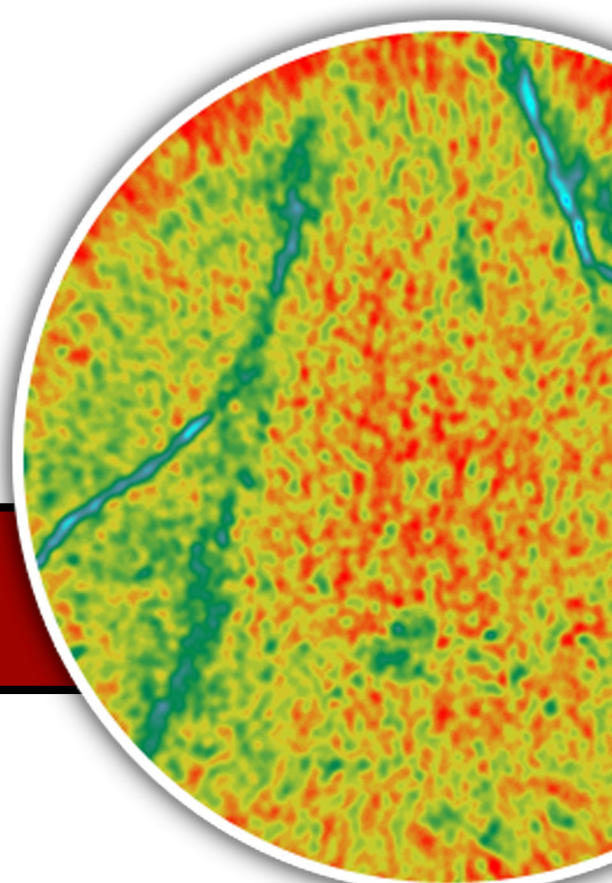


PERM Inc
TIPM LABORATORY

ALWAYS INNOVATING



PERM Inc. is a Calgary-based laboratory that specializes in conducting Special Core Analysis (SCAL) and Enhanced Oil Recovery (EOR) studies for the oil & gas industry. Throughout their 20-year history they have worked with virtually all the major oil companies operating in the Western Canadian Sedimentary Basin and have also worked on a variety of reservoirs around the world.

The story of the company began more than 20 years ago, in 1994, when founder, President & CEO Dr. Apostolos Kantzas formed the lab – which was originally known as the

Tomographic Imaging and Porous Media Laboratory (TIMP Lab).

Dr. Kantzas is a professor from the University of Calgary, and has a wealth of experience in leading advanced research of porous media, primarily dealing with petroleum reservoir engineering issues. He started PERM on the University of Calgary campus. In 2012, the company outgrew the space and moved into a 25,000 square foot laboratory off-campus in Calgary Northeast.

Today, PERM is on the cutting edge of oil



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& gas research and development. Their leading team – headed by Dr. Kantzas, as well as Vice Presidents Dr. Jonathon Bryan and Dr. Sergey Kryuchkov – is constantly pushing the boundaries of scientific understanding for SCAL, EOR and Reservoir Characterization.

PERM has conducted more than 8,000 hours of research and development, and completed more than 1,250 projects for satisfied clients in the oil & gas field.

Dr. Kantzas describes their work as “solving problems related to the production of oil

& gas from the ground.” Most of the time, PERM is identifying and resolving these problems before production even starts. They mainly work with clients during the design phase of their reservoir projects, and use their knowledge and real world laboratory results to optimize reservoirs by mitigating risk, increasing production and solving issues.

PERSONAL RELATIONSHIPS

PERM now operates from 3956 29 Street NE, Calgary. Three-quarters of their 25,000 square foot facility is a state-of-the-art labo-



ratory, while the other quarter is made up of support space. Their employee count is currently 25, though it has grown to as high as 35 when the oil & gas market is thriving.

Over the course of their decades-long history, PERM has worked on a variety of projects of different sizes and scopes. For example, on the “technical services” side of their business, they have conducted individual laboratory tests for clients for only a few hundred dollars. They have also been involved in the development of many new reservoir fields right

from the design stage, and those projects can last years and become valued at millions of dollars.

Those projects can also be challenging – and that’s where PERM thrives, Dr. Kantzas says.

“Whether it is doing full diameter core floods at high pressures and temperatures or conducting complex relative permeability measurements while scanning, we routinely take on complex projects.”

According to Dr. Kantzas, the type of work PERM does at any given time is dependent on current market conditions as well as client interest. A few years ago, for instance, there was a big focus on developing natural gas from coal, and PERM was frequently providing services and advice to clients in that arena.

“That became passé, and then bitcumen became very popular in Calgary, so we spent a lot of time working with companies on that,” he recalls. “Now, as oil prices are suppressed, a lot of activities in that area are suppressed

along with it, so we have to adapt and see what opportunities are available to us.”

No matter what sector of the oil & gas industry they are working in, however, PERM focuses on building strong relationships with their clients. That focus has paid off with repeat business, as PERM has consistently worked with a number of major industry players over the years.

“Most of our clients are large companies,” Dr. Kantzas says. “A few of them began as upstarts and have been growing.”



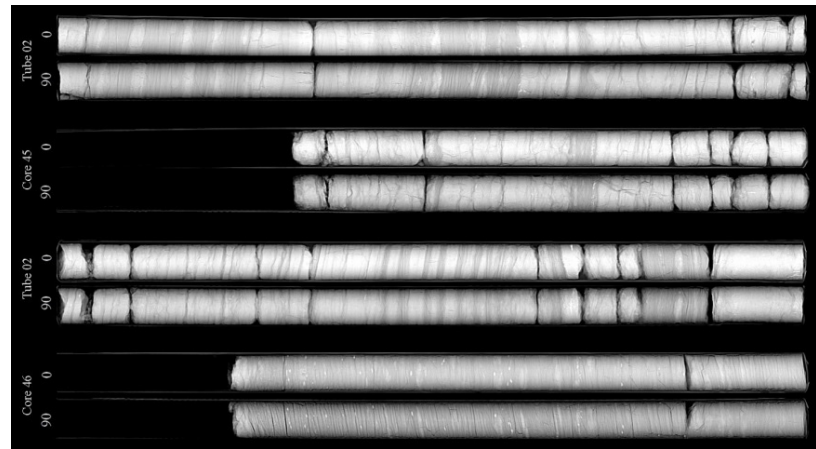
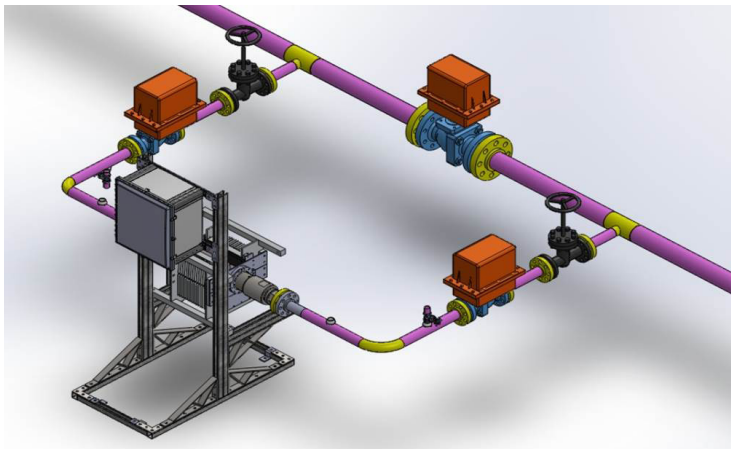
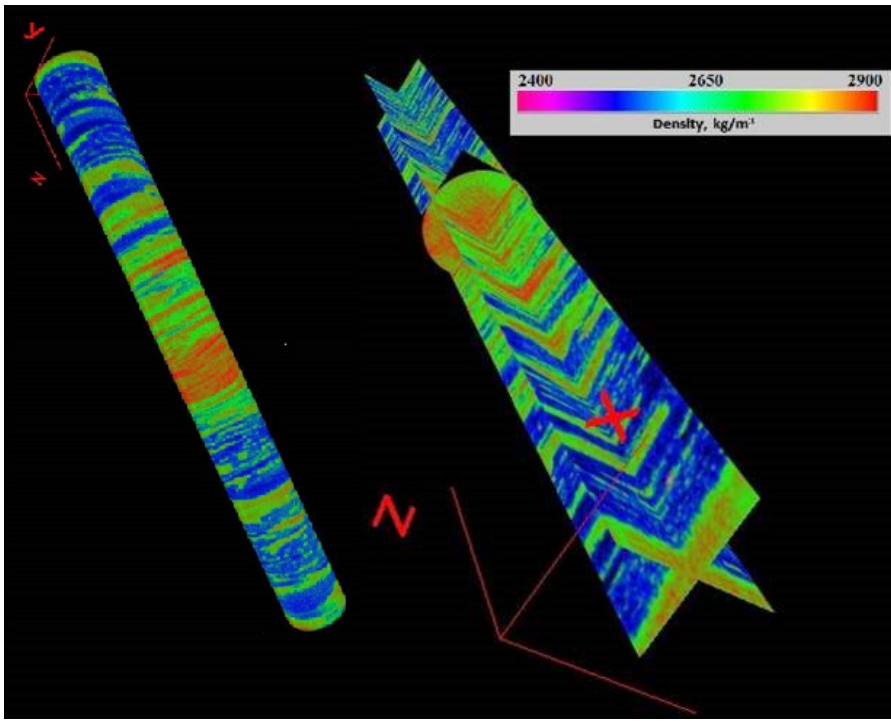
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“We form personal relationships with them,” he adds. “When it comes to our most faithful clients, we help them, we spend time in their offices and we work with them almost on a daily basis designing processes. With those types of companies, we’ve sustained long-term relationships.”

THE LATEST KNOWLEDGE

Currently, PERM is heavily focused on digital core analysis – “where we use computa-

tional physics to describe what’s going on inside the pores, at a microscopic scale in a reservoir,” Dr. Kantzas explains.

Digital core analysis works by combining CT Scanning, micro-CT, SEM, EM, NMR and a few other sensors. PERM imports this data into their complex models, and then properties are calculated within every single pore. From that, they derive accurate core analysis data and upscaling algorithms.



“We hope that this service will help a number of oil companies for whom testing is prohibitively expensive,” Dr.Kantzas says.

Another current focus of the company is their educational offering. As a professor, Dr.Kantzas spends a lot of his time teaching, and he found that there were a lot of professionals who didn't have the expertise in oil reservoirs that PERM offers. He received expressions of interest from people who wanted to take short courses where they could learn the basics of the processes that PERM deals with on a daily basis.

“I was able to set that up as a small service of the company,” Dr.Kantzasrecalls. “It's a tool that allows people to learn the basics, and lets

us show them what we can do here at our lab.

Each PERM course is taught by renowned experts with PhD's and industry experience – people who don't just teach, but also actively manage SCAL and research and development projects. PERM courses are also limited to a maximum of 18 participants, so they all have the opportunity to ask questions and get to know the instructors. Because PERM is an active laboratory, participants also have the opportunity to see real world examples of special core analysis cases, which further reinforces and enhances the learning experience.

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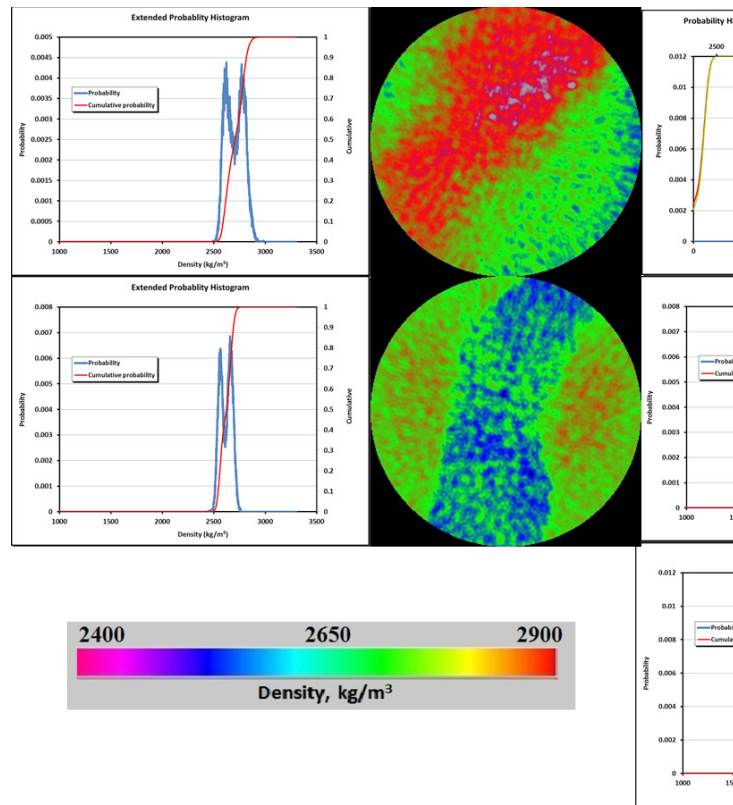
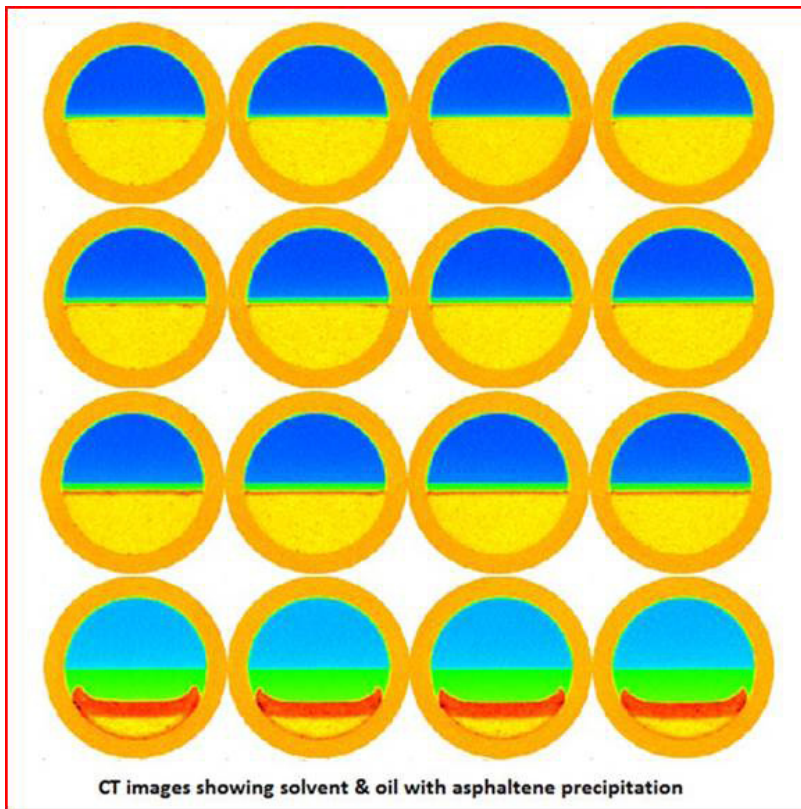


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Last year, PERM Inc also announced a new Joint-Industry-Project to study the effects of gases on thermal processes in oil sands and carbonates. Dr.Kantzas says the world is in a “new era in development of non-pristine oil-sands and carbonates” – an era which is “in need of new measurement techniques and data.” That project is ongoing.

INNOVATE TO EXIST

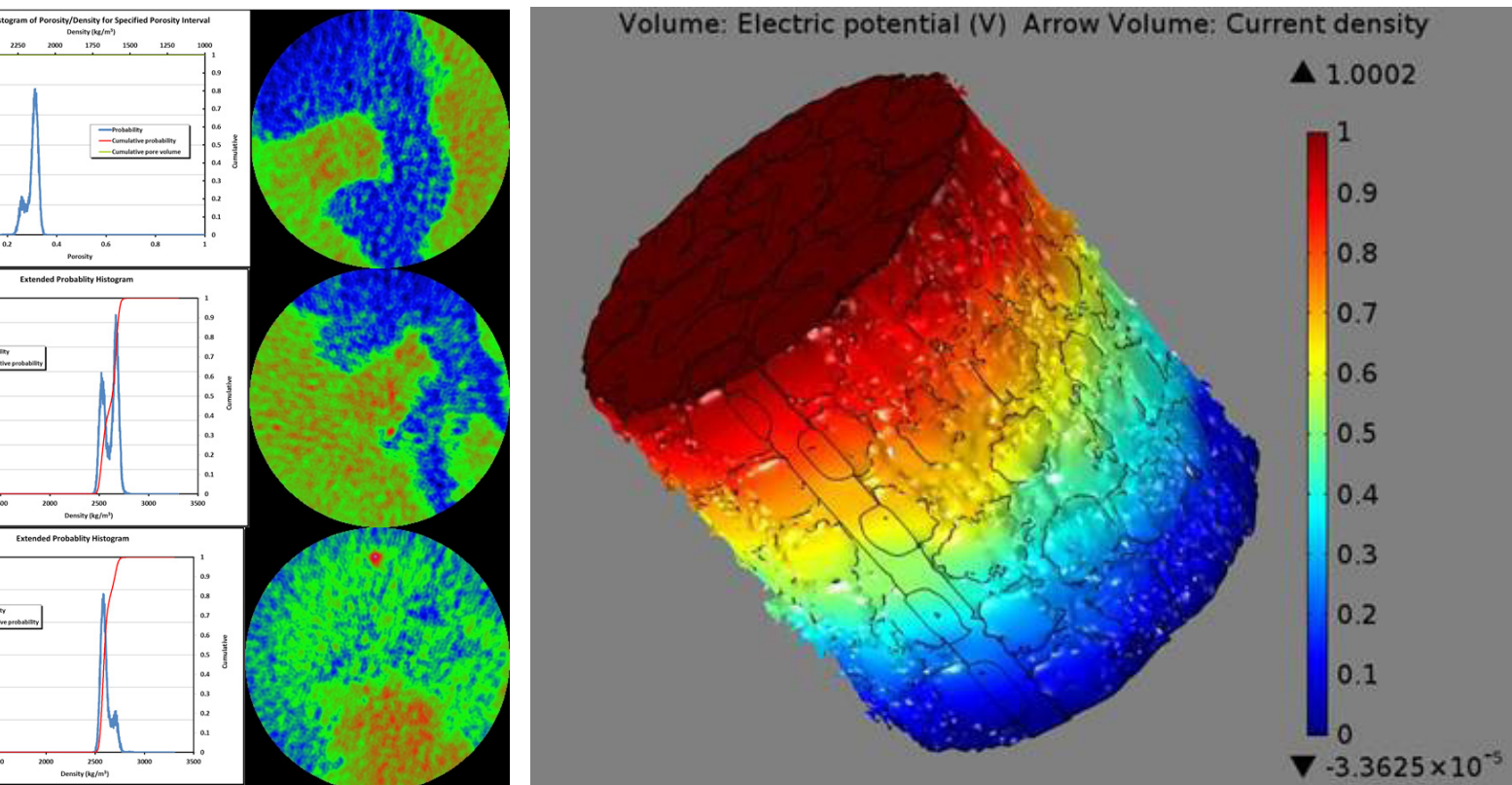
Moving forward, Dr.Kantzas says PERM will keep innovating, and keep adding to their already long list of services and specialties.

“We have to innovate to exist,” he says. “Our

niche in the market is that we’re doing the things that other people don’t do. We have to be novel at all times.”

“The novelties now are in the testing, in the digital core analysis, and it’s also in understanding how new technologies can be implemented in reservoirs,” he continues. “And we try to have new stuff continuously. Of course, that’s easier said than done, and for every success there are failures. But that’s how progress is made.”

“For the next little while, we are experimenting with new techniques that will allow us to get better and more information out of porous materials using imaging and non-



invasive technologies,” he says. “For example, we’re spending a lot of time here using magnetic resonance imaging and X-ray tomography and things like that as tools in our laboratory. We’re trying to develop new methods and new services with that technology.”

“We’re also looking at how you can use chemicals to help with thermal recovery processes,” he adds. “There are a number of new technologies we’re evaluating there.”

“The other thing we’ll be working on is how to use electromagnetic radiation to replace steam generation,” he says. “There are a lot of new technologies, and a lot of potential.” According to Dr.Kantzas, PERM Inc will

continue pursuing that potential wherever they find it. They will also continue converting their findings into increased recovery, decreased costs and improved profitability for their clients.

“We’ve survived 20 years,” Dr.Kantzas says. “That means there’s a need for the type of work we’re doing, and we plan to keep doing it. Our vision is to continue being the lab of choice for technology development in Western Canada.”

PERM Inc.’s unique and innovative technology will be on display at this year’s Global Petroleum Show.

