

## Production Wellsite Packages



Viura, UFG, Gas Production 2 Skids – Spain

### Product Definition

**By mounting all of the equipment required for production wellsite control and well safety onto a mobile skid-mounted unit, Frames Production Wellsite Packages deliver a robust, ready-to-use solution for both onshore and offshore applications.**

**Certified for hazardous areas, Frames combines all hydraulics, flowline assurance, well monitoring, safeguarding, on-site control logics, communication, independent solar power supply, and back-up power into a single modular unit. Built for your unique operating conditions, your Frames Production Wellsite Package can be designed to be used on either oil or gas wells. Highly efficient and featuring sharp design solutions, Frames Production Wellsite Packages are easy to install and require a minimum of on-site work.**

### Product Description

Frames Production Wellsite Packages combine all wellsite equipment onto a single, ready-to-operate skid-mounted package. As opposed to traditional stick-built units, our clients benefit from minimum interface engineering, procurement time and fast commissioning times. Our fully integrated solutions also optimize onsite availability, maintenance and reduce operating costs.

Frames robust skid-mounted Wellsite Packages are easily transported by road and can be offloaded in a single lift. Following placement on tarmac, beams or concrete supports, the wellhead is rapidly brought into production by connecting the Christmas tree, downstream flowline, any power grids and, if required, the client control system. With minimal onsite interfaces, our clients benefit from fast hook-up times of only several days, with the Frames team of experienced service engineers readily available to support your business during the (pre-) commissioning and start-up stages.

Frames provides a highly mobile solution, well suited for marginal field development. Frames skid-mounted Wellsite Packages can be easily relocated upon depletion of the well, with options for solar power and battery back-up providing cost-attractive alternatives when operating in remote locations. The solar panels located on top of the wellsite skids also provide shade for the electrical instruments. Minimized electrical consumption optimizes the number of solar panels and size of battery back-up.

Overall functionality, maintenance and operation of all wellsite equipment can be optimized through integration of sub-systems onto one skid-mounted package. An on-skid (SIL-rated) Programmable Logic Controller (PLC) or logic solver can be used to control the Christmas tree valves (hydraulically operated), along with the choke, PSD and ESD valves, or can be integrated with a High Integrity Pressure Protection System (HIPPS). Using several pressure transmitters connected to a logic solver, a HIPPS efficiently protects downstream equipment from overpressure and removes the environmental impact of traditional relief valves and flare.

Gas or multiphase flow and properties can be measured, fed back and controlled via the on-skid PLC and the hydraulic or electric-operated choke valve. Depending on the gas or oil composition, one or multiple chemical injection systems can also be integrated onto the Frames skid.

## Production Wellsite Packages

### Process Description



Middelie, NAM, Gas Production 2 Skids – the Netherlands



Haradh, Saudi Aramco, Oil Production 1 Skid – Saudi Arabia



In Amenas, BP, Gas Production 30 Systems – Algeria

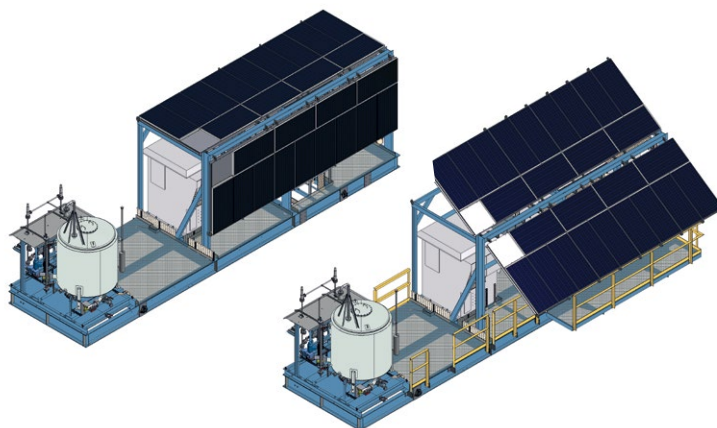
Oil or gas Christmas trees consist of several valves (hydraulic operated). The hydraulic power is supplied by the wellhead control panel.

Valve operations are controlled by the on-skid control logics which use a (SIL-rated) Programmable Logic Controller (PLC) to guarantee safe valve opening, process control, and emergency shutdown of the production well.

Operations can be controlled locally on the skid or remotely via a Remote Terminal Unit (RTU) which is connected to the PLC. Either flowline piping or a flexible jumper is used to connect the skid-mounted piping to the oil or gas Christmas tree. If required, hydrate inhibitor can be quill or down-hole injected to prevent hydrate formation during start-up, and depending on gas or oil composition, single or multiple production and flow assurance chemicals can also be injected.

Gas or multiphase flow and properties, including temperature and pressure, are measured and monitored. The PLC feeds these measurements back to the client's SCADA with production control via the electric or hydraulic-operated choke valve.

A High Integrity Pressure Protection System (HIPPS) protects downstream equipment from high pressure. Compared to traditional systems which relieve over-pressure by removing excess fluids, the HIPPS system efficiently works to stop the initial inflow of excess fluids.



In Amenas, BP, Gas Production 30 Systems – Algeria, solar panels are folded for easy transportation

# Production Wellsite Packages

## Project Management

At Frames, we understand that success depends on sharp project management. We are driven to support your business, with our dedicated project team always on hand for one-on-one contact, providing you with the best possible service.

From concept through to design, production, testing and delivery, our project team will know your operating environment, and will use the latest technology to precisely meet your needs.

We are solution orientated, understand your industry and always use strict document control and professional planning to exercise tight process control and meet all delivery deadlines. Our global office network, international supply chain and partnerships with leading vendors mean we are always able to supply the best systems and meet all of the local requirements and regulations, including possibilities for in-country manufacturing to increase local content.

## Technical Details

- Flowline piping and instrumentation
- Process valves including control and operation (Choke valve, ESD, PSD)
- Hydraulic wellhead control panel
- Chemical injection system
- Safety instrumented systems (ESD, Fire and Gas)
- High Integrity (Pressure) Protection System (HI(P)PS)
- Flow measurement (gas, oil or multi-phase)
- Electrical power distribution, solar powered (option) and power back-up
- Container-size skid for easy transport and installation
- Onsite safety control & logics (PLC and RTU)
- Telemetry (fibre optic, GPRS, radio)

## Added Value Frames

- Simple interface engineering, with minimal onsite work for fast and easy startup
- Completely integrated solution for single-point project management
- Low HSE Exposure during construction, maintenance and operation – ideal for security sensitive areas
- Easy hook-up following injection well completion and highly mobile units that are easily relocated
- Fully customized for your unique operating environment

## References

- In Amenas, BP, Gas production 30 systems – Algeria
- Viura, UFG, Gas production 2 skids – Spain
- Donkerbroek, Tulip Oil, Gas production 2 skids – the Netherlands
- Utmaniyah, Saudi Aramco, Gas production 1 skid – Saudi Arabia
- Haradh, Saudi Aramco, Oil production 1 skid – Saudi Arabia
- Middelie, NAM, Gas production 2 skids – the Netherlands

## Contact

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# Frames Family Tree

