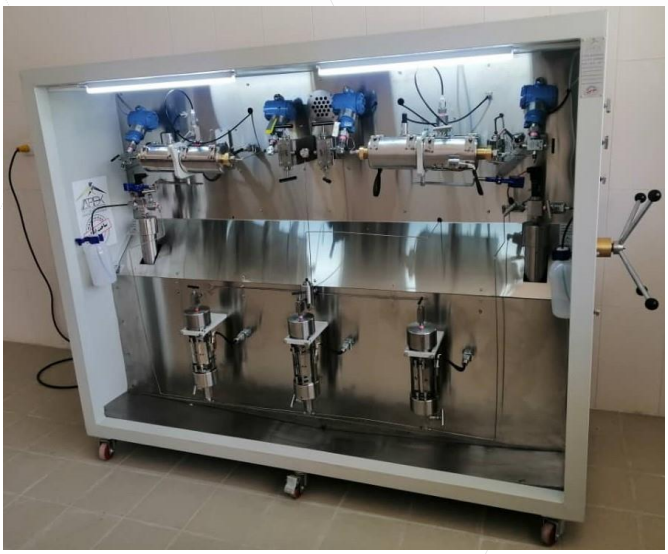
دستگاه تزریق اسید به ماتریکس سنگ

Matrix Acidizing Apparatus
(MA-P-600)

Apex technologies co., designed and manufactured a matrix acidizing equipment basically similar to core flooding equipment which evaluates the effectiveness of an acid injection and treatment to dissolve minerals of a reservoir rock under reservoir temperature and pressure. The effectiveness of such a process is evaluated considering the difference in permeability before and after acid injection. The most common acid employed to stimulate production is hydrochloric (HCL) which is useful in removing calcite materials from reservoirs and widely used in carbonate acidizing. Hydrochloric acid may be combined with hydrofluoric acid (HF) which dissolves silicate phases from the reservoir rocks, and Acetic acid also shows better results in carbonate reservoirs.

The laboratory equipment for acidizing is highly necessary since in field scale this process deals with pumping highly pressurized acid into the well make this process so risky and complex. In the shadow of this fact, it is highly necessary to examine the various possible protocols of matrix injections and applicable acids in the Lab and then scaling up the results to avoid any harsh and serious damage to the reservoirs.



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Technical Specification:

Special equipment to simulate the injection of acid into core matrix and even perform secondary, tertiary oil recovery processes including gas injection, carbonated water injection, smart water injection, microbial EOR, …
Pressure transmitters × 2 (Rosemount)
Online software to log the pressure, displaced volume, injection rate, online permeability and temperature of the system
Hand pump equipped with a pressure gauge to control confining pressure × 1
Gas back pressure regulator × 1 (600 bar) (Hastelloy C-276)
Vertical, horizontal and reverse injection patterns
Connections and valves: BuTech / Vindum / Autoclave / HIP
Core diameter: 1.5”
Core length:1” to 4”
Wetted parts material in contact with acids: Hastelloy C-276
Pressure transmitter accuracy: 0.05 % full scale
The lowest dead volume among its kind
Heating mechanism: slim elements
Max. working temperature: 120 °C
Easy load hassler core holder × 1
Max. working pressure: 600 bar
Temperature resolution: 0.1 °C
Confining pressure: 600 bar
Hastelloy C-276 Accumulator × 1 (500 cc)
Miniature S.S.316L Accumulator × 1 (100 cc)
Low dead volume design
High pressure injection pump JSSP-10000SSV × 1 • Touch panel to control the operational parameters and monitoring the pump performance • Operational mode: constant pressure and constant flow rate modes • Necessary to inject the fluids into the core holder • Displaced volume resolution: 0.001 cc • Max. Injection pressure: 600 bar • Max. chamber volume: 400 cc • Min. flow rate: 0.01 cc/min • Max. flow rate: 10 cc/min • Pressure accuracy: 0.25 % full scale (higher accuracy is available based on the client order) • Wetted parts: Stainless steel 316L • Valves and connections: Autoclave/BuTech/HIP