

REFRIGERATION & AIR CONDITIONING INCUBATION CENTER

To develop new projects and offer services through student learning in Refrigeration and Air Conditioning domain.

- Students carried out 6 PG and 10 UG projects through R & AC center.
- R & AC achieved funded projects by students.
- Display water cooler, UPS Cooling and Mobile AC.

3.1. Akella Systems an Industry inside an Institute

Dr. Suresh Akella has worked in Shriram Refrigeration Industries a DCM company and later the company was taken over by Tecumseh Products Ltd, an American company which is a world leader in manufacturing hermetic compressors. His learning in HVAC, Heating Ventilating and Air conditioning field was from 1985 to 2009. His learning and contribution were in new models' development, quality assurance, Statistical quality control, in the fields of R&D, customer support, Quality improvements and reliability. As Tecumseh was making hermetic compressors for all R&AC, Refrigeration compressors from Ballabgarh factory and Air Conditioning and commercial compressors from their Hyderabad factory he gained total knowledge in this area.

As an Industry R&AC or HVAC is as big as an Automobile industry. Engineering students in Mechanical, Civil, ECE who get trained to obtain knowledge and skills in Computer Aided Drawing, CAD; Computer Aided Design, CAD; Psychometry, Thermodynamics, Heat transfer, Fluid Mechanics, Computational fluid Dynamics, CFD; Refrigeration and Air Conditioning will get premium jobs in MNC companies in India and globally.

As the institute and the department of the mechanical engineering supported completely to start an In-House industry Akella systems stated initially as a limited company later to ease the operations converted to a privately owned company.

As the institute and the department of the mechanical engineering supported initially an incubation centre started.

As the domain of R&AC is finalized Staff in that area with Prof. K. Sainath as the leader of the group was started, he also registered his Ph.D in this area with roll bond evaporators to convert air coolers to air conditioners. Dr. Suresh Akella had a patent with Annapurna Aircon Limited for Roll Bond Evaporator. The Technicians from Tecumseh

products, Mr. Arvind provided the skills required for tube bending, cutting, swaging connecting, Nitrogen leak test, vacuuming, gas charging, electrical connections to our technical staff. Our technicians had fabrication skills of sheet metal work frames welding and brazing. Electrical connections and circuits were taught, and student projects of UG and PG level were taken up. Prof. K. Sainath was also developing his models of mobile ACs with role bond evaporators.

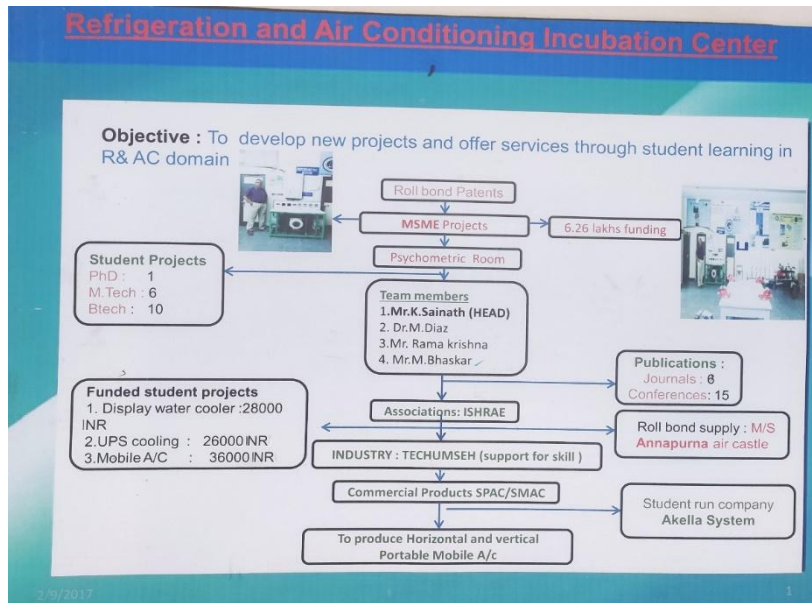


Fig: 3.1 R & AC Incubation Center Information Brochure

3.2. Akella Production:

M/S Akella Systems, a company developed by the R&AC Incubation centre of Mechanical Engineering Department which is producing number of Products, Internships, Projects, Consultancy works which is required by the society. Akella Systems, A factory within the campus has successfully launched its 1st product SMAC – Sreyas Mobile Air Conditioner into the market.

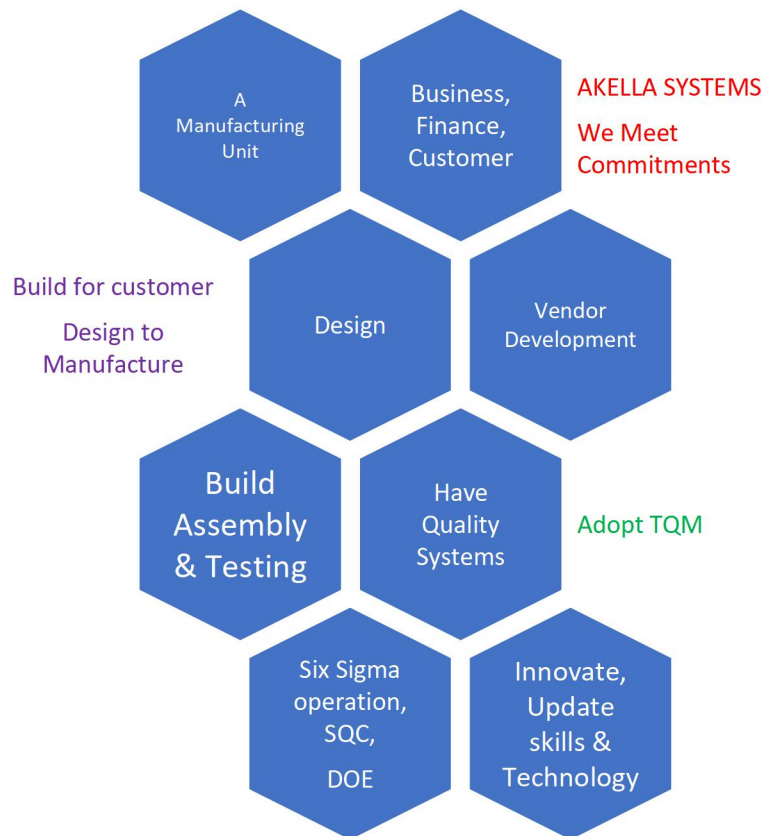


Fig: 3.2 Akella Productions

3.2.1. List of Projects

PROGRAM	PROJECT	Total	Journal Papers	Patents
UG	Internship	15	2	-
	Mini	17	1	-
	Major	10	3	-
PG	Research	5	5	-
Ph.D	Research	1	8	-
Akella Systems	Research	1	5	2

3.3. Learning in an Industry



3.4. Akella Systems Evolution

1. Took **JNTUH-MSME-Entrepreneur Development fund** 6.25 Lakhs to build Psychometric test room and build different Models of Mobile Air Conditioners.
2. First Mobile AC, SMAC, of R22 refrigerant is developed, patented.
3. Akella Systems Company is manufacturing at Sreyas Institute premises
4. Continuous Technology is developed with UG, PG and PhD projects.
5. ISHRAE projects are completed by Students.
6. Akella System employees supported RRR Company in CAD, CAE, CAA,
7. This is followed by application, analysis and evaluation of R134a models, **JNTUH-TEQIP-III** Project.
8. A Electrical Vehicles Cooling system developed for a MNC.
9. Quality Technologies new Oven Design for exothermic sleeves, B Tech Students Projects.
10. E-Fortunes want a building cooling with ML, under review.

3.4.1. MSME Entrepreneurial and Managerial Development of SMEs

A sanction of 6.25 Lakhs was provided for “ Roll Bond Evaporator for Air Conditioner”.

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3.5. HBL Project

The main aim of project is to design and development of EDT cooling system for a bus which is being modified by HBL power systems LTD, where HBL is developing electric motor coupling with gear box of the LCV a controller to run electrical peripheral and lion batteries to run the system.

Where the motor and controller will generate a heat load of 2kw each and there are 2 battery boxes which generate heat load of 600 KW.

Phase 1:

In this project the motor that is generating a heat of 2KW is cooled by using transformer oil and controlled is cooled by water and batteries are cooled with air a refrigeration and air conditioning system has been designed and developed to cool the heat sources where the refrigerant cools the water and air, oil is cooled by water in brazed plate heat exchanger.

Phase 2:

In the 2nd phase motor and controller will generate a heat load of 2kw each 2KW is cooled by water in parallel connection and batteries are cooled with air.

Phase 3:

A outdoor unit and an indoor unit for the EDT is developed called a LPT model.