

Investment program 2017

2017 Investment program is structured in 3 sections, based on objectives and projects magnitude. Total investments value allocated for 2017 is 51,926,367 USD, according below table:

	Budget 2017
Petromidia, from which:	45,736,533 USD
Development	2,447,240 USD
Compliance	15,949,725 USD
Capital maintenance	27,339,568 USD
Vega, from which:	6,189,834 USD
Compliance	3,234,683 USD
Capital maintenance	2,955,151 USD
Refinery Total Investments	51,926,367 USD

Compliance

This category includes compulsory investments required by environmental and safety regulations:

❖ Expire authorization ISCIR for static equipment (ISCIR 2017-2018)

Project consists in aligning to legislation requirements in terms of safety functionality of the refinery equipment.

In July 2010 occurred new modifications of the existing legislation, namely technical prescriptions C4, C6 and C10, 2010 edition introduced the obligation to prepare Examination, Checks and Investigation (EVI) Programs for all equipment and pressurized pipes older than 12÷18 years in order to perform Technical Checks in Use for Examinations with Technical Character (VTU-IECT).

As of 2004 the Beneficiary was required to prepare Technical Documentation for each pipe and to authorize all pressurized pipes owned. By project implementation, the following benefits are expected:

- Running with the refinery units in safety conditions according to legislation in force, as a result of detailed verifications which will be performed during this evaluation program which will have as a result the technical evaluation of the equipment after specified years of service, as well as repair or elimination of the faults which will appear after the checks;
- Obtaining the functioning authorization for the pressurized equipment, pipes and lifting equipment as per Technical Prescriptions

The project main objective consist in running with the refinery units in safety conditions according to legislation in force, as a result of detailed verifications which will be performed during this evaluation program which will have as a result the technical evaluation of the equipment after N years of service, as well as repair or elimination of the faults which will appear after the checks.

❖ “Angel hair/dust (polymer fluff) ” reduction in LDPE bunkers (trapping system)

Project “Angel hair” main objective consist in aligning with the Environmental protection demands respectively OUG 195/2005 relating to the protection of the environment and OUG 152/2005 relating to the integrated prevention and control of pollution and also improving quality of the finished product.

The main benefits of projects consist in :

- find the way to decrease the generation of dust during the transportation,
- increasing the efficiency of Separation system;
- improve the quality of the finished product.

- ❖ **V26/2 Tank Rehabilitation** tank rehabilitation was taken into consideration for capital repairs, being part of “General Master Plan Program” which have the objective to maintain to an optimal value the storage capacity for refinery products and align to safety requirements. The necessity for tank rehabilitation was needed due to the followings:
 - Alignment to the requirements imposed by legislation (GD 893/2005 and GD 568/2001) on environmental protection (reduction of emissions of volatile organic compounds). Failure to comply with the requirements of GD 893 may lead to withdrawal of the Refinery environmental permit if the requirement is broken repeatedly. The Refinery legal functioning is possible only the facility is implemented.
 - Tank V26/2 reintroduction in normal operation, upgraded, increasing the storage capacity of finished gasoline.
 - Reduce with up to 95% the emissions due to the new internal floating roof.

- ❖ **Fire-fighting Water Main Replacement, section A and I**
 - Maintain continuously and sustainable the necessary requirements for prevention and protection in case of emergency situations.
 - Ensure the safety conditions for fire-fighting, related to fire-fighting network pressure 12 barg in “standby” and 16 barg for operation in case of fire.
 - Perform replacement and rehabilitation of the fire fighting infrastructure according to the Master Plan for A and I, based on the project design RIS-3C-3244.

Development

This category includes projects for static and dynamic equipment revamp and modernization, in order to keep in good condition for safe operation of the Refineries units.

From this category, a very important place is held by projects from „Storage and logistics” area, which, consecutive to processing capacity of the refinery increasing to 5mil.tones/year after „2010 Package” implementation, will solve refinery problems regarding storage possibilities, blending and deliveries of the products in order to get a maximum efficiency by a rational use of all components. Projects from this category:

- ❖ **Maximize usage of 185 unit condensate thermal potential**

The project main objective consist in increasing Refinery Energy efficiency by:

- reducing EII with 0.29 points,
- by maximizing usage of condensate from amine unit.

- ❖ **Rehabilitation of IPPA facilities**

In order to respect the Refinery auto sales plan, is necessary that terminal to be maintained at maximum capacity of 35,000 tons/ month.

Taking into consideration that terminal will not function at its design capacity due to loading system block and theoretical losses reach 0.68 mil. \$/year, through 17 kt/year directing to external market (4.25 kt/month during the high season). The marge difference between export and internal market is 40 \$/tone.

By project implementation, the following benefits will resulted:

- Improve customer satisfaction by minimizing loading differences on deliveries from IPPA terminal to a value of $\pm 0.25\%$ m/m.
- Fulfill the Trading forecasted sales plan by ensuring optimum operating conditions for truck terminal and complying with delivery requirements;

- Reduce the risk of terminal downtime by modernizing terminal automation infrastructure as well as terminal applications;
 - Comply with KMG International Group audit findings 2011 and agreed action plan;
- ❖ **Modernization of the In Line Blending Unit**
- To make In - Line Blending system, a fully operational, controlled and automated process in order to obtain quality products.
 - Optimizing the blends composition to the lowest price of the product, with a greater control over the giveaway and reducing in the same time re-blending operations.
 - Implementation and use in DILB of an optimization software for additives.
 - C97, C98 tanks configuration to DILB software interface (field works mechanical, electrical and instrumentation will be performed in “Rehabilitation of C100 and DV20 tanks and relocation to other storage and delivery paths” project).
 - Maintain and assure the In - Line Blending system reliability at the lowest cost possible for at least the next five years.
- ❖ **G1 section 1 pumping station modernization – Phase II**
- To improve energy consumption performance of the Refinery: reduce energy costs, improve Energy Intensity Index:0.17 points EII approximatively 0.4 MWh/h=40 USD/h, by:
 - Replace recirculation pumps and electrical motors no. 4, 5, 6, and 7 from G1/section1, according with Hydraulic Study Conclusion, elaborated by Global Energy Services Concept SRL (GES) in 8/03/2012;
 - To improve operating conditions, by:
 - Up-grade electrical equipment (medium voltage breaker and protection relay) for all 4 motors.

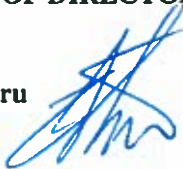
Capital Maintenance

- ❖ **Rehabilitation M92 tank**
- To have the tank fully operational from technological and safety point-of-view by ensuring the needed facilities for proper storage.
 - New foam house (alarm and fire extinguishing system);
 - Purchase and installing new radar;
 - Ensuring the storage capacity required for the reintegration component diesel M90 tank restored to normal operation the long term for long term. Alignment with the latest requirements imposed by legislation on environmental protection and safety.
 - Increase the accuracy rate of the product level according to the Master Tank requirements.
 - Maximize storage capacity.
- ❖ **T2 – 417E Tank Rehabilitation_ Phase II**
- Ensuring optimal operating conditions both in terms of safety and environmental protection;
 - The creation of dedicated storage capacity requirements for the MTBE;
 - Ensuring flexibility necessary for optimal storage of the MTBE
 - Possibility of realizing mixtures in line
 - In the configuration requested for the rehabilitated T2-417 tank, that will be in accordance with HG no. 568/14.06.2014 relating to the COV and with this combined system of caps,

- the reservoir can be used for a wide range of products and in particular can be used for storage of products containing volatile organic compounds without the need for any additional costs;

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CAPEX PLAN 2017 BU REFINING

Nr. crt.	Project Name	Total Project estimated Budget	2017 Budget (excluding RIS profit)
	Refining		
	Petromidia	\$ 148,877,933	\$ 51,926,367
	Petromidia Development	\$ 107,491,656	\$ 36,515,929
1	IG1 section 1 pumping station modernization	\$ 7,361,780	\$ 2,715,383
2	100C1 Atmospheric distillation column- increase heat removal from gasoil pumparound	\$ 2,526,767	\$ 2,160,032
3	Modernization of in line blending unit	\$ 2,156,291	\$ 223,627
4	Maximize usage of 185 unit condensate thermal potential	\$ 1,917,002	\$ 161,241
5	Increase Coker severity by introducing HCGO recycle	\$ 495,000	\$ 100,000
	Petromidia Operational	\$ 266,640	\$ 70,482
	Petromidia Operational - Compliance	\$ 98,479,217	\$ 33,139,166
6	Expire authorization ISCIR for static equipment's (ISCIR 2017-2018 PEM)	\$ 34,363,478	\$ 10,287,919
7	LPG recovery from DCU gases	\$ 13,950,000	\$ 6,350,607
8	Fire-fighting Water Main Replacement, section A-P, section G,J,A,J	\$ 2,292,616	\$ 290,128
9	Vary-frequency converters for flow adjustments for pumps motors (instead of recalculating loop) -30 pieces	\$ 978,000	\$ 909,602
10	Increase capacity of SWS unit	\$ 839,450	\$ 173,447
11	Chemical building for G1 Cooling Tower	\$ 11,000,000	\$ 10,000
12	Lighting improvement (replacing street lighting with LED lamps) 2017	\$ 356,462	\$ 172,776
13	Prestarization system upgrading in control rooms at Railcar Loading Point, black- white products	\$ 555,535	\$ 164,923
14	Detailed Design Engineering For Fire-Fighting System Rehabilitation	\$ 199,170	\$ 161,890
15	De-clopping discharge channel	\$ 1,045,972	\$ 116,161
16	Capital Repairs to Gasoline Tank V262	\$ 49,980	\$ 49,980
	Petromidia Operational - Capital maintenance	\$ 3,036,293	\$ 1,808,406
17	Refinery 2017 Shutdown	\$ 64,175,739	\$ 22,931,247
18	Rehabilitation of C100 and DV20 tanks and relocation to other storage and delivery paths	\$ 19,900,000	\$ 10,601,122
19	Rehabilitation of utilities network pipework, sections AHC, PON, CDE3-I	\$ 4,907,761	\$ 2,088,405
19	65 steam trap installing and condensate pipelines (low and medium) rehabilitation	\$ 3,174,431	\$ 169,980
19	Replace the old 6 KV switches and the relays compartments in power station SRA2	\$ 503,412	\$ 332,587
20	100 T3 tank rehabilitation	\$ 2,498,921	\$ 95,921
20	Fabrication top column segment 100 C1	\$ 9,994,304	\$ 2,665,549
21	Purchasing Power Transformer 110 KV / 6 KV 63 MVA	\$ 2,206,237	\$ 33,846
21	Replacement of stripping column 185C2	\$ 1,065,731	\$ 113,995
22	Replace the tube bundle of 120S8 heat exchanger	\$ 895,938	\$ 32,728
22	Returned condensate system rehabilitation	\$ 117,331	\$ 91,427
23	S124 slops tank rehabilitation	\$ 900,599	\$ 349,531
23	Replace ignition and surveillance system at 138FH4 CO Boiler, FCC Unit	\$ 443,120	\$ 153,732
24	Replacement of tube bundles for 125S1C heat exchanger	\$ 342,590	\$ 67,841
24	Replace pumps 715SP5R and 715SP6R	\$ 69,533	\$ 55,331
24	Replace air cooler 185A2 - Amine and Klaus	\$ 262,800	\$ 21,698
25	Replacement tube bundle of 130S11 heat exchanger	\$ 274,644	\$ 228,513
26	Repair tubular section 100A1/2.7	\$ 74,133	\$ 53,916
26	Replace the elevator for people and materials from Coker unit	\$ 502,194	\$ 395,958
27	Replacement of tubes bundle for 125S2C heat exchanger and replacement of tubes bundle and distribution chab	\$ 1,648,254	\$ 99,082
27	Replace the 6KV cables from SRA 2 and Carasu station to substations optimized	\$ 99,671	\$ 82,387
28	Replace air cooler 185A4 - Amine and Klaus unit	\$ 625,274	\$ 218,406
28	Replacement of electric motor - 120P1R, NHT Unit	\$ 246,501	\$ 202,884
29	Replacement tube bundles heat exchangers 120S1D and 120S1H	\$ 194,648	\$ 152,202
29	Delayed Coker belt conveyor replacement	\$ 143,102	\$ 123,280
30	Rehabilitation of Roads 2016	\$ 128,834	\$ 106,573
30	Replacement tube bundle heat exchanger 120S1A(C)	\$ 1,655,680	\$ 106,524
31	Replacement vessel 125V2	\$ 199,400	\$ 17,281
31	Replace the tube bundle of 100S24H heat exchanger	\$ 123,618	\$ 102,936
32	Emergency works for unexpected capital maintenance 2017	\$ 124,065	\$ 102,341
32	Replacing pump 190P3H from SRU unit	\$ 642,342	\$ 583,948
33	Replace air preheater 220F302 MHC unit	\$ 137,306	\$ 96,907
33	Replace vessel MEA 185V4 - Amine and Klaus unit	\$ 112,750	\$ 92,772
34	Replace thermal facilities from AMC-Laboratory	\$ 123,965	\$ 87,475
34	Replacement tube bundle of 120S2A heat exchanger (3pcs)	\$ 348,272	\$ 63,917
35	Replace cooler by-pass 122 K2R	\$ 65,263	\$ 36,550
35	Replacing 220P12B pumps motor from MHC Unit	\$ 70,969	\$ 53,321
36	Replacement tube bundle of 130S5 heat exchanger	\$ 34,121	\$ 25,233
36	Replace the tube bundles of cooler 122 K2R	\$ 89,716	\$ 63,520
37	Replace 138F72B pump motor from FCC Unit	\$ 73,460	\$ 52,024
37	Repairing air preheater tubular bundle 1 for heater 100H2	\$ 46,200	\$ 36,369
38	Replace 4pcs rectangular expansion joint 138 FH4 - CO BOILER, FCC Unit	\$ 37,500	\$ 32,488
38	Rehabilitation M92 tank	\$ 53,325	\$ 30,321
39	Rehabilitation of depressors and slides in Rail ramp	\$ 4,153,060	\$ 291,818
39	Eliminating Leaks at skid berth 9H, 4 ways valve replacement	\$ 2,833,880	\$ 1,784,011
40	Relocate M16, P11 and B5 tanks to SRGO	\$ 935,482	\$ 332,552
40	Eliminating Leaks at skid berth 9H, 4 ways valve replacement	\$ 220,350	\$ 170,277
41	Relocate M16, P11 and B5 tanks to SRGO	\$ 99,881	\$ 67,583
41	IIWA Loading Process Improvement - Replacement of TAS related equipments	\$ 776,170	\$ 144,258
	Petromidia Non-Operational	\$ 1,650,739	\$ 661,381
	Petromidia Non-Operational - IT	\$ 1,650,739	\$ 661,381
42	Replacement area system	\$ 100,000	\$ 100,000
43	Upgrade LAN Refinery platform	\$ 450,000	\$ 438,580
44	Laptops Renewal - replacement after 4 yrs PEM	\$ 67,739	\$ 25,229
45	IT non-standard equipments 2017 - 2021	\$ 100,000	\$ 20,000
46	AJPC DAV soft implementation	\$ 933,000	\$ 77,572
	Petrochemicals	\$ 28,578,141	\$ 10,087,488
	Petrochemicals Development	\$ 2,021,474	\$ 43,353
47	New HP pipelines (36 barg) between Ref (UTM limit-node A) and RPP (node H)	\$ 2,021,474	\$ 43,353
	Petrochemicals Operational	\$ 18,548,667	\$ 10,044,127
	Petrochemicals Operational - Operational support	\$ 114,323	\$ 31,792
48	Transfer RGF control panel instruments to DCS L1PP1	\$ 114,323	\$ 31,792
	Petrochemicals Operational - Compliance	\$ 9,442,777	\$ 5,888,169
49	Expire authorization ISCIR for static equipment's (ISCIR 2016-2017 PET)	\$ 8,209,590	\$ 5,192,440
50	Amplifier reduction	\$ 1,123,926	\$ 526,468
51	EQUIPMENT SUPPORT STRUCTURE PP - EXPERTISE AND CONSOLIDATION/ REPAIR PROJECT	\$ 109,261	\$ 89,261
	Petrochemicals Operational - Capital maintenance	\$ 8,991,567	\$ 4,284,166
52	Petrochemicals 2017 Shut Down	\$ 3,820,000	\$ 3,447,060
53	Monitoring and diagnosis system for K 101 si K 102 hypercompressors in L1PP1 plant	\$ 1,221,100	\$ 82,384
54	Purchase a pair of screws mixers Z 502A,B	\$ 367,680	\$ 36,081
55	Technical Expertise for P911	\$ 1,100,000	\$ 100,000
56	Purchase complete gear box for motor - reducers extruders Z501A,B	\$ 471,330	\$ 37,324
57	Replace tubes for Inercoilers F103 and F104, L1PP1 Unit	\$ 426,393	\$ 9,582
58	Execution of 320E114 heat exchanger	\$ 164,724	\$ 130,056
59	High capacity die plate for PP Unit	\$ 121,446	\$ 104,255
60	Purchase complete gear box for motor - reducers mixers Z502A,B	\$ 110,000	\$ 20,000
62	Technical Expertise for V3	\$ 90,865	\$ 87,002
63	Supplying distributors column T401, PP Unit	\$ 89,579	\$ 85,679
64	Bottom valves replacement of vessels V108A-I and V107, L1PP1 plant	\$ 92,728	\$ 57,040
	VEGA	\$ 715,733	\$ 7,702
	VEGA Operational	\$ 12,016,136	\$ 5,322,958
	VEGA Operational - Compliance	\$ 11,994,136	\$ 5,304,958
65	Replacement of 140-C1 and 140-C2 coloums	\$ 6,671,938	\$ 2,003,262
66	Expertise (PEVIT) for pressure equipments and metallic pipes authorized (ISCIR 2017)	\$ 1,697,156	\$ 170,670
67	Revamp of the CR2CR1 boiler to maintain the level of emissions imposed by AIM rules and legislation in force	\$ 522,799	\$ 252,462
68	Expertise and consolidation DVV heater, DVV Unit, Vega	\$ 550,000	\$ 50,000
69	Safety Package in Refinery Platform Vega	\$ 234,170	\$ 45,893
70	Wastewater tank filline system	\$ 371,358	\$ 128,794
71	AF ISCIR C10/2010 for CT pipes	\$ 312,670	\$ 115,558
72	Increase security level in VEGA Platform	\$ 154,610	\$ 17,184
73	VEGA Vapor recovery system at railway loading point	\$ 933,405	\$ 12,129
	VEGA Operational - Capital maintenance	\$ 1,895,770	\$ 1,210,572
74	Vega Shut Down 2017	\$ 5,322,198	\$ 3,301,696
75	Replacement of the General Distribution Switchboards in Vega Refining electrical stations (PT2)	\$ 2,959,092	\$ 2,442,097
76	Vega Corlatesii sewerage system pipe line replacing	\$ 529,685	\$ 17,487
76	Replacement plates heat exchanger with welded plates heat exchanger	\$ 305,779	\$ 24,951
77	Replace pump in Bitumen Unit	\$ 196,810	\$ 161,736
78	Replacing heat exchangers from the Heating Station (S6,S7,S9)	\$ 196,032	\$ 175,445
79	Replacing feeders the 20 Kv in the Vega Refinery	\$ 224,767	\$ 173,526
80	Replacement of the low pressure motor-compressor assemblies (K1, K2)	\$ 223,035	\$ 58,404
81	Purchase a pump for asphalt mass evacuation from VD unit	\$ 112,680	\$ 94,327
82	Rehabilitation works of waterproofing buildings in Vega platform	\$ 156,817	\$ 34,586
83	Replace the heating system from electric stations	\$ 197,772	\$ 64,230
84	Consolidation CT ramp	\$ 62,862	\$ 44,816
	VEGA Non-Operational	\$ 156,867	\$ 13,692
	Petromidia Non-Operational - Administrative	\$ 22,000	\$ 18,000
85	Repair locker buildings- nr inv 185	\$ 22,000	\$ 18,000

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