



CAE R & D CONNECT

Edition IV, Mar'09

A Newsletter from Cranes Software International Limited

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Dear Colleague,

It gives me immense pleasure to present to you this edition of the Cranes CAE R&D **Connect**; the official mouthpiece of the Cranes Engineering division of Cranes Software International Limited (CSIL).

This is a significant issue as we cover some extremely successful events we participated & organized in the last quarter. Most important, would be the recently concluded and very successful 'Cranes- India LS-DYNA® User's Conference 2009' in Bangalore, India.

Our Engineering Services division has added many prestigious Government and Corporate customers in India, China, Japan, the USA and the UK. Our key Indian customers like BHEL, BARC, Kirloskar, NPCIL, etc. continue to engage us in many prestigious projects. In the USA we continue to work with GM, Ford, Chrysler, the US Department of Defense, the Department of Energy and with many bus and truck manufacturers. Globally we are working with Hyundai, Toyota, Mitsubishi and many more automotive OEM's.

NISA DesignStudio and NISA/CIVIL are doing their magic and are becoming the preferred software of structural engineers and architects. An international version of NISA DesignStudio is due for launch this year.

Hope you enjoy this edition of CAE R&D **Connect** and find it informative. Please keep your suggestions coming in.

Looking forward to exciting times!

Abe Keisoglou

Head-Cranes Engineering



Events at a Glance

Cranes-India LS-DYNA® User's Conference 2009, Bangalore, India

Cranes Engineering organized the 'Cranes - India LS-DYNA® User's Conference 2009' on the 23rd of January at Hotel Grand Ashok, Bangalore. Cranes is a reseller of LS-DYNA® software in India through ETA (Engineering Technology Associates) its fully owned subsidiary in Troy, Michigan, USA. Key personnel from LSTC (Livermore Software Technology Corporation, USA) & ETA presented at the conference and conducted product trainings

before & after the conference on the 22nd and 24th of January. The conference had senior speakers from reputed organizations like Mahindra & Mahindra, GE, Wipro, Infotech Enterprises, KG Herotech, Intel, NAFEMS and IISc. Intel Corporation was the premier sponsor of the event. The conference was also supported and promoted by NAFEMS India. The event had over 250 participants and was a grand success.

Industry partner



Supported by



Papers Presented at the conference

Mr. Vish Kotta

LS-DYNA® & future directions

Mr. Uma Maheshwar

Next Generation Airworthiness Technologies

Prof. Anindya Deb

Simulation-driven advances in automotive crash safety

Mr. Rajendra Kumar Patro

Design for Accidental Abuse and Extreme Events through CAE

Mr. Sridharan Venkatramanan

Unique Advantages of Multi-Physics Code 'LS-DYNA' as perceived by a consulting firm

Mr. P Sivanesan

Analysis of 'Roller-Hemmed' automotive components using DYNAFORM & LS-DYNA®

Key Speakers

Cranes-India LS-DYNA® User's Conference'09, Bangalore, India.



Mr. Ravi Singh AVP-Global Marketing Cranes Engineering welcomes the gathering



Dr. Rudra Pratap, Chairman CSIL addresses the gathering



Mr. P. S Kasthuri Rangan of Turbo Machinery Pvt. Ltd presents a memento to the Keynote speaker Mr. Aslam Adam – GM CAE Mahindra & Mahindra



Mr. Vish Kotta (in Brown suit) specialist LSTC, USA receives a memento from Dr. Hakim of TCS



Mr. Uma Maheshwar Leader Aviation Technology, GE (in Brown suit) receives a memento from Mr. Prakash Surappa of Taal Technologies



Dr. Anindya Deb, Head CPDM IISc (in dark jacket) receives a memento from Dr. P. C Pandey, Prof Dept of Civil Engg, IISc



Mr. Vivek Venkatesh (in dark shirt) Head Intel Software Products receives a memento from Dr. B Ashok of ADE



Mr. Rajendra Kumar Patro (in suit) GM-Engg, Infotech (Pratt & Whitney Group) receives a memento from Dr. Rajeev Jain of GTRE



Mr. Huxley Joseph (in suit) Program Manager ETA, USA receives a memento from Mr. Padmaraj of Wipro



Mr. Sridharan Venkatramanan Tech Manager Wipro Technologies receives a memento from Ms. Bevita Phillip (Cranes)



Dr. Kariappan Elangovan of NAFEMS India receives a memento from Ms. Bevita Phillip (Cranes)



Mr. Rangs Padhmanabhan (in Blue shirt) BD head & Mr. Sivanesan Sr. PL KG Herotech receive a memento from Ms. Bevita Phillip (Cranes)

REDECON-2008, Bangalore, India

Association of Consulting Civil Engineer-Bangalore Centre, conducted a national seminar on Recent Developments in Design and Construction Technologies (REDECON) – 2008 at the Convention Centre, NIMHANS Campus, on 7th, 8th & 9th August, '08. Many papers were presented on the theme of Concrete and Construction Technology by eminent engineers and technocrats. Around 750 delegates from across the country attended the conference. Cranes Software endorsed this event as a supporting organization. **NISA/CIVIL** and **NISA Design-Studio**, were showcased at the event.



L to R: Janardhan. K (Cranes), Mr. U. B Rao (ACCE-President), Mr. Ajit Sabnis (ACCE-Chairman Bangalore Chapter), Bhargav Puranik (Cranes) & Sujit Nair (Cranes)

OPPCON – 2008, Dharwad, India

The Association of Consulting Civil Engineers (ACCE), Dharwad Chapter organized a National Workshop on Opportunities & Challenges for Civil Engineers in Today's World at Dharwad on the 29th & 30th of August 2008. Large number of delegates from North Karnataka & Goa participated in the event. Cranes Software supported OPPCON – 2008 as a sponsor. **NISA Civil** and **NISA DesignStudio**, were showcased at the event.

Automotive Summit 2008, Pune, India

The Automotive Summit 2008 was all about Driving India's R&D Strategies towards becoming an innovation hub. The event was organized at the Le Meriden, Pune on the 12th and 13th of August '08, and was attended by various luminaries from the industry, who came together to discuss future R&D challenges in the automotive sector.

Companies like Tata Motors, Maruti Suzuki, Skoda Auto, Infosys Technologies, and IBM etc participated in the event. Some of the main topics of interest at the event were; Role and development of technology in the auto industry of India and Worldwide, R&D innovations in safety standards and security, Role of Biotechnology vis. alternate fuels, Technology and software for the automotive industry, and Strengthening domestic R&D capabilities.

Cranes Software International Limited was an 'Industry Partner' for this event. **Eta/VPG**, **Eta/DYNAFORM**, **LS-DYNA** & **NISA** were showcased at the event.



David Hendrie (Blue Shirt) of Cranes engages a visitor

SAE Wichita Aviation Technology Conference, Kansas, USA

The biennial SAE Wichita Aviation Technology Conference formerly known as the General Aviation Technology Conference was held at the Century II Convention Center in Wichita Kansas, August 19-21, 2008. This conference highlighted Aviation technology in transition, focusing on past successes, ongoing efforts and existing or perceived future impediments to fielding new technologies from the user perspective. David Hendrie and T. J Fleming from Cranes Software, Inc USA participated in the conference and displayed **Eta/VPG**, **Eta/DYNAFORM**, **LS-DYNA** & **NISA** at the Cranes booth.

Cranes Simulation Days at Vizag & Hyderabad, India

The renowned **Gayathri Vidya Prishad (GVP)** and **Cranes** organized a one day seminar on 'CAE (Computer Aided Engineering) Centric Approach to Product Design' at the GVP Campus on 25th of August 2008. Participants were from academia from the state of Andhra Pradesh.

The event started with a welcome speech from Prof. A. B Koteswara Rao, the head of department of the Mechanical Engineering Department - GVP.

Mr. Srinivas Prasad from Cranes gave the gathering an overview of **NISA** and its use in the industry today; Real-life examples were also demonstrated using NISA software. There were detailed discussions on the importance of CAE in vehicle development and how industries across the world are using NISA for virtual analysis & design of their vehicles. **Eta/VPG, Eta/DYNAFORM & LS-DYNA** were also demonstrated at the event.

A similar program was organized at **Chaitnya Bharathi Institute of Technology (CBIT), Hyderabad**.



Many companies in the transportation industry are now adopting simulation-based product development practices that have already been adopted by the major automotive manufacturers. Due to this new shift, ETA's VPG group found a wide-range of attendees at the 2008 SAE Commercial Vehicle Engineering Congress and Exhibition (COMVEC) and Vehicle Dynamics Expo.



T. J Fleming of Cranes @ COMVEC

SAE 2008 Commercial Vehicle Engineering Congress & Exhibition, Rosemont, Illinois, USA

COMVEC attendees were now more eager than ever to explore how the VPG system-level simulation approach could help improve their company's quality and overall bottom-line. Large commercial truck engineers, armored vehicles and systems engineers, embedded electronics engineers and engineering consultants all had significant interest in how ETA-Cranes engineering analysis software tools like eta/VPG and NISA allow engineers to perform multi-disciplinary (coupled CAE solutions) analysis. Some examples of interest included Acoustic prediction, occupant safety and impact simulations, as well as access to traditional FEA on the desktop at affordable prices via the NISA suite of FEA tools.

Vehicle Dynamics Expo-North America 2008, Novi, Michigan, USA

The Vehicle Dynamics Expo in Novi, Michigan was heavily focused on testing hardware with a strong simulation sub-focus. Visitors included all the US OEMS and Commercial Vehicle makers. Custom motor coach truck and van builders; agricultural equipment manufacturers and aerospace product manufacturers also attended the expo.

At both events, Sales Engineers illustrated how ETA-Cranes strategic development process; simultaneous engineering, virtual reality and rapid prototyping reduce overall engineering times, offer global potential optimization and improve vehicle dynamics performance. With the shift to more simulation-based practices, the information was well-received by attendees.



David Hendrie of Cranes @ the Cranes-ETA stand



Edifice, New Delhi, India

Edifice'08 – New Delhi was organized by Cranes on the 26th Sept'08 at the sprawling campus of the India International Center, New Delhi. It was a technical seminar on structural analysis and design using **NISA DesignStudio** (NDS) organized jointly with the Indian Association of Structural Engineers.

Around 60 senior structural consultants participated. These included engineers from organizations like STUP Consultants, Delhi Metro Rail Corporation, Larsen & Toubro (L&T) and DLF Home Developers to name a few. The gathering also had the presence of Mr. Mahendra Raj, a distinguished veteran in the field of structural and civil engineering.

Dr. C Channakeshava and Sujit Nair of Cranes presented NISA DesignStudio at the seminar. The audience was also treated to a real-life demonstration of NISA DesignStudio.

Innovative World of Concrete (IWC) 2008, New Delhi, India

Today, India is one of the six fastest growing economies of the world and Asia's biggest Infrastructure Investment opportunity. Construction constitutes 40% to 50% of India's capital expenditure on projects in various sectors such as highways, roads, railways, energy, airports irrigation etc. Recognizing these new trends and developments, the Indian Concrete Institute - New Delhi centre, a premier professional body promoting growth of Concrete Construction organized an International Conference cum Exhibition - Innovative World of Concrete (IWC). The Ministry of Urban Development, Ministry of Power, Ministry of Commerce & Industry, Ministry of Railways, and NHAI supported the expo. Cranes demonstrated its flagship products **NISA/CIVIL** and **NISA DesignStudio** at the Expo.

FMFP 2008, PESIT, Bangalore, India

The Thirty Fifth National Conference on Fluid Mechanics and Fluid Power was organized jointly by the National Society of Fluid Mechanics & Fluid Power and PES Institute of Technology, during December 11 to 13, 2008.

Dr. Satyanarayan Panigrahi of Cranes Software International Limited, Bangalore was invited to present a paper titled **"Backpressure Evaluation of Plug Muffler: a Multiscale Modeling Approach"** using NISA/3-D FLUID at this conference.

BHEL – CFD Conference, Hyderabad, India

With an ever increasing push for strict emission norms, CFD (Computational Fluid Dynamics) has become an inevitable part of designing and analysis of Industrial equipment and processes. Power plant equipment being a source of high emissions, CFD becomes crucial for the power sector. For this reason Bharat Heavy Electricals Limited (BHEL), Hyderabad has set up a Center of excellence for CFD at its Corporate R&D.

The Centre of Excellence conducted a 2 day National Conference on CFD Applications in the Power Industry on the 28th & 29th of January '09.

The conference brought together people from academia and industry working in different aspects of fluid dynamics and design of power plant equipment such as steam turbines, gas turbines, hydro turbines, steam generators, condensers, pumps, fans and compressors.

B. Eswara Kumar & R. Viswanath of Cranes presented a paper titled **"Numerical Investigation of Free Convection between Three Vertical Coaxial Heat Generating Cylinders"** using NISA/3D-FLUID software at the conference.

New Product Launches

NISA DesignStudio V16

NISA DesignStudio V16 (NDS) has been launched. As many are aware, NDS is a cost-effective software for individual and upcoming structural engineers who predominantly analyze and design Multistoried Buildings, Apartment Complexes and Industrial Enclosures made of RCC & Steel. The product has excellent reporting and graphing features and automatically generates detailed AutoCAD® drawings. This release comes with many new features and marks a significant improvement over the previous version. Some of these are:

- Load specification options such as; copying loads across levels, automatic computation of seismic forces as per number of floors above the specified base, and computation of static accidental torsion as per codes of practice with or without negative shears have been introduced.
- Enhanced modeling features such as automatic generation of shell elements from floor panel definition are now available - Automatic shell model generation for flat slabs has been introduced.
- New features to design raft foundations as per rigid beam theory have been introduced.



- Design of Flat slabs using equivalent frame method & using shell elements has been introduced.
- Design of Shear Walls as per Indian standards has been introduced.
- Design of Corbels has been introduced.
- Design of five types of concrete staircases has been introduced.
- Automatic selection of sectional sizes for beams & columns based on user specified percentage of steel and from a list of preferred sectional sizes is now supported.
- Automatic selection of isolated footing sizes from user specified list is now supported.
- IS: 13920 Seismic ductile detailing design provisions along with automated identification of beam supports & reporting are introduced.
- Automatic generation of drawings for Concrete Staircases, Flat Slabs, Beams of unequal depths, retaining walls and corbels are introduced.
- Reinforcement details for generally shaped columns can now be obtained.
- Structural drawings now include rebar rationalization for beams & columns.
- Improved STAAD Pro® - NISA DesignStudio interface.

NISA V16 for Linux

NISA Version 16.0 for Linux has been launched. This version comes with more than 40 new features and marks a significant improvement over the previous version. Some of these are:

- A faster Multi-Core solver has been introduced for the Structural, Fluid, Heat and EMAG (Electromagnetic) Modules in 32 bit O/S.
- There are major enhancements in Non-Linear Static Analysis Capabilities with improvements in 3D Contact Element with Friction and introduction of Concrete element.
- New Direct Frequency analysis has been added.
- Assembly/Multi body meshing has been added in DISPLAY Automesh.
- The MACRO functionality in DISPLAY has been enhanced to better support Parametric Modeling.
- Multi load animation capability has been added in DISPLAY.
- Finite Element Translators NISA to ANSYA and NISA to NASTRAN have been revamped.
- The Linux operating systems supported are Fedora® Core - 8 , 9, Ubuntu® - 8.01, OpenSUSE® - 10.0 (both 32 and 64 bit)



Customer Testimonials

For NISA DesignStudio

It has made model generation easy and drawing generation much simpler for both small and big projects.

Sheshadri B S - Design Consortium, Bangalore

NDS has made the dream of converting huge design data into detailed drawings within seconds instead of taking enormous man hours come true.

M Munusamy, Design Forum India Pvt. Ltd., Coimbatore

Residential, industrial, commercial projects are getting better analysis & design with NDS, also the output formats supported by NDS namely AutoCAD®, Word®, & Excel® is making it easy to maintain records for all projects.

V. P Ponnuswamy - Sankar & Associates, Coimbatore

NISA DesignStudio is indeed a most user friendly software and the options available really keep it on higher pedestal when compared with other software's.

P. V Prabhakara Sastry, Kurnool, AP

Due to its feature of analysis, design and generation of AutoCAD drawings, it is more user friendly when compared to other software's.

Vijay KH - Nirmithi Engineers, Bangalore

It's very easy to model & verify the results. It's a better & and more reliable software, at a good price.

T Rangarajan - Consulting Structural Engineer, Coimbatore

Analysis & design results are very accurate. Detailing & exporting option made me happy.

D Rajendran - Designtech Civil CADD Centre, Coimbatore

The features for standalone design modules are of great assistance.

Col. Jacob G Podipara - Border Roads Task Force (BRTF)

Yes, definitely NDS has helped us in simplifying the design of slabs, footings, columns & beams, combined footings etc.

Sandhya R. K - CPWD, Bangalore

I have analyzed one sample problem on continuous beam, plane frame, plane truss etc. using my own prepared software & by NISA DesignStudio & results are well matching.

Rajendra B Copra - Strucon Designers Pvt. Ltd., Nashik

FE modeling & AutoCAD® output is good and saves time. Generation of earthquake forces has become easy. Generation of design output reports for Govt jobs has become easy.

Batavia Jayesh J - Batavia and Associates, Nashik

New Customers

The Cranes family just got bigger, many reputed organizations licensed our CAE products over the last few months. To name a few;

Central Building Research Institute, **Roorkee**
Public Work Department, **Goa**
Development Consultants International Limited, **Kolkata**
Central Public Work Department, **Trivandrum**
B.M.S.College of Engineering, **Bangalore**
Tyche Engineering, **Trivandrum**
Defence Electronic Research Laboratory, **Hyderabad**
V2 Engineering Systems, **Bangalore**
Toch Institute of Science and Technology, **Ernakulam**
Engineers India Limited, **New Delhi**
Sharp Formwork Pvt Ltd, **Pune**
Electronics & Radar Development Establishment, **Bangalore**
Dayananda Sagar College of Engineering, **Bangalore**
Construction Catalysers Private Limited, **Pune**
Intercad Systems Pvt Ltd, **Cochin**
Vedamaya Software Technologies Pvt Ltd, **Tiruchirapalli**
K. S Rangasamy College of Tech, **Tiruchengode**
BHEL, **New Delhi**

BARC, **Mysore**
Mazagon Dock Limited, **Mumbai**
Karnataka State Police Housing Corporation Limited, **Bangalore**
Muffakham Jah College of Engineering & Technology, **Hyderabad**
Sampoorna Rotor Dynamics Consultancy, **Bangalore**
D-CAD Technologies, **Delhi**
STJ Institute of Technology, **Ranibennur**
India Builders Corporation, **Bangalore**
Design Consultants, **Bangalore**
Structural Consultants, **Raipur**
Ajay Kumar Associates, **Alappuzha**
Sree Construction, **Bangalore**
Rachyita Construction Co, **Ahmedabad**
Sigma, **Bangalore**
Yasha's Consultants, **Bangalore**
Srikar & Associates(P) Ltd, **Bangalore**
Shapes & Structures, **Bangalore**
Sisodiya & Associates, **Chattisgarh**

Nishita Associates, **Bangalore**
Wanroy Challam, **Shillong**
Structural Concept, **Mumbai**
T.Rangarajan & Associates, **Coimbatore**
QUEST, **Bangalore**
TAML, **Bangalore**
Hyundai, **Chennai**
Honeywell, **Bangalore**
Caparo Engineering, **Chennai**
Mahindra Engineering Services Limited, **Pune**
Hepatica Technologies Private Limited, **Bangalore**
Aktis Engineering Solution, **Bangalore**
Asea Brown Boveri, **Mumbai**
Space Application Center, **Ahmedabad**
Kghirotec, **Coimbatore**

The Lighter Side

How many nuclear engineers does it take to change a light bulb?
Seven. One to install the new bulb and six to figure out what to do with the old one for the next 10,000 years.

How many mechanical engineers does it take to change a light bulb?
Five. One to decide which way the bulb ought to turn, one to calculate the force required, one to design a tool with which to turn the bulb, one to design a comfortable - but functional - hand grip, and one to use all this equipment.

How many computer engineers does it take to change a light bulb?
Why bother? The socket will be obsolete in six months anyway.

How many electrical engineers does it take to change a light bulb?
None. They simply redefine darkness as the industry standard.

"Have you ever noticed that anybody driving slower than you is an idiot, and anyone going faster than you is a maniac?" *George Carlin*

"You know, somebody actually complimented me on my driving today. They left a little note on the windshield; it said 'Parking Fine.'" *Tommy Cooper*

"I dream of a better tomorrow... where chickens can cross roads and not have their motives questioned."
Unknown

Astronaut Anxiety

An astronaut in space was asked by a reporter, "How do you feel?"

"How would you feel," the astronaut replied, "if you were stuck here, on top of 20,000 parts each one supplied by the lowest engineering bidder?"