

**Introducing Bruno Gerard
And
Oxand Group
By
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Introduction

One of the definite perks which comes with being the Chief Operating Officer of Pegasus-Global is the opportunity to meet some of the most interesting and innovative people from around the world. Pegasus-Global has agreed to collaborate with Dr. Bruno Gerard, Chairman and Chief Executive Officer of Oxand Group (Oxand) which is headquartered in France, with operations in Canada, Switzerland, the Netherlands and the United States. Oxand has merged advanced project risk management processes which can identify risks to facility life cycles, calculate the probability of a life cycle failure and the impact of that failure, identifying those maintenance and replacement actions which will enable a facility to meet or even exceed their planned life cycles. Oxand has strong references in Energy (nuclear, oil & gas, hydropower) and transportation systems (railways, highways, ports)

Meet Bruno Gerard

Bruno is as energetic and passionate a person as one could ever hope to meet. His passion flows from his belief that the functional life cycle of any facility can be extended if one has the ability to capture and act on those elements and systems of a facility which are most likely to deteriorate or fail during the full life cycle of that facility. His energy comes from having successfully integrated more traditional risk management practices with life cycle historical data to create a risk based system for management of infrastructure maintenance.

Bruno originally comes from the French nuclear power industry having worked for EDF on their older nuclear power plants. It was Bruno's job to find ways to develop new on-site data treatment methodologies in order to determine their remaining practical life cycle and, if possible, find ways in which to extend the life cycles of those nuclear plants. Bruno's experience with EDF and those aging nuclear plants brought him to the realization that an "infrastructure project" such as construction of a power plant should not end with the transition from construction to operation; according to Bruno "*if one wants to achieve the full life cycle potential of any infrastructure facility, the project never ends.*" That realization began his efforts to combine effective project risk management techniques with historical life cycle data and expertise. Ultimately he succeeded in his efforts and in 2002 he started Oxand as a business dedicated to applying state of the art risk management to total facility life cycle management.

Risk Management Based Life Cycle Program

The underlying premise of Oxand's risk management based life cycle program is fairly simple: the better one manages and controls maintenance planning and action, the longer the total life cycle of the facility. But on major infrastructure facilities such as power plants, oil and gas facilities, airports, roads, bridges, docks, locks and dams, the question has always been how can an owner/operator be sure that attention is focused on those structures, materials, systems and equipment which are most critical to the

functional life cycle of the facility. For Bruno and Oxand, it begins with lots and lots of historical data on everything from knowing the corrosion curves for rebar in reinforced concrete to understanding the manner in which systems and materials interact over their life cycle. Collecting all the raw data and organizing it was only the first task faced by Oxand. Equally critical was *how to use* that mass of data in a manner which was both practical and meaningful over the full life cycle of a facility; and here Bruno and the team at Oxand turned to a fundamental management tool of the construction industry today, project risk management.

Oxand uses the traditional four elements of risk management as a starting point:

- Identify the Risk Element
- Evaluate the Probability of the Risk Occurring
- Evaluating the Impact of the Risk should it Occur
- Define mitigation plans and implement a risk management workflow to manage the process

However, Oxand takes that traditional risk management framework a step further and uses it to map operational life cycle risks, not just design or construction project risks. The output of the Oxand program is a Risk Map, which in essence identifies and evaluates life cycle risk elements, probabilistically models those risk elements, then maps those risk elements in a series of real time reports, tables and graphs which enables owners/operators to specifically monitor for and anticipate those risk elements which pose the greatest threat to attaining a facility's full life cycle potential. Take for example a nuclear power plant containment structure consisting of primarily reinforced and prestressed concrete. Oxand has a data base of the actual condition of concrete and reinforcing steel gleaned from decades of experience in actual operating nuclear facilities (along with a data base of concrete and reinforcing steel conditions in almost every environment one can think of). Knowing how concrete and reinforcing steel will react in various environments and conditions, and working with an owner/operator's technical and engineering personnel, Oxand can produce a "map" of those risk elements which will pose the most significant threat to the integrity of the containment structural concrete and reinforcing steel throughout the facility's life cycle.

Once the risk map has been developed, maintenance risks can be monitored, evaluated, and maintenance mitigation plans can be prepared and implemented to ensure that those threats to functional life cycle can be dealt with at the optimum point in the facility's life cycle. Timely, focused maintenance and remediation actions not only improve the functional life cycle of the facility; they enable the owner/operator to plan and control maintenance actions in a more efficient and cost effective manner.

More recently Bruno and Oxand have been involved in major infrastructure projects at the earliest points in project engineering and construction, advising owners/operators on maintenance risk management actions that can be implemented during design and construction of the facility, such as embedding sensors in structural members and systems from which the owner/operator (or Oxand remotely) can monitor the conditions of those concrete structures, steel members, pipelines, etc., in "real time" during operations. This real time monitoring ability, linked to the risk map enables an owner/operator to stay well ahead of the maintenance curve during the entire life cycle of the facility.

Summary

Unfortunately, this web site article does not begin to address the full breadth, depth and potential benefits of the Oxand Risk Management Based Life Cycle program teamed with Pegasus-Global's high level risk management and prudence performance audits in the power, infrastructure and oil & gas sectors. Oxand and Pegasus-Global can help owners develop integrated risk management programs which do not simply end with final construction and the turnover of the facility to operations, but which allow owners/operators to utilize that same basic risk management program throughout the total life cycle of a facility.

Those of you attending the American Nuclear Society meeting this coming November will have an opportunity to meet with Bruno, Pat, Kris, me and other Pegasus-Global resources to discuss Oxand's and Pegasus-Global's approach to project and life cycle risk management (or any of the other services provided by our firms). To gain some additional insights on Oxand and its array of services prior to the meeting please drop in on the Oxand web site at www.oxand.com. Knowing Bruno's passion for his subject, I am sure he would also welcome you to contact him directly at bruno.gerard@oxand.com at any time.