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- Researcher in the simulation area, management and reservoir characterization.

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Research in Reservoir Simulation and Management Group

Petroleum Engineer Division - Energy Department
Faculty of Mechanical Engineering

Center for Petroleum Studies
University of Campinas
Campinas - SP

Phone.: 55-19-3521-1220

Fax: 55-19-3289-4916

unisim@dep.fem.unicamp.br

New Research Chair from Foundation CMG established at UNICAMP

[Denis José Schiozer](#)

A new five year Research Chair from the CMG Reservoir Simulation Foundation (Foundation CMG) was established an Industrial Research Chair in optimization and integration of reservoir simulation and production facilities, in UNISIM, research lab in University of Campinas, UNICAMP.

The Foundation CMG funding will support a chair in reservoir engineering, which will be led by Dr. Denis Schiozer. The chair will support the team of professors, research associates and students in undertaking leading edge research in innovative methods for the optimization and integration between reservoirs and production systems.

The central idea of the Chair is to:

- Apply optimization techniques to production strategy definition including operational restrictions and multiple reservoirs producing to common surface facilities;
- Obtain efficient management of multiple offshore reservoirs with shared production systems and some advanced production systems (subsea networks, separation and treatment facilities) in Pre-Salt and heavy oil fields scenarios;
- Apply optimization techniques to real-time operations in oilfield production.

The main themes of the chair are:

Comparison of coupling methodologies:

- Develop a framework to integrate reservoir and production system data, in the same approach of simulation pre-processing, oriented to optimization of multiple scenarios;
- Evaluate reservoir and production system models evaluable in integrated simulators with some comparative tests to validate the integration.

Field management and production optimization with integrated models:

- Evaluate field management in coupled simulations focusing production optimization and decision;
- Study production system modeling, subsea and surface networks, separation and treatment facilities inside integration modeling context and the impact in production optimization;
- Compare the network solutions adopted by coupling approaches to evaluate how the simplification of production system model impact in decision analysis;
- Evaluate production optimization of integrated asset models in uncertain analysis context.

Pre-Salt and heavy oil fields applications:

- Development of pre-salt offshore fields, in general natural fractured reservoirs with high productive wells that share production in common surface facilities, exploited by WAG

injector wells with recycled gas and smart wells;

- Evaluation of heavy oil mature fields with a high water rate production revitalized with recent advanced subsea pumping, separation and injection Technologies in order to increase oil production.

Integrated models will be developed based on reservoir study cases benchmarked to decision analysis regarding exploitation strategy selection in Brazilian pre-salt and heavy oil fields scenarios.

The expected results are:

- Find best available solutions to evaluate integration modeling of reservoir simulation with constrained production facilities and production optimization, what we believe to get the better decision to manage petroleum fields;
- Find adequate optimization techniques applied to field management and production strategy definition including operational restrictions and multiple reservoirs producing to common surface facilities, especially in pre-salt and heavy oil mature fields production scenarios;
- Form future O&G professionals and researchers with a better knowledge in the optimization and integration of reservoir simulation and production engineering.

About the Foundation CMG chairs

Foundation CMG will take advantage of the 27 years of experience that Dr. Schiozer brings to the area of reservoir management and simulation. Schiozer joined the faculty at UNICAMP in 1988 and holds Ph.D. degree in Petroleum Engineering from Stanford University.

UNISIM, one of the laboratories of CEPETRO-FEM, was created in 1996 by a partnership between Petrobras, UNICAMP and FAPESP (São Paulo Research Foundation), with an agreement between the University and the companies for technological innovation. In August 2014, UNISIM achieved 18 years and had, as main results: more than 100 students, more than 340 articles, 44 funded projects (more than US\$ 26 million) and 18 prizes.

About Foundation CMG

Founded in 1978, CMG Reservoir Simulation Foundation (Foundation CMG) was initially developed at the University of Calgary in the Chemical and Petroleum Engineering Department. Foundation CMG promotes and financially supports research grants at universities around the world focusing on reservoir simulation. Foundation CMG has a rich history of more than 30 years working in 25 countries around the world.

Disclosure by UNISIM, Cepetro and FCMG.