams that participated in the "Khamsa" intellectual game dedicated to the National Flag Day, Constitution Day and National Revival Day. This "knowledge bowl"-type event was organized by SOCAR's Azerikimya PU, with player teams delegated by various companies, enterprises and organisations, including the Baku Higher Oil School, the Baku Engineering University, the Sumgayit State University, the Polymer Materials Institute of the Azerbaijan National Academy of Sciences, the Baku Branch of the Moscow State University, the Sumgayit City Branch of New Azerbaijan Party, the Carbamide Plant, SOCAR Polymer LLC, the Sumgayit Regional Center of MES, the Sumgayit City Branch of the International Red Crescent Organization, X-military unit, the Sumgayit Regional Culture and Tourism Office, the "ASAN" Service, the Sumgayit City Education Administration and Azerikimya PU.

The competition was held under the strict supervision of the jury board consisting of "Khamsa" game experts while all teams actively pursued victory. The 4-hour competition traditionally consisted of three qualifying stages and a final one. The Baku Engineering University team that demonstrated commendable knowledge, broad vision and inventiveness succeeded in the final stage and won the first place in the competition. The teams of Azerikimya PU and

the Baku Higher Oil School won the second, third and fourth places, respectively. SOCAR Polymer's team was rewarded for its active participation in the intellectual game and victory in the second round of finals where 4 distinguished teams had competed. In our team SOCAR Polymer was represented by Nihal Alizadeh, Sevinj Mammadova, Famil Mammadov, Nizam Zahidli and Islam Asadov.

The Trade Unions Committee of Azerimikya PU awarded the winner-teams with prizes and certificates of appreciation.



Prolific Polymers

Advance textiles, digitalised clothing & wearable technologies



Polymers increasingly serve a make-do for shrinking nature, if perhaps to give the latter a chance to rest and recuperate. Eventually historical records might run something along the lines, “By early XXI century, polymers have taken over natural fibres”. Still skeptical? Take what you wear, as a proof.

Incomplete and Utter History of What We Wear

Some ten thousand years ago, humans used **animal skins** to protect themselves from cold and wet. In another couple of millennia, they mastered spinning **wild plants fiber** into thread, to make textiles. Cotton, hemp and flax were domesticated as a result. Roughly 6000 years ago people began to raise sheep for wool, probably the first **animal fibre** to render into cloth. Around 3000 BC the Chinese set off to cultivate silkworms, feeding them on mulberry leaves and then unwinding fresh cocoons to produce long strands of **silk fibre**, which was spun into thread, and woven into fabric. About the same time in ancient India the **cotton** plants became widespread, to yield cotton, a light fabric that could be easily dyed and printed by hand using wood blocks with patterns cut into them.

The entire humankind has been living out of this finite list of available tissue for thousands of years, until **synthetic materials** made an entrance in the XIX century, seemingly superior to natural fibres for their strength, durability and light weight.





Polymer Polytetrafluoroethylene, a.k.a TEFLON®

First of their kind, **Rayon** and **Nylon**, or thermosetting polycondensate polymer, were developed as artificial substitutes for silk in 1855.

In 1938 American chemist Roy Plunkett stumbled across PTFE, a synthetic fluoropolymer of tetrafluoroethylene, best known as **TEFLON**, a happy accident indeed which made his name immortal ...hm... at least, as far as chemists are concerned. Hydrophobic non-stick coating found its ultimate application in cookware some 16 years later, but this is a different story altogether.

Meanwhile, **Polyester** was introduced into clothing in the early 1950s. Blended with rayon or cotton it was plied into 'wash-and-wear' fabrics that need little or no ironing.

In 1969, in another twist of luck, another American chemical

engineer and consummate open-air athlete W.L. Gore co-invented a **membrane fabric** for all-weather use, based on TEFLON, or expanded ePTFE rods: behind the highly hydrophobic ePTFE layer is a hydrophilic porous barrier layer made of polyurethane. The material formed by these layers is known as **GORE-TEX®** - the first industrially manufactured membrane protected by patent. Lightweight, water proof, breathing, it changed the comfort properties of outer garments for generations ahead.

Soon after, synthetics fell out of favour, for the telltale public opinion found them all of a sudden less comfortable, inordinately odorous and causing skin irritations. Indeed, nylon's water-repellent properties would lead water vapour from perspiration wetness to condense on the inside of the material, damping it from inside out.

Membrane clothes

By late XX century, new strands of fabric, durable yet softer, with a whole new range of pre-programmed properties and aerodynamic qualities, made a triumphant comeback. As for example, an **eVENT®**, in which the polyurethane of GORE-TEX® is replaced by a perfluoroalkyl acrylic copolymer, which also coats the insides of the pores in PTFE membrane.

Membranes proper are too flimsy and fragile to survive exposure. A layer or more of membrane coating, depending on the functional purpose of the vestment, are bonded to carrier fabric, which could basically be one of two: light and lasting nylon, or inexpensive polyester.

Featherweight, wind-proof, water-resistant multi-purpose membrane clothes have become indispensable wardrobe items in business attire suiting a variety of climate and time zones; casual wear; as well as in outdoor activities, such as mountaineering, cycling, or downhill skiing, or scuba-diving, for long week-end hikers and urban tourists alike. Breathability and moisture vapour transmitting rate are their defining properties. High-quality membrane clothes deserve high-ranging price tags. On a second thought however, they might be a viable cost-saving solution for a family budget – instead of spreading thin one's wages to adapt to changing climate, proper clothing could expand your comfort zone beyond limits. Kids, true experts in particularly deep and muddy puddles, know it for a fact.





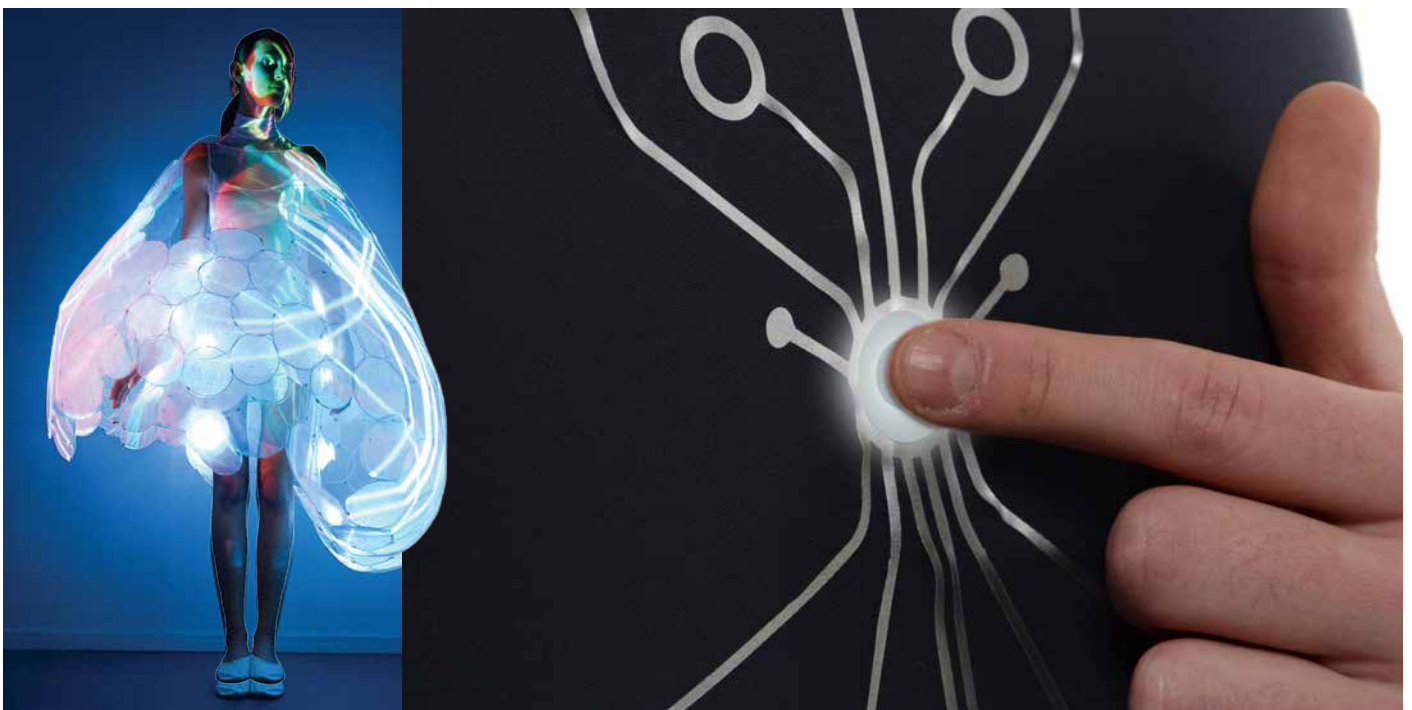
Advance Textiles, Digital Clothing & Wearable Technology

World's catwalks and red carpets are getting accustomed to smart digitalized gowns and vests, such as a dress made of microscopic LED lights, so as it would change colour at its mistress' wish, or a coat connected to Internet via blue-tooth to lighten up when a call is received. These are amazing prototypes of the advance textiles and technologies that enhance and extend functionality of clothing. Internet-connected, integrating Quick Response matrix barcode, wearable technologies these days take the form of garment all the more often.

Smart sweatshirts and windbreakers that take your heart rate, count steps, track movement, or navigate, are already available in retail shops. In July 2014 a smart technology

footwear was introduced in Hyderabad, India. The shoe insoles are connected to a smartphone application that uses Google Maps, and vibrate to tell users when and where to turn to reach their destination. Smart shoe for the visually impaired has emerged recently with a greater scope in the future.

A fashion statement, fitness tracker, navigation tool, media device, communication gadget - digital clothing is all that and infinitely more, for they could serve a noble cause of life assisting and eldercare, providing constant health monitoring, specific health issue treatment. Wearables might still be suffering from limited battery capacity; however, the decreasing cost of processing power and other components is encouraging widespread adoption and availability.





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