

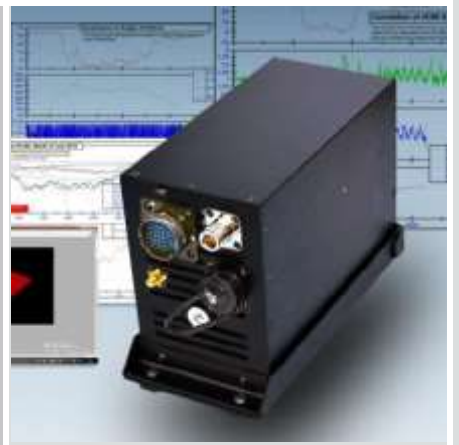


**INTER-DISCIPLINARY
RESEARCH CENTRE (IRC)**



Inter-disciplinary Research Centre (IRC)

Leveraging Industry Academia Relationship
and Knowledge Exchange through Technology
Mediation



Our Pledge

Empowering our Customers through
Technology Mediation, Product Knowledge,
Open Architectures & Life Cycle Support

To deliver high quality, cost-effective and
reliable advanced Integrated solutions
with adequate technical know-how &
training support to empower our valuable
customers and achieve their total
satisfaction.

We believe in the success of our clients and make it possible
through the network of our Business Associates, OEMs, Suppliers
and our competent team members while implementing highest
standards of quality management system to minimise variance in
our environmentally friendly products, services and processes.

Synergising Theory, Good Engineering Practices
and State-of-the-art Technology

Message from Vice Chancellor



Air Marshal Abdul Moeed Khan, HI(M)

Inter-disciplinary Research Centre at Air University is one of the spectacular success we have had at the Air University using Technology Mediation Services to reduce the theory-practice gap and make university research meaningful for the local industry both in the private and public sectors. Cognizant of the dynamics of higher education, the faculty and staff of Air University engage in ongoing assessment and improvement of the curriculum and other university programmes to meet the needs of students and the community. Additionally, the University strongly stresses character development that includes cultural, social and ethical values.

Inter-disciplinary Research Centre



Inter-disciplinary Research Centre (IRC) is one of the spectacular successes we have at the Air University using Technology Mediation Services to reduce the theory-practice gap and make university research meaningful for the local industry both in the private and public sectors.

The **Interdisciplinary Research Center (IRC)** aims to foster meaningful collaboration between academia, research institutions, and external stakeholders by providing a structured and supportive framework for interdisciplinary research and innovation. The Center seeks to offer a credible platform for faculty members, researchers, and students to undertake research projects and collaborative initiatives in a timely and effective manner while maintaining high standards of quality and academic integrity.

Through such engagements, the IRC facilitates opportunities for faculty and students to contribute to applied research, gain practical exposure, and enhance their knowledge and professional skills. Participation in collaborative projects also supports capacity building, encourages innovation, and strengthens the research culture within the academic community.

The Center further promotes partnerships with national and international organizations through research collaborations, joint initiatives, and Memoranda of Understanding (MoUs), enabling the academic community to engage in impactful research that addresses real-world challenges.

The IRC was established on **17 December 2007** and has since continued to support interdisciplinary research and collaborative activities. The Center also maintains compliance with relevant regulatory and administrative requirements where necessary to facilitate research collaborations and project-related engagements.



Our Mission

To bridge the gulf between academia and industry by providing, within a legal framework, a solid and reputable platform to academic community for delivering projects within time, cost and quality.

OUR TECHNICAL PARTNER

National Instruments



Our most successful and beneficial MoU, of course, has been with National Instruments. We acknowledge their pivotal role in our success and hope to strengthen this relationship even further in the future. With support from NI products, we opted for challenge based labs rather than demonstrative labs. Today, IRC is successful because of this “conscious design decision” of Air University Management.

As a result, the concept of virtual instrumentation was born, and NI was formed. 35 years later, NI became the leader in computer based test and automation and the concept of virtual instrumentation became widespread and adopted in several industries, its name evolved to be referred to as synthetic instruments and more recently, as the concept of virtual instrumentation moved, from test measurement to the fields of design, rapid prototyping and to be an engineer's tool used from design stage thru production, the concept of virtual instruments evolved one more time to become a graphical system design over all encompassing concept that to put it in simple terms allows us –engineers + scientists to dream and draw the solution and have it ready to execute and deploy.



IRC-Air University is an ideal partner of NI where one can find both the domain knowledge and the development skill set. Air University, has a unique set of highly advanced NI based Labs when coupled with the engineering skills formed at the university can only result in great innovations.

“ NI's involvement by means of its exceptional products was tremendous in reaching the success ”

OUR TECHNICAL PARTNER



GUNT Technology Limited is a subsidiary of the German manufacturer G.U.N.T. Gerätebau GmbH. Since 1979, GUNT develops, manufactures and provides educational engineering training equipment that is designed and built for universities, colleges and technical training academies.

Their range has over 1000 experiments in its portfolio, covering key areas of educational engineering subjects. In addition to providing equipment, the company also provides key services such as:

Subject areas:

Mechanical engineering
Mechatronics
Thermal engineering
Fluid mechanics and hydrology
Process engineering
2E Energy & Environment

Safety

GUNT maintains partnerships with many leading universities and this foothold in education and research has allowed them to remain on the leading edge in their field and to expand their range of training products to the benefit of all engineering establishments.



- TVET Operation & maintenance services



- - TVET Learning & practice modules



- - TVET DigiSkills



- - TVET Industrial application projects



- - TVET Pilot plants & training plant



- GUNT DigiSkills learning projects

- 1 Engineering drawing

- 2 Dimensional metrology

- 3 Preventive maintenance

- 4 Energy efficiency in compressed air systems

- 5 Robotics & automation



- SKILLS Media Center



- SCIENCE Media Center



- - HM 150 digital: fluid mechanics



- - GUNT Cold Play: refrigeration and air conditioning technology



- - MEC Line: engineering mechanics



- - Solar Line: solar energy

- - Solar thermal energy

- - Photovoltaics



- - Fluid Line: fluid mechanics



- - Heat transfer
- - Fluid mechanics
- - Control engineering
- - Wind energy
- - Solar thermal energy



- Remote learning with GUNT devices:
- - Upgrade Web Access Box
- - Screen mirroring
- - Network capable GUNT software



GUNT experimental flumes and their accessories open up a wide range of experiments and demonstrations on the topics of open-channel flow, running waters, hydraulic engineering and coastal Protection.



- HM 150 digital: fluid mechanics



- GUNT Cold Play: refrigeration and air conditioning technology



- MEC Line: engineering mechanics



- Solar Line: solar energy

- Solar thermal energy

- Photovoltaics



- Fluid Line: fluid mechanics



- WL 110 series: heat exchangers



- Thermoline: heat transfer



Training & Certifications

Short Courses, Hands-on Training, Skill Development Services

With a view to overcoming the Theory practice gap between academia and industry IAA has established a purpose built Human resource Development Centre (HRDC). This centre identifies high-tech domains and enabling technologies, the know-how of which can provide a competitive edge to the local industry. The HRDC runs specialist short courses to enhance the skill set of an engineer in the field. instrumentation and measurement and potential flow methods.

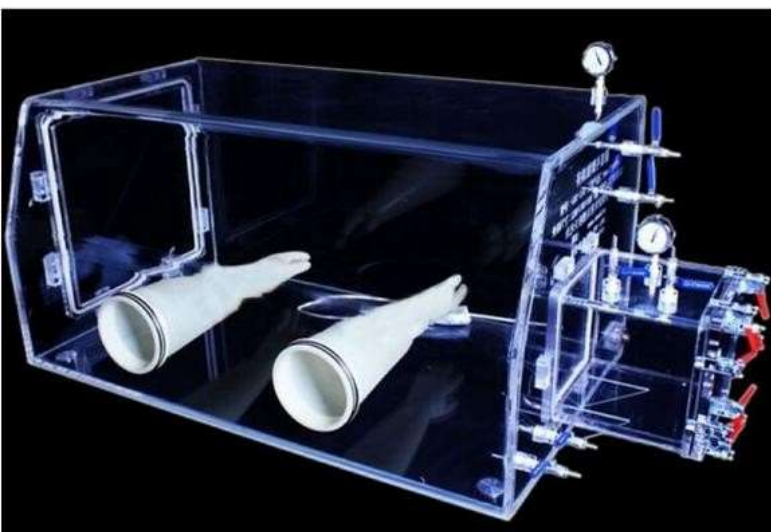
IRC in collaboration with Air University is conducting training courses for Universities Faculty and students.



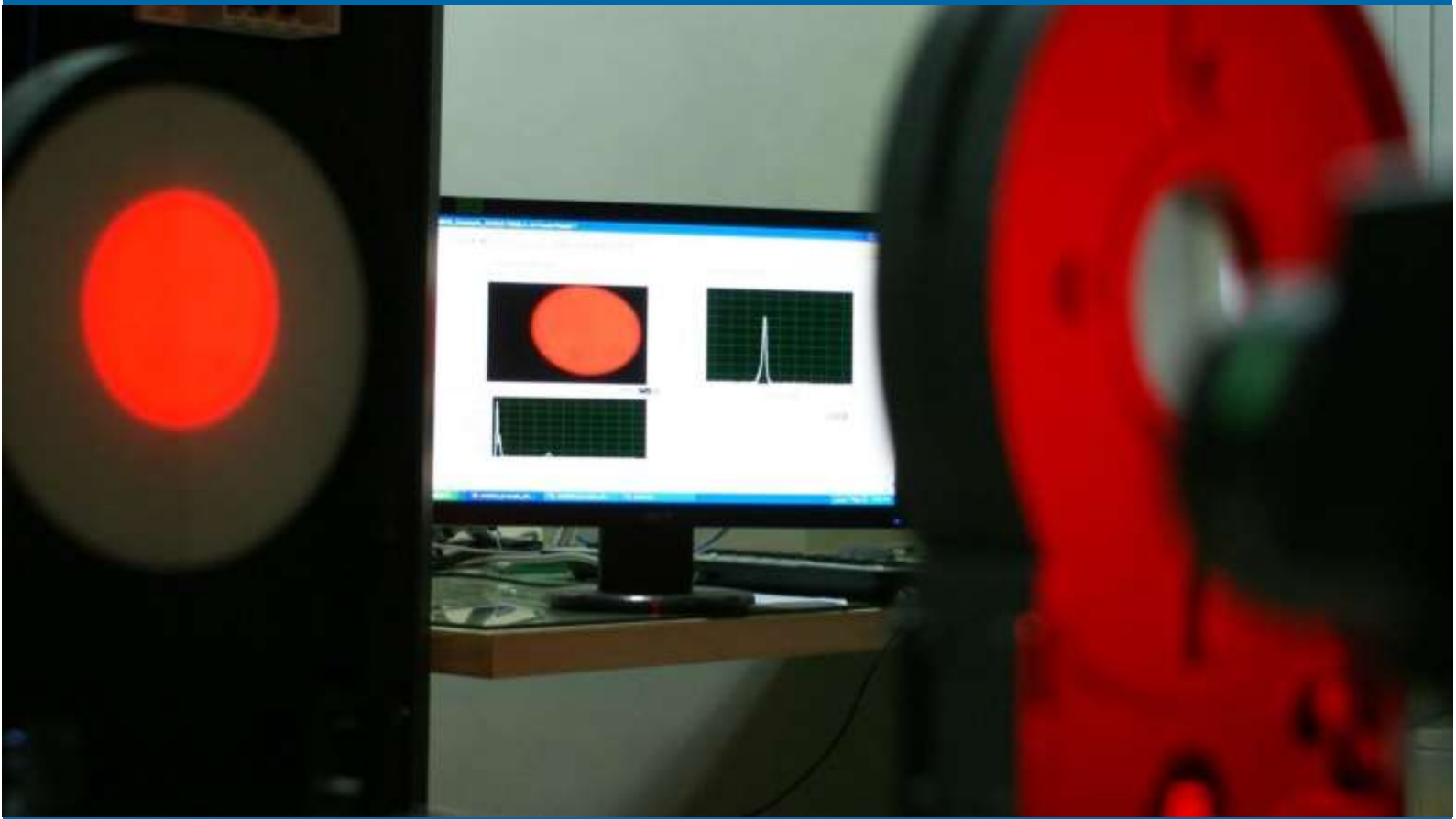
IRC BUSINESS ACTIVITIES

IRC has won projects through open market competition to an increasingly diverse customer base. In the initial few years, net revenue generated by IRC has grown exponentially. The response to IRC's Business Approach of "Try before Buy" has been overwhelming.

IRC benefits the Air University in many ways. The successful completion of projects results in training of faculty and students through Knowledge Exchange. The students get an opportunity to experience the real world and resultantly are able to polish their knowledge and skills. It also accrues financial benefits for the University.



Our Approach at IRC

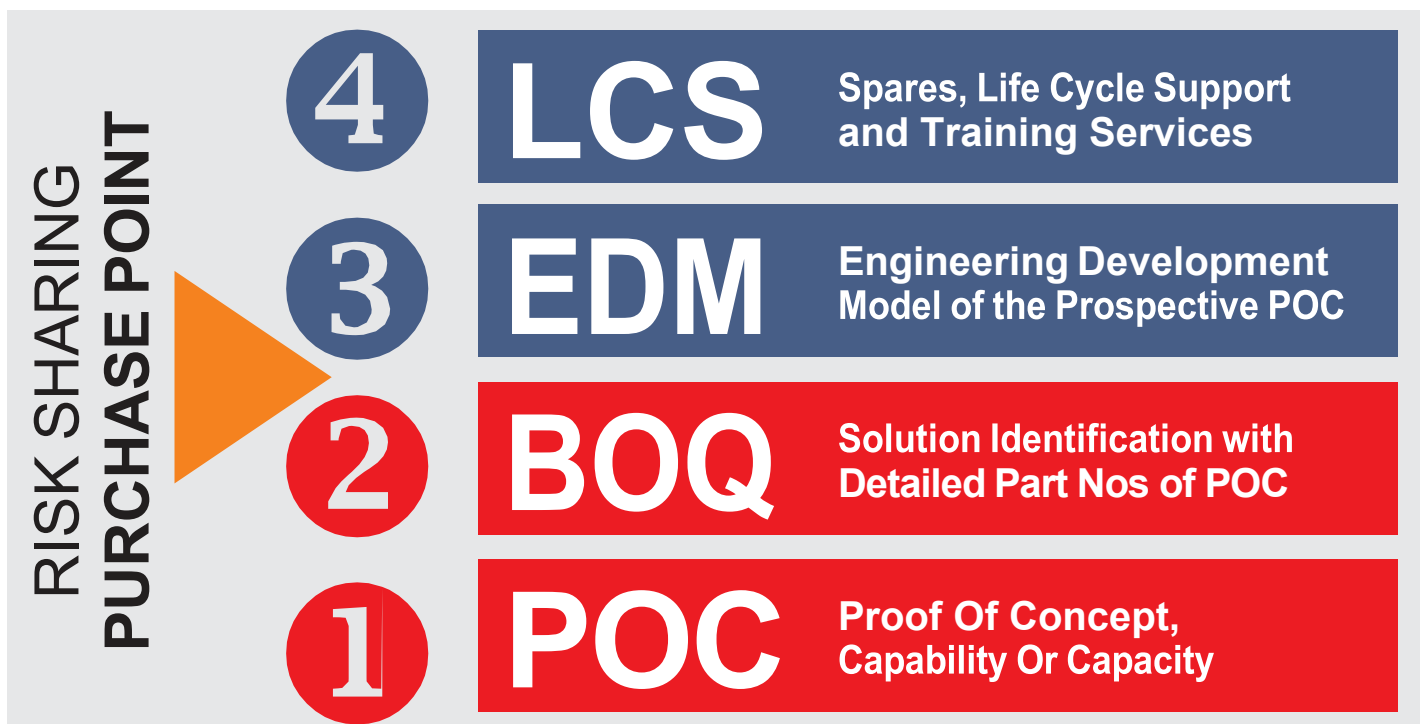


The response to IRC's Business Approach of "Try before Buy" has been overwhelming. We can, therefore, do unmatched value addition at competitive cost and deliver international standard training and services. What is most important is that engineering innovations by university are locally made, locally developed, locally controlled and locally owned and solve locally related problems of the industry in Pakistan.

At IRC, because of our conscious design decision of choosing NI modular technology, we can offer “Try before Buy” to the customers which allows customers to know EXACTLY what will be delivered and IRC can offer competitive pricing, which in other integration-oriented projects is not possible.

Often industrial projects require some additional specialized solutions – be it hardware or software. These solutions can also be locally developed thanks to the Open architectures found on products and platforms from NI and GUNT. AU-IRC is an ideal place for the flourishing such development. NI and GUNT also see a great value in this move and looks forward to seeing its benefits on the entire country in improving its competitiveness in both education and intellectual property development.

IRC-Air University is an ideal partner of NI and GUNT where one can find both the domain knowledge and the development skill set.



IRC works very closely with Planet NI, a National Instruments signature program, to empower engineers in emerging countries to achieve sustainable prosperity by providing increased access to NI technology.



One of AU flagship project is tele-health initiative where we are actively participating in collaboration with Planet NI. IRC ventured into projects related to alternate energy based water purification and tele-health. The solar water purification and tele-health systems were presented at the NI week in Austin USA last year. We are also working on road safety and energy management project.

IRC also working with technical partner GUNT-Germany since 2016. We are complete many projects of government and non-government organization with GUNT Equipment.

Heat exchangers

Heat exchangers are used for heating, cooling, evaporation or condensation of media at different temperatures. The basic function is to transfer the thermal energy of a medium with a higher temperature level to a medium with a lower temperature level.

WL 314

Convective heat transfer in air flow



Knowledge Exchange and Community Outreach



Knowledge exchange is of paramount importance for any University's research and outreach program. Aim of Technology outreach programme at Air University is to bring university research to less privileged communities through exchange of ideas, evidence and expertise.

Technology Outreach Lab has been created through IRC at Air University as a platform for developing awareness and interest in students for projects of direct benefit to our society, in general, and the under-privileged community, in particular. The aim is to capitalize on the research at university by developing projects using state-of-the-art, cost effective and rugged hardware that can be delivered directly to the deprived region



Inter-disciplinary Research Centre

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