

SIMULATION PROGRAMS FOR REFINERY & PETROCHEMICAL OPERATIONS

ADVANCED DISTILLATION OPERATIONS – AUDY™ 5050

The advanced distillation operations unit simulates a two tower depropanizer and debutanizer distillation system. The two tower simulation includes reboiler and overhead systems. Product quality analyzers are included.

CRUDE UNIT – AUDY™ 5090

Crude distillation unit including crude oil feed section, atmospheric column and vacuum column.

NAPHTHA REFORMER – AUDY™ 5100

Includes: hydrotreating, desulfurization and catalytic reforming.

AMINE GAS TREATING – AUDY™ 5120

The amine treating unit simulates gas sweetening via DEA absorption. The program includes the amine contactor, treated gas separation, amine recovery, and overhead water recovery. The program also includes anti-foam and filtration systems.

VACUUM FRACTIONATION – AUDY™ 5130

Vacuum tower with overhead system and pumparounds.

ATMOSPHERIC PRODUCT FRACTIONATION – AUDY™ 5140

Includes: feed heater, fractionator with overhead system.

HYDROGEN PLANT – AUDY™ 5150

Includes: hydrodesulfurizer, desulfurizer, reformer, high and low temperature shift converters, regenerator, methanator and product gas compressor.

REFINERY & PETROCHEMICAL OPERATIONS continued.....

F.D. GAS-FIRED SUPERHEATED STEAM GENERATOR – AUDY™ 5160

The forced draft superheated steam generator burns either fuel gas or fuel oil to generate superheated steam. The boiler furnace is forced draft design.

HYDROCRACKER – AUDY™ 5170

Includes: hydrogen system, first stage reactor, second stage reactor, fractionation system.

HYDROTREATER – AUDY™ 5180

Includes: first stage reactor, second stage reactor, fractionation system.

REFRIGERATION COMPRESSOR – AUDY™ 5210

Includes: 4-stage refrigeration compressor, inlet scrubbers, surge drum and refrigerant users.

HYDRODESULFURIZATION UNIT – AUDY™ 5220

Includes: HDS reactors, H₂S removal by diethylamine (DEA) and product stripping.

REACTOR UNIT OPERATIONS – AUDY™ 5230

Includes: batch reactor, continuous stirred tank reactor (CSTR) and fixed bed catalytic reactor.

FLUIDIZED CATALYTIC CRACKING UNIT – AUDY™ 5260

Includes: feed preheat, reactor, regenerator, power recovery train and main fractionator section.

MEK CRYSTALLIZATION – AUDY™ 5310

Includes: oil solvent chilling, and wax crystallization and propane refrigeration system.

REFINERY & PETROCHEMICAL OPERATIONS continued.....

MEK DEWAXING – AUDY™ 5320

Includes: Filter feed drum, rotary vacuum filter, wax boot, solvent receivers, slack wax solvent recovery, and dewaxed oil solvent recovery.

DELAYED COKER – AUDY™ 5370

Includes: coker heaters, coke drums and fractionator.

SULFUR RECOVERY WITH SCOT TAIL GAS – AUDY™ 5430

Includes: knockout drums, air compressor, multi-furnace, waste heat boiler, sulfur condensers and reactors. The SCOT unit includes a SCOT heater, SCOT reactor, waste heat boiler, quench column, absorber and stripper.

SULFUR RECOVERY – AUDY™ 5440

Includes: knockout drums, Claus air compressor, multi-furnace, waste heat boiler, sulfur condensers and reactors.

HYDROCRACKER MODEL – AUDY™ 5580

Hydrocracker unit, which catalytically cracks heavy atmospheric and vacuum oils, consists of two (2) sections: a reactor train reaction section, and a product fractionation section to separate the finished products.

UTILITY PLANT WITH STEAM DISTRIBUTION – AUDY™ 5590

The utility plant is a typical utility power plant, which includes cogeneration. The unit includes boilers (one in detail), turbine generator sets (one in detail) and a steam distribution system.

GAS TURBINE GENERATOR – AUDY™ 5640

Includes: 12MW generator, gas turbine combustor, compressor, turbine and diesel starter, lube oil system, oil or gas fired waste heat recovery boiler.

REFINERY & PETROCHEMICAL OPERATIONS continued.....

ETHYLENE AND PROPYLENE FURNACE OPERATIONS – AUDY™ 5670

Includes: an ethylene furnace and a propylene furnace, each with its own quench boiler(s) and steam supply header.

GAS CONCENTRATION UNIT – AUDY™ 5940

Stand-alone FCCU gas concentration unit consisting of three (3) sections: stripping and recovery section, stabilization section and fractionation section

LPG TREATING – AUDY™ 5970

The LPG treating unit emulates a typical LPG treating plant , which removes the H₂S and mercaptans from an LPG feedstack. The model consists of a pretreatment section, which removes H₂S by an amine absorber; water wash and caustic prewash; an extraction section which removes the mercaptans by an extractor, caustic knockout drum and sand filter; and a caustic regeneration section which removes mercaptans by means of a caustic heater and oxidizer.

ALKYLATION UNIT – AUDY™ 5980

Processes isobutene and olefins to product an alkylate product through a feed preparation unit, reactor, product fractionation and a product treating section.

ACETYLENE CONVERTER – AUDY™ 5990

Includes: reactor feed/effluent exchanger, steam pre-heater, acetylene converters and reactor effluent cooler.

FCCU/GASCON – AUDY™ 8000

Includes: feed preheat, reactor, regenerator, main fractionator, primary absorber, sponge absorber, and debutanizer.

FCCU W/GASCON – AUDY™ 8370

Includes: feed preheat, reactor, regenerator, main fractionator column, naphtha stripper, two (2) stage compressor, primary absorber, sponge absorber, debutanizer and depropanizer.

REFINERY & PETROCHEMICAL OPERATIONS continued...

VACUUM DISTILLATION UNIT – AUDY™ 9470

Includes: crude feed system with feed preheat train, vacuum feed heater, vacuum tower with overhead system, vacuum distillate drum and multi-stage air ejection system.

ATMOSPHERIC CRUDE DISTILLATION UNIT WITH STABILIZER – AUDY™ 9480

Atmospheric crude distillation unit (ADU) which fractionates crude oil to produce six (6) product streams. Model includes feed preheat section, desalting, multi-pass heater, fractionator column with pumparounds and sidestream strippers, overhead system, off-gas compressor and debutanizer column.

NAPHTHA HYDROTREATER & REFORMER – AUDY™ 9490

Includes: hydrotreater feed system, hydrotreater furnaces, hydrotreater reactor, product separator, recycle and booster gas compressors, naphtha fractionator, reformer charge heaters, reforming reactors, LP separator, recycle gas compressor and stabilizer.