

# New HMI/SCADA and Training Simulator for Drilling Rigs



## Distributor

EFA Automazione S.p.A.

## Industry

Oil & Gas

## End User

Various international companies in the oil & gas market.

## Integrator

Drillmec S.p.A.

Drillmec is an important international player in the oil & gas sector that works with the design, production, and distribution of offshore and onshore drilling plants, as well as a wide range of drilling equipment.

Drillmec has leveraged Ignition SCADA to create customized screens for its many customers in oil & gas.

## Problem

Drillmec needed a redesign of the supervision system at all levels: the human-machine interface, a second level of higher supervision, and a third level of synchronization of the server in the cloud (where data from various plants is collected). Drillmec also needed customized dashboards to show to customers.

## Solution

The fact that Ignition is web-based and has a pure client-server architecture was very useful in this case, where there are many access points to the system. Each workstation has a touchscreen monitor. Each system has approximately 10 monitors. Thanks to Ignition's client-server architecture, the operation remains

very lean, since no software is installed on PCs. This flexibility has allowed Drillmec to create customized, complex solutions without implementing intricate and difficult-to-maintain structures.

## Results

Drillmec's initial goal was to create a single project to be installed on every drilling rig, to minimize HMI development costs. The company soon realized that the variety of rigs and components weren't compatible with that approach. Customers' requests also conflicted with the startup goal. Ignition helped tremendously with this. With the Ignition scripting functions, it was easy for Drillmec to create extensive personalization.

Approximately 50,000 rows of Python scripting helped to create a customizable user interface. The project has been upgraded to Ignition 8 and is currently using the Vision Module. Later in 2020, the Ignition Perspective Module will be used for the new centralized application.

Drillmec has built an innovative drilling simulator which is used for operator training. The simulator has joysticks and touchscreen monitors that simulate the experience of operating a drilling rig, with all the available parameters and data relating to the supervision. The simulator is equipped with a projection system that realistically reproduces the operating components of the rig in 3D visualization. It's possible to simulate the startup of the system and each installed component and perform calibration, in order to retrace the operating sequence using the hardware commands and the HMI.

#### Project Info

- 10-20,000 tags per rig
- Up to 15 clients
- 2-5,000 alarms
- Remote access from mobile devices and palm devices
- Standard Ignition Architecture with a single server for the original version in Ignition 7.6.6. With Ignition 8, the plan is to use Ignition Edge and MQTT to send data from older rigs
- SQL Server database, most often with Express. At least four connections: one for configuration, one for historical measures, one for historical event logs, and one for the maintenance system (configurations, active maintenance, and historical reports)
- Historical data logged with tag history enabled for all tags needed from the end customer in order to monitor the rig behavior
- Approx. 100 tags for trends



The new HMI/SCADA system includes customized dashboards pulling in data from the cloud.



Drillmec created an innovative simulator for operator training.

*EFA Automazione S.p.A. is the Authorized Ignition Distributor for Italy. Based in Milan, EFA distributes connectivity and industrial-communication solutions to machine manufacturers and system integrators while supporting IIoT and Industry 4.0 architectures.*