Windsor Industrial Development Laboratory, Inc.

18 Years *in business*

Your partner in design through simulation

A publication of WIDL inc.

About Us

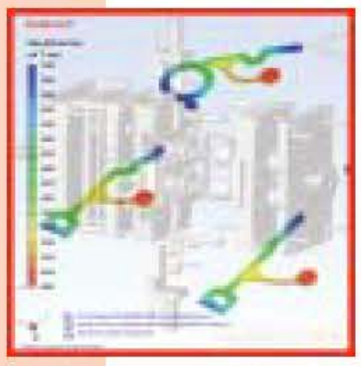
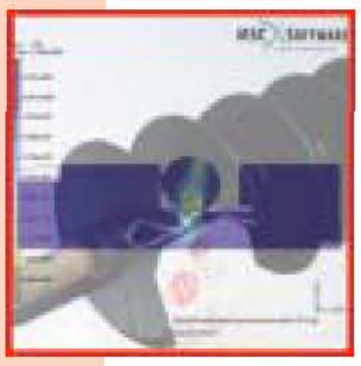
WIDL is a R&D company with professional know-how in materials and computer-based analyses. Our goal is to provide practical and cost-effective integrated technical and management services to clients who require additional expertise for specific projects or technical investigations.

Numerous clients have used our "design by analysis" services, repeatedly, to assist in-house staff meet various project milestones. We pride ourselves on being corporate team players in the development and hands-on implementation stages of each contract. WIDL provides services to industrial, insurance, and legal clients, who rely on us to answer questions such as:

- Why did it fail?
- How can we fix it?
- Can we make it better?
- Is it strong enough?
- How can we optimize it?
- Can we reduce its cost?
- Is it possible to market it fast?

WIDL customizes services to fit clients' needs. We continually provide patrons with value-added solutions that translate into competitive advantages and increased profits. We urge you to experience the difference WIDL can bring to your business today!



Some of the industries we serve

WIDL has successfully tackled many and varied applications, under genuinely demanding project constraints and deadlines, in a myriad number of widely varying environments, on behalf of numerous customers and industry sectors.

WIDL has invested quite heavily in preparing for challenges in many technical disciplines, and is sufficiently ready to expand its presence and profile further through a comprehensive program of sectoral diversification. WIDL has over the past few years particularly identified and participated in several dynamic and growing markets into which it intends to more fully establish a steady and permanent presence:

Oil and Gas - Today, oil and gas are recovered across Canada and in at least 30 jurisdictions in the USA. However, much of the lower-cost hydrocarbons in America in particular have been recovered, whereas remaining resources are located in geologically-complex reservoirs and in difficult-to-reach locations. WIDL has been, and intends to further be a player in sustainable development of oil/gas resources, via innovative technology and optimal technical decisions.

Healthcare - Healthcare costs in the USA continue to rise faster than both the economy as a whole and worker's earnings, and can certainly benefit from modern development approaches. WIDL has over the past few years, selected and optimized materials for surgical use, developed tools/equipment for patient care, and tested packages for medical/clinical drugs. Nonetheless, WIDL's initiatives are still expanding to meet better standards of living and care for aging citizens.

Aerospace/Defense - To compete in the aerospace and defense markets, device makers must deliver complex products within budget and on stringent schedules. Such objectives must be met without compromise in performance, safety, or reproducibility. Indeed, in the mission-critical fields of aerospace and defense, devices must be reliable, durable, and efficient: human lives hang in the balance. WIDL has worked on aerospace and defense missions, and intends to expand its presence in such fields by partnering with key suppliers.

Agribusiness - Reducing boundaries between nutrition, healthcare, well-being, and cosmetics, the agribusiness continues to expand through linkages. WIDL is strategically well positioned (from testing and simulation standpoints) to capitalize on the growing opportunities for biofuels, novel bio-molecules, and unusual agrimaterials. The latter, in terms of cellulose alcohol, antibiotic/vaccine, hemp linen, to name but a few are seeing quite a penetration in industries spanning transportation, pharmaceuticals, textiles, along with many others.

Please visit us at www.widl.ca

VIRTUAL TRYOUTS via FINITE ELEMENT ANALYSIS

"I will heartily recommend the seminar to
needs to grasp the power of the FEA tool; exce

David Hipwood, Product Developme
Flexible Produc

"The WIDL Seminar was full of data and
Dr. Chouchaoui's delivery of subject kn
outstanding and confident. The materia

The WIDL impact:

Lasting seal performance: WIDL aided Smith International (Houston, TX) develop a computer model that simulates rubber pipe seals ("strippers") in downhole drilling. Predicted contact stresses optimized gripping and deformations negated reversion, an occurrence that costs drilling companies millions of dollars in pipe back-pulling and extended production stoppage. The WIDL-developed method is now religiously used at Smith International.

Airplane manufacturing tools: WIDL helped Valiant Machine & Tool (Windsor, ON) develop hardware for Boeing's aircraft assembly and finish. FEA ensured sturdiness of lifters during painting, in particular, saving the company valuable time in bringing the 747-8 Intercontinental and 747-8 Freighter to market. Other collaborative work underway at WIDL aims at optimizing tools to produce various airplane parts for The Boeing Company.

Insulators composites-conversion: WIDL assisted Hubbell Power Systems (Centralia, MO) convert an electrical power distribution insulator from fragile, expensive, and difficult-to-make ceramics to composites. The development relied on laboratory work and FEA for speed and optimization, and the material switch saved the company millions of dollars. Consequently, more components are being converted to composites at Hubbell.

Please visit www.widl.ca for more details on these case studies.

WIDL can improve your current products!

- Do you "tweak" existing products, developed years ago, to try and make them meet new requirements by the customer? Do you have products you are moving forward with, insecure if these will fulfill more challenging field applications?
- Do you go through various tryouts of physical prototypes in attempts to develop and optimize your products for manufacturing? Do you build-in excess safety (making your products "fat"), adding material, production, and shipment costs to your products?
- Do you benchmark products similar from the open market to yours (including materials, designs, and processes), and do you bookshelf past experiences, good or bad, for the continuous improvement of your own products?
- Do you know why a product you make or use, works in the field, what are its limits, can it be improved upon, can it be made cost-effectively, and can you answer such questions before you actually make the product and try it?

If you answered yes to any of the questions above, then chances are that WIDL can help you improve your current products: please contact us for a free proposal today; the benefit is yours and your firm's!

FEA and "lean manufacturing"

Lean means "wasteless" manufacturing: materials, time, idle equipment, and excess inventories are examples of waste. Even the best "lean manufacturers" waste up to a staggering 30% of their available resources. Still, the ideal "lean factory" is beyond a slight expansion on the "KANBAN" system. As challenging as a "lean factory" implementation can be, it is the easy part.

Indeed, the vital (and painfully wasteful) activities that lead to product launch have to date sadly been almost completely ignored. Lean manufacturing initiatives may prove to be too little, too late, even if a firm strips all waste from the factory floor, when bringing "fat" products late to the marketplace, with major design and technical issues still unresolved.

Hence, without eliminating waste from the new product/process development, something achievable with FEA, the substantial benefits of lean manufacturing may unfortunately go unrealized.

Article from the WIDL *Écho*, a bi-monthly e-newsletter to which you could subscribe online at www.widl.ca

Equipment at WIDL:

WIDL's operation entails CAD, CAM, CAE, and testing; this latter divides into materials characterization and product validation. WIDL operates state-of-art electro-mechanical and servo-hydraulic load frames in addition to various tools and machinery for sample preparation and aging. WIDL can undertake a portion of a project or assume entire ownership of an application via testing and simulation.

anyone who
ellent value".

ent Manager
ts Company

l experience.
owledge was
l content and

printed literature is top of the class and cannot be better".

David O'Donnell, P.E., VP, Sustaining Engng; Pressure Control Group, Rig Solutions - *National Oilwell Varco*

"The tutoring was exceptional, and combined knowledge of the subject and group involvement; great material".

Dr. Steve Seneker, Sr. Scientist
Anderson Development Company

References on work by WIDL or the seminar delivery are available from within your industry sector; please ask!

Classes for 2016

1	Multi-materials/fields FEA class Two-day, hands-on FEA training - Jan. 27, 28
2	Rubber products design/FEA One-day, hands-on rubber FEA - Feb. 3
3	Plastics products design/FEA One-day, hands-on plastics FEA - Mar. 4
4	Die/mold structural analysis One-day, hands-on mold structual FEA - Apr. 16
5	Multi-materials/fields FEA class Two-day, hands-on FEA training - May 12, 13
6	Rubber products molding/CFD One-day, hands-on rubber injection CFD - Jun. 16
7	Plastics products molding/CFD One-day, hands-on plastics injection CFD - Jul. 8
8	Die/mold thermal analysis One-day, hands-on mold thermal FEA - Aug. 13
9	Multi-materials/fields FEA class Two-day, hands-on FEA training - Sep. 9, 10
10	Rubber products extrusion/CFD One-day, hands-on rubber extrusion CFD - Oct. 6
11	Plastics products extrusion/CFD One-day, hands-on plastics extrusion CFD - Nov. 18
12	Die/mold flow analysis One-day, hands-on mold fill CFD - Dec. 3

You will learn about:

- Virtual "tryouts", using advanced FEA and CFD simulation techniques;
- Software on the market that helps improve products for manufacturing, and avenues to using such tools;
- Characterizing materials (rubbers, metals, plastics, wires, bonds, etc.) in the laboratory, for simulation;
- Bringing "real-life" problems to the computer (e.g.; simplification of geometries using symmetry or isolating areas of interest, yet accounting for the rest of structures via boundary conditions);
- Finite element(s) to use, the type of analysis to run, outputs to look for, and correlation of numerical predictions to tests or field data;
- Troubleshooting potential faults in materials selections, processes, or product designs, and ensuring the success of new products for manufacturing.

Who should attend?

WIDL' seminars are designed for managerial or technical professionals in manufacturing; i.e., materials suppliers and compounders, machinery builders and tool/die makers, equipment manufacturers, service support companies, various Tier Suppliers, and OEMs.

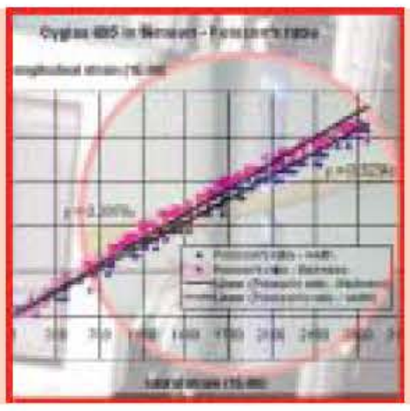
Course main instructor, Dr. Ben Chouchaoui [shoe/sha/we], is a graduate of the Polytechnic School of Algiers, and holds masters and PhD degrees from the Polytechnic School of Montreal and the University of Waterloo. Dr. Chouchaoui's background is in materials and FEA/CFD; he manages WIDL, specializing in materials characterization and the computer simulation of products' performance and manufacturing. WIDL aims at assisting OEMs and suppliers bring optimal solutions to the marketplace, quickly and cost-effectively.

The WIDL' seminars are offered monthly, out of Windsor, Ontario (Canada) – one mile south of Detroit, MI, as a central location - for audience target, delivery focus, and attendance flexibility. Still, any WIDL seminar can be scheduled in any city in North America, for a minimum of six attendees. We could also **book a "WIDL Seminar" at your premises**, for up to 12 attendees, from the menu of regular seminars. Moreover, each of the 10 seminars WIDL is offering throughout 2009 can be adjusted for your line(s) of product(s). Indeed, WIDL offers complete customization of technical training in '*product development via simulation*' to best suit your firm's needs.

THE WIDL BUSINESS PROPOSITION:

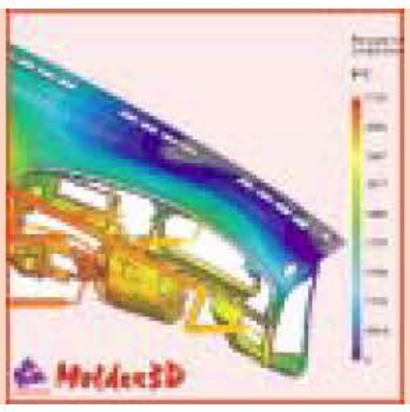
In today's competitive marketplace, manufacturers must continuously enhance quality, reduce cost, and accelerate delivery processes. However, most manufacturing firms cannot meet these challenges with internal resources alone. The alternative: partnering with a 'Center of Expertise' that can quickly and efficiently apply skilled people, efficient equipment, and demonstrated technologies to meet industry challenges. WIDL is such "Center of Expertise", strategically located in the Detroit, Michigan-Windsor, Ontario industrial corridor, proven ready to quickly, methodically, and cost-effectively assist manufacturers and their customers.

In evidence, WIDL's core expertise lies in the following five complementary segments:



Materials testing/characterization: WIDL can select, reverse-establish, and inspect any material, for any manufacturing process, through destructive or NDE techniques. Besides, obtaining material parameters from test data constitutes a major obstacle to valid time-simulations. WIDL can assist toolshops, manufacturers, or OEMs, characterize their materials for FEA or CFD. WIDL can also select parameters for modeling at WIDL, or for patrons' discretionary use. WIDL can develop special equipment for end-applications as well, from design, build, trials, data acquisition, and analysis of test results.

Design/definition of design parameters: "Design parameters" are often neglected in product shaping or processing. For example: 'What would be the optimal stress by a "living hinge"?' ... too thick or too thin a hinge would require large actuation forces or bring about failure. WIDL can help manufacturers define 'optimal actuations of hinges' for instance, among many other design parameters such as strength, deflections, and surface finish. Design parameter definition at WIDL helps part makers establish boundaries for processing, and can go all the way to ensuring the functionality of OEM items over time.



Product/process simulation/validation: The only alternative to the costly "over-design" and time-consuming "trial-and-error" is simulation of part performance (e.g., the longevity of a welded structure) and processing (e.g., heaters/cooling lines and amounts/locations of gates for the lowest cycle time of a BOP (blow-out preventer) for the Oilfield). WIDL can cost-effectively build simulation knowledge for manufacturers, combining novelties in materials, designs, and processes. Consequently, any know-how gained via R&D remains the property of the contractor, with easy data access at any time via WIDL.

Technical/R&D program management: WIDL can work with manufacturers (one-on-one, or in groups) on: existing programs, for cost-savings; tools/molds/dies or parts being quoted, towards optimization; and specific projects to make, for cost-effectiveness. WIDL can also structure R&D activities for production shops, from early concepts, literature and patent searches, design and simulation, to prototyping and testing, with the transfer of knowledge benefiting contracting shops and their patrons. WIDL can be part of any program and production team, or take on entire management and R&D of applications for OEMs.

R&D grants structuring and tax credits: Governments often sponsor 'new product development' efforts leading to manufacturing incentives and the spin-off hiring of labor. WIDL helps clients apply for Government grants geared at such applied R&D. WIDL also does the actual R&D leading to 'new tooling concepts and/or products/machinery', yet documents all activities and findings assisting patrons secure additional tax credits. Government R&D funding requires continual progress in approaches/ideas, and WIDL is ready to take on such challenges on behalf of material suppliers, toolshops/manufacturers, and OEMs.

Your investment with us and your firm's actual support to WIDL qualifies as "Research and Development" or "Continuous Improvement" expenditure eligible for reimbursement via Federal, State, and Provincial programs. WIDL encourages more extensive collaborations with manufacturers, their suppliers, and their customers in developing new and novel products and applications; in improving existing products and processes; and in helping secure funding relief and assistance in these pursuits.

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