

telephone connections were provided at other locations as per user requirements. 22 number of new digital phones were provided and 31 number of new Digital Reflex Phones with voice mail facility were installed. Figure I.3.14 shows the view of the remote shelf installed at SCRF building. Figure I.3.15 shows the view of MDF commissioned at SCRF building.

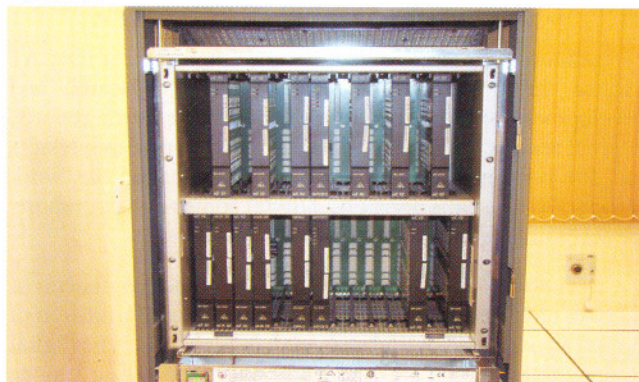


Fig. I.3.14: Remote shelf installed at SCRF building



Fig. I.3.15: MDF commissioned at SCRF building

G) RRCATNet Planning, Expansion and Upgradation:

Phase-V related Optical Fiber Cable (OFC termination) work was completed. Commissioning of 80 port SCRF building network, 72 port PG Hostel network and 48 port RTS Hostel building network was completed. Ferrite Lab building network of 12 points was connected to RRCATNet using OFC. Rack installation and rack end termination work at Fire Station Extension building was completed. In LFL, 24 newly laid network points have been connected and commissioned. In MIA building, 24-port switch was replaced with 48-port and newly laid points were commissioned. 05 number of new points were commissioned in Indus-I building for ISU users. A 10 Mbps connectivity was provided in new Civil Maintenance building. Total number of 105 new network

points were added to RRCATNet. To strengthen the power backup setup at the IT building, the 200 KVA UPS setup was interconnected with the 80 KVA UPS setup to provide redundant main supply feed, in case of main supply failures.

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I.4: Development in Library & Information Resources at RRCAT

A) Institutional Publications Productivity

Quantitative analysis of publications written by Scientists and Engineers of RRCAT and their citations was carried out in September 2011. 'Web of Science' an online citation database was searched to identify number of publications of RRCAT. It was found that total number of 1725 papers have been published since 1987 and these papers have been cited 11038 times. Earliest publication from RRCAT was in the year 1987. Publications have grown steadily over the last twenty four years. It was found that highest number of papers (172) were published in the year 2010.

During the period 1987-2011, average number of citations for a paper as per database is 6.40. Table I.4.1 & Figure I.4.1 show year wise number of publications and citations.

Publication Year	Number of Publications	Number of Citations	Average Citations/Pub.
1987	2	2	1.00
1988	3	15	5.00
1989	6	47	7.83
1990	8	34	4.25
1991	14	109	7.79
1992	25	243	9.72
1993	27	359	13.30
1994	50	477	9.54
1995	44	388	8.82
1996	44	341	7.75
1997	51	553	10.84
1998	72	480	6.67
1999	71	621	8.75
2000	64	558	8.72
2001	64	680	10.63
2002	89	648	7.28
2003	85	758	8.92
2004	83	757	9.12
2005	111	875	7.88
2006	126	1069	8.48
2007	144	852	5.92
2008	144	632	4.39
2009	120	346	2.88
2010	172	173	1.01
2011*	106	21	0.20
Total	1725	11038	6.40

* - till September 2011 only

Table I.4.1: Year-wise Distribution of Publications and Citations of RRCAT

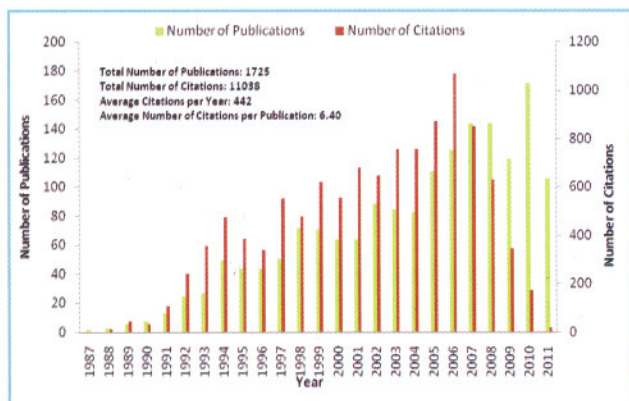


Fig. I.4.1: Year-wise Distribution of Publications and Citations of RRCAT

Publications are categorized in three broad disciplines viz. Engineering Sciences, Material Sciences and Physical Sciences. Number of publications and citations in each category is visualized in below Table I.4.2 & Figure I.4.2.

Subject Categories	Number of Publications	Number of Citations	Average Citations/Pub.
Engineering Sciences	175	589	3.37
Materials Sciences	311	1448	4.66
Physical Sciences	1239	9001	7.26
Total	1725	11038	6.40

Table I.4.2: Subject-wise Distribution of Publications and Citations of RRCAT

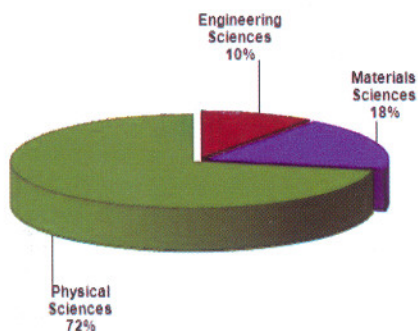


Fig. I.4.2: Subject-wise Distribution of Publications of Raja Ramanna Centre for Advanced Technology

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B) Institutional Digital Repository of RRCAT

RRCAT Library has deployed an institutional digital repository using an open source software dSpace. It is built to save, share, and search RRCAT's digital research materials like technical reports, theses, project reports, newspaper clippings, conference papers etc.. Digital copies of the following documents related to RRCAT have been archived:

e-Internal Reports: Scientists and Engineers of RRCAT publish the progress and results of their research and development work in the form of internal research reports. Internal reports are used for dissemination of research results and for documenting development outcome of the work carried out in various divisions. Digital copies of these reports are accessible on RRCATInfonet using dSpace.

e-Thesis: Thesis of the scientists and engineers of RRCAT have been collected and digitized. For digitization of theses, an overhead digital scanner has been used. The digital copies of the theses are archived in dSpace and are made available on RRCAT Infonet.

e-Project Reports: RRCAT conducts internships for graduate/postgraduate students in different labs. After the completion of their training period, students submit soft copy of their project reports to the Library as e-Project Reports. Since the year 2010, all the project reports are received as soft copies and are archived for reference. Full-text of these project reports can be viewed through RRCAT Infonet.

e-Newspaper Clippings: RRCAT Library subscribes to ten daily Hindi and English newspapers. All these news papers are scanned for any news related to RRCAT and DAE. These clippings are scanned and archived. Full news can be viewed date wise and news heading wise.

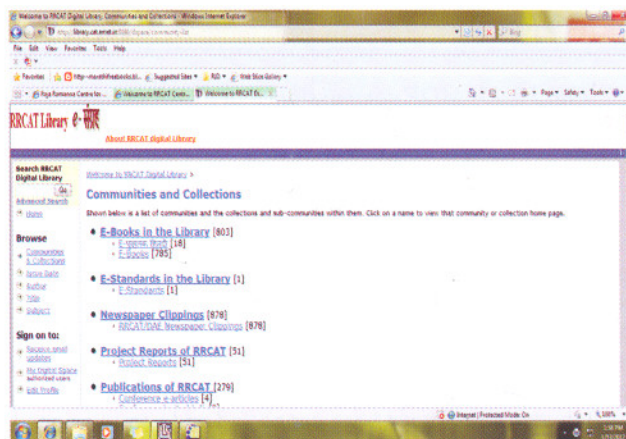


Fig.I.4.3: RRCAT digital library (dSpace)

Apart from dSpace, using web based Library management software LibSys, library has also archived:

e-Journal Articles: RRCAT Scientists and Engineers publish their papers in national/international journals. All journal articles are made available as full-text within RRCAT Infonet through the web based Online Public Access Catalogue (OPAC), a feature available in LibSys.

All the above listed digital documents can be accessed from user's own desktop through RRCAT Infonet. All bibliographical details of these digital documents can be easily searched and full text of the files can be viewed.

Library also plans to archive conference papers and invited talks, submitted by scientist and engineers of RRCAT to different national and international conferences.

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I.5: Construction & Services

A) Making of Super Conducting Radio Frequency (SCRF) building

Introduction:

The article highlights constructional features of the facility, created for the SCRF cavity development programme at RRCAT. Owing to the diversified and multidisciplinary requirement of the facility, a number of challenges in terms of integrated planning, designing and construction of the building were faced. The building has been designed with an aim to have a complete facility for the fabrication and testing of the cavity, which includes design and validation of the components required for the cavity. Salient features of the building are; comprehensive building plan, for making optimum use of space, to satisfy functional layout and ensuring required electrical power and stringent environmental conditions, which are essential for different processes of the facility.

The Layout:

The building layout for such facilities though dictated by the functional requirement and the process flow, yet needs to be in conformity with a set of conditions put forth by services, location, ambience, ground topography etc. Selection of the type of structure for a particular requirement is an important decision and should be taken after considering above mentioned parameters. The building has been constructed as two blocks connected by a corridor. The Air Handling Unit

(AHU) & Electrical rooms have been housed in a service block which has been constructed adjacent to the Pre Engineered Building (PEB).

The PEB hall has been provided with Reinforced Cement concrete (RCC) floor in M25 grade, cast using vacuum dewatering process, which is followed by 2 mm thick, self levelling epoxy flooring, to ensure clean space. The Alternating Current (A/C) supply ducts have been shielded, using aluminum composite panels following profile of duct with provision for mounting of diffusers. The planning of building also includes provision for an emergency escape door. Coordinate Measuring Machine (CMM) room has been provided with insulated composite panel false ceiling, along with epoxy coatings on walls and floors to ensure dust controlled environment. This has the added benefit of achieving the room temperature conditions in close tolerance. Figure I.5.1 depicts the final building plan of the SCRF building. Figure I.5.2 depicts the elevation of the completed SCRF building.

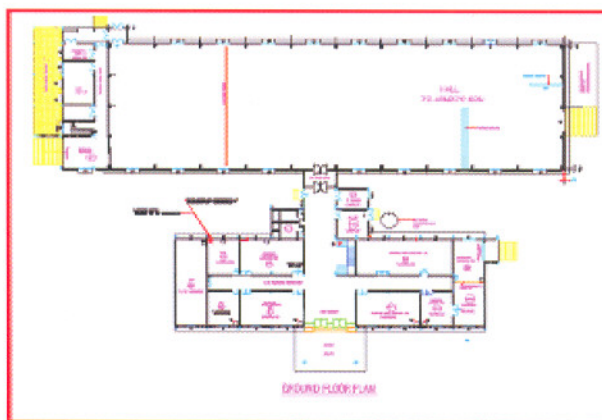


Fig. I.5.1: SCRF building plan



Fig. I.5.2: Elevation of the completed SCRF building