

# Distributed Fibre Optic Sensing for the Oil & Gas Industry 2014-2024: Market Prospects for DTS, DAS & DTSS; Well & Reservoir Monitoring, Security & Seismic

## 8.8 AP Sensing

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AP Sensing offers distributed optical sensing technology (DTS - distributed temperature sensing) for a wide range of applications. Based on their HP/Agilent heritage, with over 25 years of optical measurement expertise, the company stands for top quality and well-designed solutions.

Visiongain interviewed AP Sensing in April of 2014 and would like to thank them for their time and informative comments.

### 8.8.1 AP Sensing & Distributed Fibre Optic Sensing

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**Visiongain:** Briefly describe how AP Sensing is involved in the business of providing well monitoring solutions. To what extent do you design the solution and manufacture the equipment?

**AP Sensing:** DTS (Distributed Temperature Sensing) is becoming a widely accepted technology for Reservoir Production and Well Stimulation Monitoring. AP Sensing designs and produces the most reliable and rugged DTS on the planet; our customers appreciate that! We design and produce a wide variety of configuration options (including range, number of channels, singlemode or multimode fibres, and performance) to meet their technical and budgetary requirements; our customers appreciate that! As you said, we design and manufacture equipment; however, AP Sensing is not a "Direct" Well Service Company. In other words, we don't compete with our customers as some DTS OEMs do.

**Visiongain:** What do you think gives your company a competitive edge over those also implementing well monitoring solutions?

**AP Sensing:** Quality products and a passion for customer service – our systems and customers rarely have problems; but, when they do, we go the extra mile! On the technical or design front, our systems are highly integrated. This means we meet virtually all of our customers' technical requirements while providing a small, low power and highly reliable/durable instrument.

**Visiongain:** What other applications do you apply your DTS solution to?

**AP Sensing:** Linear Heat/Fire Detection, High Voltage Transmission Power Cable Monitoring, Vessel Monitoring, Pipeline Heat Trace Monitoring, Pipeline Leak Detection and General Industrial Temperature Monitoring

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## 8.8.2 Regional Demand for Distributed Fibre Optic Sensing

**Visiongain:** What regions of the world are the biggest users of distributed fibre optic sensing for enhancing reservoir performance?

**AP Sensing:** We sell most of our systems through Well Service Companies; those systems are deployed world wide. Our customers appreciate the respect for their privacy and intellectual property.

## 8.8.3 DAS, DTS and Reservoir Monitoring

**Visiongain:** What is your view of the potential for using DAS in permanent reservoir monitoring (PRM) both onshore and offshore?

**AP Sensing:** DAS has many very promising applications for PRM and therefore great potential. DAS has both challenges and a bright future.

**Visiongain:** What are the advantages of DTS over DAS for reservoir monitoring? Is it an either/or matter, or do you think there is potential to do both within a well monitoring exercise?

**AP Sensing:** DTS is easier to interpret and generates less data. However, every single DAS OEM or end customer generally realizes the value of the simultaneous use of DTS and DAS. These two technologies do not compete; they are recognized as very complementary solutions.

## 8.8.4 Technical Challenges Facing the Industry

**Visiongain:** What technical challenges are facing those supplying distributed fibre optic sensing solutions for well monitoring and/or PRM? How are these being overcome?

**AP Sensing:** The primary challenge is in the sensor cable deployment. Cable companies have done a great job designing fibre optic cables. Most well service companies and operators understand how to select the right cable and fibre for the application. However, without proper sensor cable deployment, DTS or DAS is dead in the water. The deployment has to be done properly and there is always some risk. Other challenges are usually along the lines of operational training and data interpretation.

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## 8.8.5 SAGD and DTS

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**Visiongain:** Aside from the development of SAGD as a production technique (re oil sands), what are the major growth markets for DTS in terms of well monitoring?

**AP Sensing:** SAGD has been good for DTS because of its relatively shallow depths and obvious requirement for temperature monitoring; however, we are seeing consideration of DTS deployment in almost every single well monitoring application. DTS has a good future in all well monitoring markets. These include Production and Well Optimization, Completion Integrity, Artificial Lift Monitoring and Optimization and Horizontal Well Profiles in addition to Steam Flood Monitoring.

## 8.8.6 Emerging Applications for DTS and DAS

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**Visiongain:** What type of distributed fibre optic sensing solution will experience the strongest uptake going forward: DTS or DAS? Why?

**AP Sensing:** Both, because they are distributed and because deployment of fibre optic cables is getting better and better.

**Visiongain:** What applications for distributed fibre optic sensing solutions are the most exciting from a market growth point-of-view? Security, seismic substitution, well monitoring?

**AP Sensing:** Traditional temperature, acoustic and ultrasonic technologies for well performance and troubleshooting profiles; well diagnostics, flow monitoring, flow assurance; micro seismic, pipeline leak detection, third party interference; heat trace monitoring and security.

## 8.8.7 Overall Drivers & Restraints for Uptake

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**Visiongain:** Overall, what do you think are the biggest drivers for the use of fibre optic cable as a distributed sensing solution?

**AP Sensing:** The need for energy; the need to invigorate brown fields; the need to get more out of current assets; the need for better, higher resolution (spatially) measurements that can only be provided by a true, distributed measurement technology.

**Visiongain:** What has prevented fibre optic cables from being used as a sensor in the past?

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**AP Sensing:** I would not use the word prevented; but I think I know where you are coming from. Early on, well service companies deployed fibre optic sensing cables that were not appropriate for harsh environments and people got burned. Sensor cables lasted weeks or months instead of years. Many operators got a bad taste of fibre. Those days should be completely in the past!

I have seen fibre optic cables deployed by those that know nothing about fibre; this is a mistake. So, if you use the right deployment crews (and we can help you know who they are) and you use good equipment, like AP Sensing, everything will work out fine. Cost is always a factor; but, that is improving as well.

**Visiongain:** What solutions are being developed to overcome the challenges that have been faced?

**AP Sensing:** Fibre and cable technology has improved tremendously. Deployment techniques and deployment expertise has vastly improved. DTS equipment reliability and ease of use, with a real instrumentation company like AP Sensing, has improved tremendously as well.

**Visiongain:** What restraints on market penetration still exist for distributed fibre optic sensing solutions?

**AP Sensing:** Trust. The equipment is ready; however, the operators need to gain a higher level of trust in the fibre optic cable deployment companies. More and more success stories are helping all of this improve.