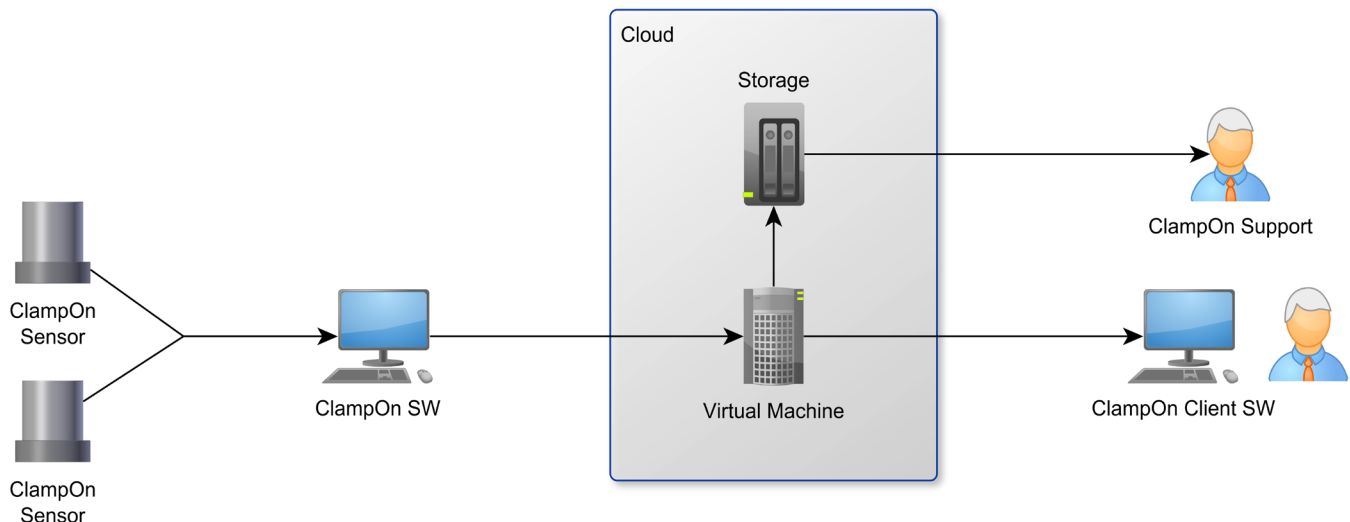


# ClampOn in the Cloud Support & Sand Management

DIGITAL SIGNAL PROCESSING



*ClampOn Cloud solution. One way communication from a standalone ClampOn system on site, via a ClampOn Virtual Machine in the Cloud, to ClampOn Support and/or ClampOn client software*

## SAND MONITORING IN THE CLOUD

For more than 10 years, the ClampOn support team has been available to remotely assist all our customers that use our permanently installed sand monitoring systems. However, the rapid development of solutions for working with data in the cloud has now made it possible to offer the same solution for portable systems, typically used in well test applications.

By utilizing cloud based data sharing, we are now able to provide real-time support 24/7 directly to any client, anywhere in the world. This is achieved with one-way communication from the sensor, where the acoustic RAW value is streamed to a secure folder in a Cloud

account with the help of a standalone laptop. This laptop can be connected to the guest wireless network offshore or a 4G modem. Where production data is required, this should be sent via a separate communication channel to ensure cyber security.

Built into the ClampOn Cloud is a simple client giving customers easy access to sand production trends from any location, as well as access for ClampOn support and service engineers.

## CLAMPON REMOTE SUPPORT

### BACKGROUND

For more than ten years, ClampOn's highly experienced

support team have been meeting the sand monitoring needs of all of the world's major operators. Sand data from hundreds of wells all over the world are sent to the ClampOn support centre in Bergen, Norway. Most of the data is sent in real-time, while some upload historical data to our support server.

### WHY

Sand production forces many operators to restrict wells. A proactive sand monitoring and management approach may open up the possibility of increasing oil & gas production. This approach may also reduce maintenance and production downtime, thereby increasing overall profit for our clients.

***"We are the experts on our instruments, and you are the experts on how to operate your wells."***

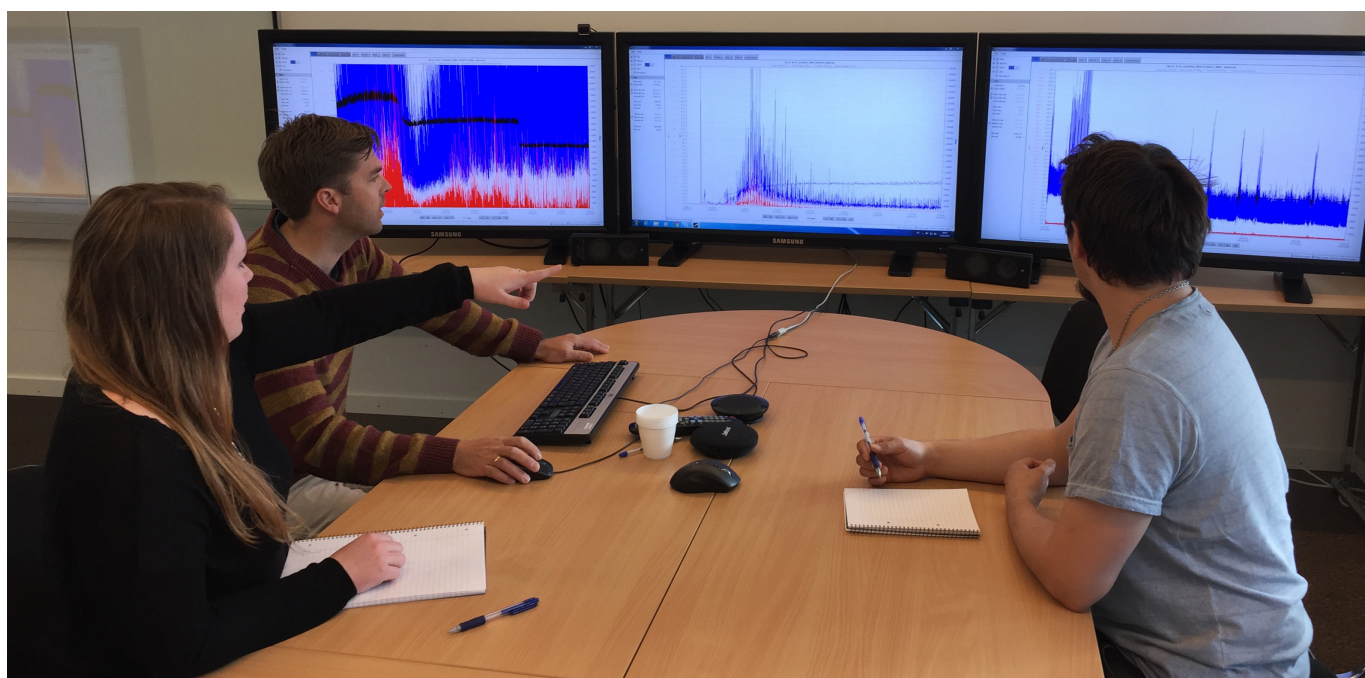
Involving the ClampOn support team in your sand management program utilizes your resources better. ClampOn seamlessly adapts to your organization's sand management philosophy.

## **OBJECTIVE**

Our objective is to be the technological leader in providing reliable sensors and sand monitoring expertise to clients all over the world. When sand is detected, the concern for the client should be how to handle it, not how to quantify it.

***"Leave sand monitoring to ClampOn, so the operator can focus on how to manage sand production."***

Sand monitoring and management is simple when there is no sand production. However, when there is sand production, it can be very challenging and frustrating; mistakes can be dangerous and extremely expensive.



*Support team analyzing live wells*

## **OUR SUPPORT SERVICES**

### **MAINTENANCE**

ClampOn recommends that the system is maintained at regular intervals. Maintenance concerns mainly the software. For a given sensor, background noise at different flow velocities will change if well characteristics change, and zero values need to be

updated if the system is to provide reliable sand rate outputs. With the ClampOn support team at your back, we ensure that your system is well maintained.

### **OPTIMIZATION**

Offshore installations are complex, sometimes requiring more than a basic set-up. Therefore, ClampOn's versatile and customizable software is available to our clients in order to ensure accurate live auto-calculated sand rates, integrated directly into our client's control systems.

## ANALYSIS

Sand analysis is in many cases easy, but there are also cases that present challenges, such as unstable production, low velocities and production of small particles. These more complicated cases require human interaction, which is where ClampOn's years of experience of day-to-day monitoring ensures that the operator's data is correct, and that operation is as safe as

possible. Data is formatted into customized weekly, monthly or quarterly reports, which typically include detailed information about sand production for each well, and statistics showing long-term trends and total sand production.

The technical condition of the system and any need to service, calibrate or update

system parameters are described. A revised table of calibration parameters can be provided. Depending on the system and procedures, the revised configuration files can be directly uploaded to the ClampOn system.

## AVAILABILITY

The ClampOn Support Team is available to our clients 24/7. Modern communication networks allow our support engineers to remotely assist our clients all over the world. From our headquarters in Bergen, our engineers have assisted clients with:

- Bean-up operations
- Trimming
- ASR tests - acceptable sand rate
- Well tests
- Start-ups
- Troubleshooting



*ClampOn DSP Particle Monitor*



ULTRASONIC INTELLIGENT SENSORS

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