STUDIO D'INGEGNERIA ROGANTE
ROGANTE ENGINEERING

Neutron Techniques for Industry

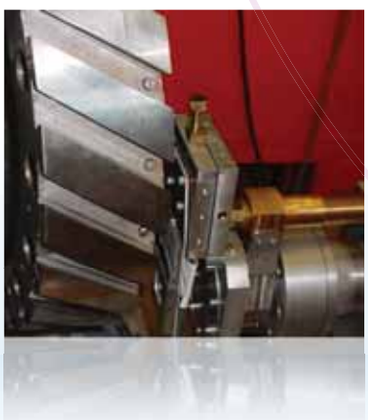
Industrial applications of Neutron Techniques have been pioneered by **STUDIO D'INGEGNERIA ROGANTE**, which is playing a significant rule also in the development of international standard.
In many industrial sectors (e. g., Automotive, Oil & Gas, Pipeline, Offshore, Aerospace, Mechanics in general, Polymers and Coatings) Neutron Techniques help with failure analysis, validate models and evaluate changes to the process route.
STUDIO D'INGEGNERIA ROGANTE has developed, trough many years of activity in this sector, special data treatments of neutron measurements results particularly for industrial applications. Industry can benefit, in this way, from the unique knowledge that can only be obtained by neutron beam measurements. No other techniques can provide in a non destructive way such information, which include a microstructural characterisation of the specimen or a detailed map for all three-strain components; without such a detailed map, many features of the stress data, in various cases, would be missed. For instance, a mid-thickness line scan would miss the considerable through-thickness stress variation and the maximum stress location.

Facts about neutrons:

Non-destructive probe of bulk materials (metals, alloys, composites, etc.), deep penetration (1.5 cm or more in steels, 5 cm in Al). Ability to scan the interior of many full-scale components from Automotive, Oil & Gas, Pipeline, Offshore, Aerospace, Plastic and Mechanics in general, and Coatings industries. Spatial resolution of the order of 1 mm3 or less. Investigation of the factors controlling the fatigue behaviour of welded components. In materials science and engineering, Neutron Techniques are today applied to the study of residual stresses, microstructural characterization of materials, crystallographic texture, micromechanics kinetics and other microstructural characteristics.

STUDIO D'INGEGNERIA ROGANTE - ROGANTE ENGINEERING ACTIVITY

STUDIO D'INGEGNERIA ROGANTE (SIR) activities are devoted, in general, to industrial research and technology transfer, especially in the fields of Materials Science.
We operate, in particular, in Industrial Applications of Neutron Techniques, i. e. a field of applications in which we are considered one of the main reference points.
The same techniques are applied on metallic components and materials, and concern residual stresses determination by neutron diffraction, microstructural characterization by Small Angle Neutron Scattering (information on precipitates, micro defects like voids, heterogeneities etc), neutron radiography, prompt gamma and neutron activation analysis.
SIR, as Industry-research interface, is in direct collaboration with the main neutron sources in international field.
SIR has introduced Neutron Techniques in various Italian and International Conferences, and organized several seminars in Europe, directly dedicated to industrial applications of Neutron Techniques. Various scientific and technical cooperation, consequently, have been carried out, e.g., in the Automotive, Oil & Gas, Pipeline and Plastic sectors, and **SIR** has served various important industries (e.g. General Electric, Ferrari SPA, etc.) and organisations (e.g. Italian Naval Register, etc.). Dr. Eng. Massimo Rogante, Mechanical Engineering and PhD in Nuclear Engineering, is head of **SIR**. Dr. M. Rogante is also a Member of the International Scientific Advisory Board (ISAC) of the Budapest Research Reactor.
His repeated lectures in various European states, in the Gulf area and in USA, and his function in various international bodies and associations, have provided him with international experience in the specific sectors of activity. Dr. Rogante is in the list of Expert Evaluators of European Commission since 1999. He is also member in the Programme Committee and co-organizer of various International Conferences dedicated to materials science.



Dr. Rogante has a long time experience either on structural and microstructural investigation of metallic materials as steels and alloys, or on weldings. In particular, he operates in the micro- and nanoscale characterisation of materials and components of industrial interest - including residual stress determination - by neutron diffraction, and **SIR** can boast, in the considered field, a large number of contributed articles to scientific and professional journals. Intensive scientific collaborations and exchange have been also developed, in recent years, between **SIR** and other international research centres, giving them the support of Neutron Techniques with the main purpose to assist and develop Industry.

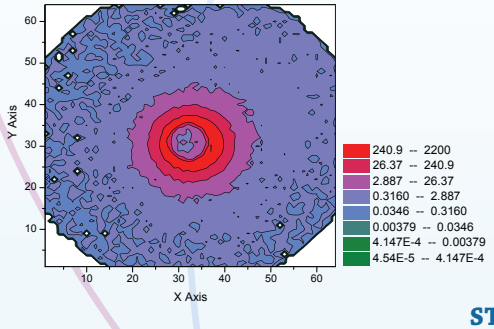
CONFERENCES

Materials science is one of the fastest growing fields in technology. Almost every day advanced materials with new or improved properties emerge, giving impetus to technological progress.

STUDIO D'INGEGNERIA ROGANTE:

- has been a co-organizer of MED06 International Conference (Dublin, March 2006), prompted by the wide range and uses of new materials.The aim of said Conference was to provide an opportunity for researchers in the Science, Engineering and Technology fields to present recent progress in research, development and applications of advanced materials, tribology, surface engineering, design, energy and related disciplines;
- has organized other Conferences, which aim was to provide a forum through which collaboration with industry has been developed, leading to practical solutions for industry and new innovations in the materials area;
- has actively participated to several International Conferences and Workshops presenting its works concerning industrial cooperation with Automotive, Oil & Gas, Pipeline, Offshore, Aerospace, Mechanics, Coatings and Polymers sectors.

How to acces Neutron Techniques



When you've got a problem to solve and you need the special insights that Neutron Techniques can provide, **STUDIO D'INGEGNERIA ROGANTE** has the expertise to help you.
Start a project by making contact with us. We will work with you to develop a scope of work that meets your requirement cost-effectively. Business is arranged through an agreement for standard services, either at a fixed price or at an actual price, based on an estimate.
The deliverable is a full study or a feasibility study report summarizing the measurements and interpreting the results. Normally, the specimens will be returned unchanged by the test.

STUDIO D'INGEGNERIA ROGANTE
operates in the Industrial Applications of Neutron Techniques, providing definitive and feasibility studies on residual stress analysis, microstructural characterization of materials, prompt gamma and neutron activation analysis, and neutron radiography. Such techniques are useful in various industrial sectors, including Automotive, Oil & Gas, Pipeline, Offshore, Aerospace, Mechanics, Coatings and Polymers.

Lo **STUDIO D'INGEGNERIA ROGANTE (SIR)** nasce nel 1997 dall'attività di ricerca dell'ing. Rogante, iniziata nel 1984 ed integralmente finalizzata alla soluzione di problemi industriali.
Massimo Rogante, cresciuto in una famiglia di tradizione industriale, ingegnere meccanico e Dottore di Ricerca in ingegneria nucleare, è componente italiano del Pannello Scientifico del Reattore Nucleare di Ricerca di Budapest, è autore di innumerevoli pubblicazioni riguardo alle applicazioni industriali delle tecniche neutroniche e relatore in numerose Conferenze Internazionali, editore associato di riviste scientifiche internazionali e membro di svariate associazioni scientifiche nazionali ed internazionali.
SIR si occupa di Applicazioni Industriali delle Tecniche Neutroniche® per l'analisi e la caratterizzazione di materiali - ad es. acciai, leghe e superleghe, saldature, poliuretani, vetri - e componenti - ad es. ingranaggi, tubi, parti motore, rivestimenti: la determinazione non distruttiva delle tensioni residue interne e sub-superficie, la caratterizzazione della microstruttura a livello di micro- e nanoscala, le informazioni sui processi all'interno del componente, la misurazione non-distruttiva degli elementi costitutivi, e svariate altre indagini.
SIR è un punto di riferimento per la grande e media industria italiana ed estera nell'ambito delle tecniche neutroniche impiegate nei settori industriali: Automobilistico, Oil & Gas, Pipeline, Offshore, Aeronautico, Industria della Difesa, Elettrodomestici, Plastico e Metalmeccanico in generale, Calzaturiero, Rivestimenti. I risultati delle investigazioni hanno fornito un contributo concreto per incrementare le prestazioni del prodotto finito, migliorando la competitività industriale.
SIR è altresì fornitore qualificato di note industrie ed Enti a livello nazionale ed internazionale, ed organizzatore di Conferenze Internazionali e Workshop sui Materiali per la promozione delle Applicazioni Industriali delle Tecniche Neutroniche®.
SIR ha raggiunto una posizione d'eccellenza nel settore, ed è oggi l'unica struttura privata esistente in Italia in grado di conciliare il mondo innovativo della Ricerca mediante Tecniche Neutroniche con le esigenze concrete dell'Industria.

STUDIO D'INGEGNERIA ROGANTE - ROGANTE ENGINEERING
Contrada San Michele, 61 - P.O. Box 189 - 62012 Civitanova Marche (MC) ITALY
Tel. +39.0733.775248 - Fax +39.0733.1941197
info@roganteengineering.it - www.roganteengineering.it

Graphic: canenero.com