

The background features a large, white, semi-circular shape on the left side, resembling a bright light or a large bubble. The rest of the background is a light gray gradient. Scattered throughout are several water droplets of various sizes, some with highlights, giving a sense of freshness and fluidity.

HYD-PREDIC : THE PIPELINE HYDRATE PREDICTION SOFTWARE

FLOW ASSURANCE SOFTWARE WITH A DIFFERENCE

DEFINITION OF GAS HYDRATES

GAS HYDRATES ARE INCLUSION COMPOUNDS OF LOW MOLECULAR WEIGHT GASES LIKE O₂, H₂, N₂, CO₂, CH₄, H₂S OR INERT GASES LIKE AR, KR OR XE WITH WATER.

SOME HIGHER HYDROCARBONS LIKE ETHANE, PROPANE AND BUTANE AND FREONS ALSO FORM GAS HYDRATES.

ONE UNIT OF GAS HYDRATES CONSISTS OF SINGLE MOLECULES OF THESE GASES EXISTING IN A CAGE FORMED OF WATER MOLECULES.

GAS HYDRATES ARE SIMILAR IN STRUCTURE TO ICE BUT UNLIKE ICE THEY ARE STABLE AT TEMPERATURES HIGHER THAN 0 °C (THE FREEZING POINT OF WATER) AND AT PRESSURES ABOVE ATMOSPHERIC PRESSURE.

GAS HYDRATES IN SUBSEA CRUDE PIPELINES

GAS HYDRATES FORM IN SUBSEA CRUDE OIL PIPELINES DUE TO PRESENCE OF WATER AND HYDRATE FORMING HYDROCARBONS AND SUITABLE PRESSURE AND TEMPERATURE CONDITIONS.

GAS HYDRATES RESULTING IN BLOCKAGE OF SUBSEA CRUDE OIL PIPELINES LEADING TO LOSS OF PRODUCTION, TIME AND MANPOWER.

DUE TO INHERENT PROPERTIES OF GAS HYDRATES, THE PIPELINE BLOCKAGES DUE TO HYDRATE FORMATION ARE SOMETIMES VERY DIFFICULT TO REMOVE RESULTING IN HUGE MONETARY LOSSES.

INTRODUCTION TO HYD-PREDIC

HYD-PREDIC IS A FLOW ASSURANCE SOFTWARE APPLICATION COMPRISING OF MACROS WRITTEN FOR MS EXCEL USING VISUAL BASIC FOR APPLICATIONS (VBA) PROGRAMMING LANGUAGE.

HYD-PREDIC CAN BE USED TO PREDICT THE FORMATION OF HYDRATES IN A SUB-SEA MULTIPHASE CRUDE OIL TRANSFER PIPELINE.

HYD-PREDIC PREDICTS THE EXACT SECTION OF PIPELINE PRONE TO HYDRATE FORMATION AND HELPS IN PREVENTING HYDRATE FORMATION FOCUSING ON THE SPECIFIED SECTION OF THE PIPELINE RATHER THAN THE WHOLE PIPELINE.

HYD-PREDIC SAVES A LOT OF MONEY AND RESOURCES AS THE FOCUSED SECTION PRONE TO HYDRATE FORMATION MAY BE A SMALL PART OF A LONG PIPELINE THUS PREVENTING COSTLY HYDRATE PREVENTION MEASURES TO BE APPLIED TO THE WHOLE OF PIPELINE.

APPLICABILITY OF HYD-PREDIC

HYD-PREDIC CAN BE APPLIED TO SUB-SEA MULTIPHASE CRUDE OIL TRANSFER PIPELINE

HYD-PREDIC CAN GIVE RESULTS FOR UPHILL FLOW THROUGH A VERTICAL OR INCLINED MULTIPHASE CRUDE OIL PIPELINE WHICH CAN BE A INSULATED OR UNINSULATED VERTICAL TUBING CONNECTING BOP AT THE SEAFLOOR TO THE OIL COLLECTION VESSEL AT SEA LEVEL.

THE PIPELINE CAN CONTAIN A MIXTURE OF GAS, OIL AND WATER WITH KNOWN RESERVOIR TEMPERATURE, KNOWN BUBBLE POINT PRESSURE OF ORIGINAL CRUDE OIL AND KNOWN WEIGHT PERCENTAGE OF PRODUCED WATER AT STOCK TANK CONDITIONS.

OTHER PARAMETERS REQUIRED BY HYD-PREDIC ARE TEMPERATURE PROFILE OF SEA WATER, STARTING PRESSURE AND TEMPERATURE OF CRUDE, LIQUID FLOW RATE AND SPECIFIC GRAVITY OF OIL AND GAS AT STOCK TANK CONDITIONS AND DIMENSIONS AND THERMAL CONDUCTIVITY OF PIPELINE.

CALCULATION PROCEDURES FOR HYD-PREDIC

HYD-PREDIC USES BLACK OIL MODEL AS THE BASIS OF ITS CALCULATIONS

HYD-PREDIC USES DIFFERENT BLACK OIL CORRELATIONS FOR CRUDES OF DIFFERENT PARTS OF WORLD

DINDORUK CORRELATION

GULF OF MEXICO CRUDE

PETROSKY AND FARHAD CORRELATION

GULF OF MEXICO CRUDE

STANDING CORRELATION

CALIFORNIAN CRUDE

GLASO CORRELATION

NORTH SEA CRUDE

AL MARHOUN CORRELATION

MIDDLE EAST CRUDE

VASQUEZ AND BEGGS CORRELATION

WORLDWIDE CRUDE

KARTOATMOJDO AND SCMITZ CORRELATION

WORLDWIDE CRUDE

HYD-PREDIC SIMULATES UPHILL FLOW OF OIL-GAS-WATER MIXTURE USING DIFFERENT EQUATIONS/
CORRELATIONS

NO SLIP BETWEEN GAS AND LIQUID PHASE

DARCY EQUATION

SLIP BETWEEN GAS AND LIQUID PHASE

BEGGS AND BRILL CORRELATIONS

MUKHERJEE AND BRILL CORRELATIONS

HOW TO AVAIL SERVICES OF HYD-PREDIC

HYD-PREDIC SOFTWARE IS AVAILABLE FOR USE AS PER SAAS (SOFTWARE AS A SERVICE) MODEL.

THE SERVICES OF HYD-PREDIC CAN BE AVAILED ON PER CALCULATION BASIS.

THE SERVICES CAN BE AVAILED BY LOGGING REGISTERING IN THE VLE CALCULATOR PAGE OF THE WEBSITE, WWW.EQ-COMP.COM .

NEW USERS SHOULD MENTION THEIR E-MAIL ID FOR REGISTERING WITH THE WEBSITE.

AFTER THIS USERS CAN DOWNLOAD THE MS EXCEL FILE RELEVANT TO THE CALCULATION, PAY A NOMINAL AMOUNT USING THE PAYPAL BUTTON GIVEN AGAINST THE RELEVANT CALCULATION, FILL THE DOWNLOADED MS EXCEL FILE AND SEND IT AT INFO@EQ-COMP.COM.

THE RESULTS OF THE CALCULATIONS WILL BE SENT AT THE EARLIEST AT THE REGISTERED EMAIL ID.

THANKS

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