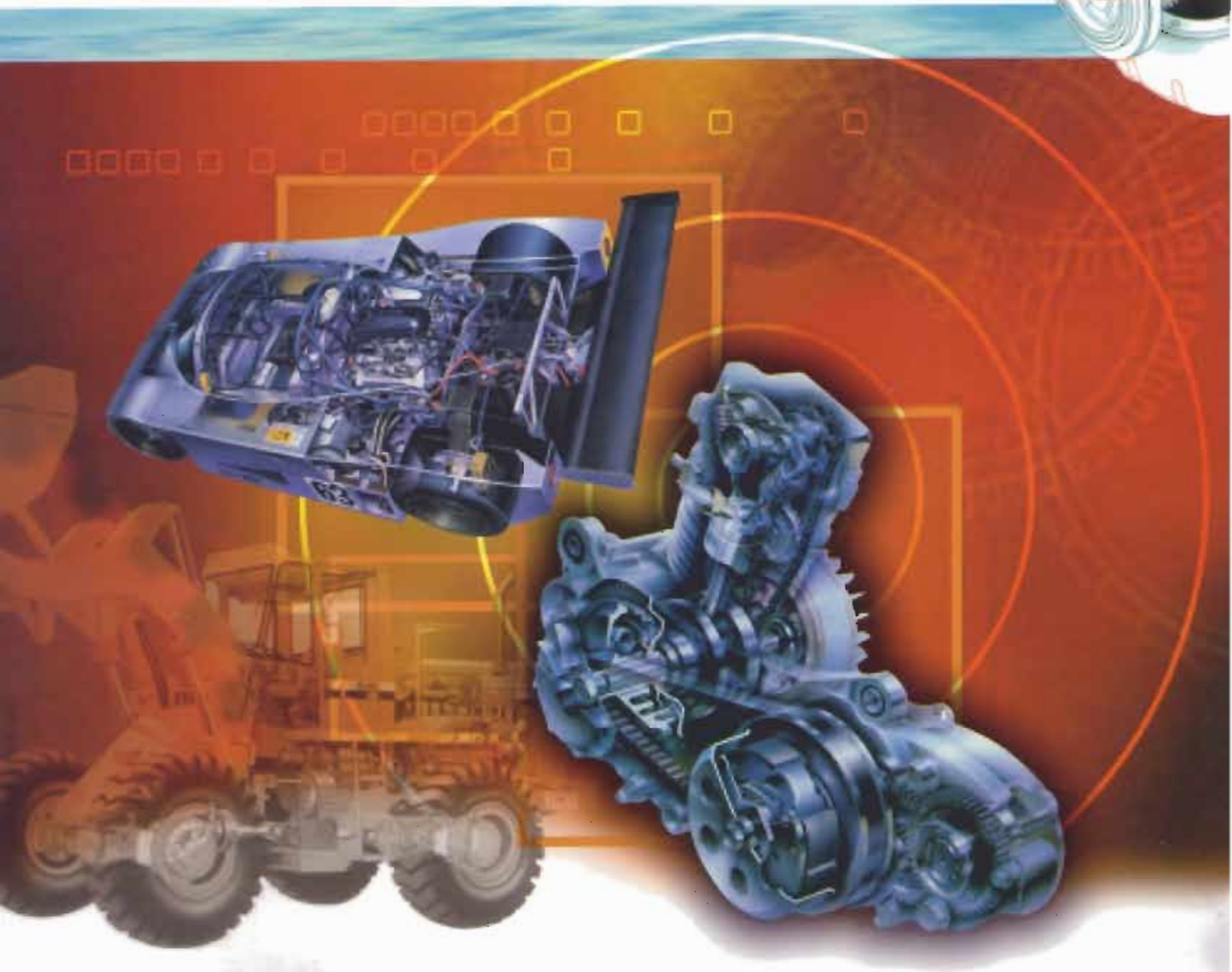


CHAKRIKA

design doctors - Critical To Your Success



■ TECHNOLOGY SOLUTIONS ■ CONSULTING ■ OUTSOURCING ■ TRAINING



About CHAKRIKA

CHAKRIKA is in the business of providing *turnkey engineering services & consulting using CAD/CAM/CAE & PDM technologies* and tools as an *One-Stop Solution Provider* for product development from *Concept to Customer* with zero degree of difficulty to work with.

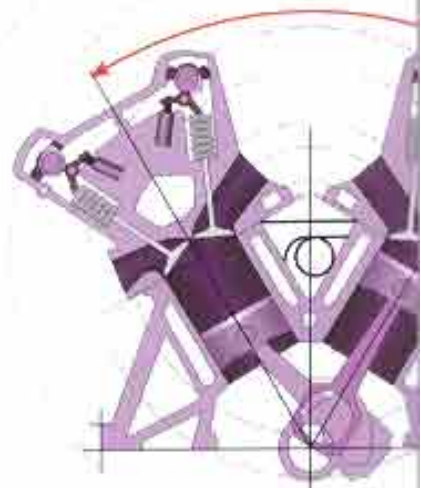
Our breadth, combined with over 17 years of in-depth experience enables us to continually produce groundbreaking results out of our work across spectrum of clients spread worldwide.

CHAKRIKA provides high-performance engineering analysis and design services applying most recent technological ideas and tools. By fully integrating our engineering experience and efficiency with that of our client's core competencies we greatly help them leverage the development costs, optimizing resources and decreasing time-to-market, allowing them to more closely focus on their core competencies.

CHAKRIKA's engineering resources are hand-picked from best of talents with specific industry experience and possess in-depth knowledge and skills that are well suited to handle large and complex projects which are Technology driven and challenging with best in class expectations. CHAKRIKA offers 24 X 7 customer support and project update, which makes it an ideal choice and a convenient *Design Factory* for its global customer base.

CHAKRIKA's unique *CD-CONNECT* integrated services pulls up their vast experience in design and manufacturing to provide *RITE-CHOICE* low cost sourcing solutions connecting you directly to hundreds of manufacturers across Asia to quickly develop your ideas into products with a world-class supply base developed over the years.

Learn more about us, visit our website: www.chakrika.com



PRODUCT DEVELOPMENT & MANUFACTURING SOLUTIONS

Real value beyond expectation, virtually...

www.chakrika.com

CHAKRIKA

REVERSE ENGINEERING ■ RAPID PROTO TYPING ■ TOTAL PRODUCT DEVELOPMENT ■ CAM Programming ■ Virtual Manufacturing

Rapid Prototyping



CHAKRIKA provides engineering assistance to help build prototype (up to medium sized parts) and complete the product design cycle right from concept design involving:

- Computer generated solid modeling file (.STL) and generate a rapid prototype via Stereo lithography and Laser Sintering Process
- Fused Deposition Modeling or other appropriate methods
- Perform the engineering analysis and design
- Verify the desired physical characteristics of the designed part, and make any modifications as necessary

The following are the advantages of building prototype:

1. Reduction in the Design-to-Market product cycle
2. The ability to debug designs prior to production
3. The ability to test product functionality of products using desired materials
4. The ability to provide test market prototypes
5. Extended tool life to tens of thousands



Reverse Engineering

Reverse engineering is a Time-compression technology for the development of any product. It combines three technologies. First, using laser scanners virtually any part can be mapped for the surface of regardless of surface complexity. Second, a point cloud is created from the scan that is used to generate 3-D curves for constructing a parametric

solid model using software. Third CAV (computer aided verification) is used to verify part accuracy of the parametric solid model using data analysis, comparison and inspection.

CHAKRIKA offers its customers complete assistance in development or re-engineering small to medium sized parts all under one roof with technological excellence and optimized cost. One more hassle-free service offering to clients only from CHAKRIKA.

@-CONNECT

CHAKRIKA serves, as a one-single source supplier for most of your product development needs from Concept to Customer.

CHAKRIKA's RITE-CHOICE low cost sourcing solutions connects you directly to hundreds of manufacturers across Asia to quickly develop your ideas into products with world-class supply base developed over the years.

CHAKRIKA would be delighted to quickly turn around your enquiry into development of products (pilot) & Tooling required by you from world-class supply base helping you to leverage the development costs effectively.

What's in it for you?

- Lower total cost of Design & Development
- One-stop industry-specific outsourcing solution
- "Hassle-free" Project efficiency and delivery
- Secure Product Road Map
- One-stop RITE-CHOICE low cost sourcing solutions for product development and manufacturing

CAE SOLUTIONS

Fast, Accurate & Reliable ...

www.chakrika.com

CHAKRIKA

■ FEA ■ FEM ■ SIMULATION ■ ANALYSIS-TO-TEST CORRELATION ■ VALIDATION OF MODELS AND METHODOLOGIES

Computer Aided Engineering

CHAKRIKA's engineering expertise extends beyond Designing. CAE Services form Chakrika, is one of their core competency area. Chakrika offers the following FEA & meshing solutions - for both Linear and Non-Linear analysis using various application software (Ansys, Abaqus, Nastran, Cosmos, LS-Dyna, Autoform, and Hypermesh):

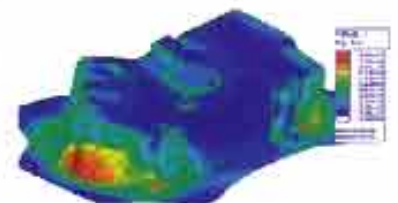
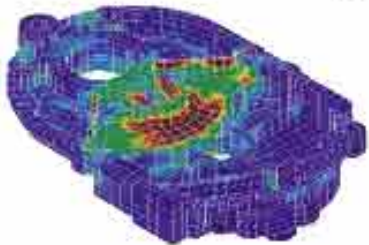
- Structural Analysis
- NVH/Durability
- Thermal Analysis
- Vibration Analysis
- Kinematics Analysis
- Computational Fluid Dynamics (CFD)
- Strength & Stiffness Analysis
- Fatigue life prediction
- Analysis to Test correlations

CHAKRIKA provides full-scale Finite Element Modeling and Analysis of complex engineering systems for Automotive, Aerospace and other Engineering industries. Simulation of practical and real-life situations, correlation between test and analysis data, service life prediction, design optimization, kinematics analysis and failure mode prediction are performed by our highly-

qualified engineers with multi-faceted experience in solving complex projects using critical inputs. Besides executing full-scale FEA projects, CHAKRIKA's expertise in providing cost effective meshing solutions (generation, optimization and repair) comes handy to many global customers to simply ask for ready to use meshed models, which are critical to them for in-house analysis.

CHAKRIKA offers specialized CAE services for the following:

- Sheet metal forming simulation required for tool design engineering and virtual tryouts
- Plastics flow simulation for Injection molded and blow molded parts
- Pressure die casting simulation
- Automotive wheel design and validation
- Automotive structure and subsystems including closures, cross-members, suspension components, engine mounts, IP structure, Knuckle, control arms, torsion bars, braking system, chassis & allied areas.



PRODUCT DESIGN SERVICES

Concept to Customer, quicker...

www.chakrika.com

CHAKRIKA

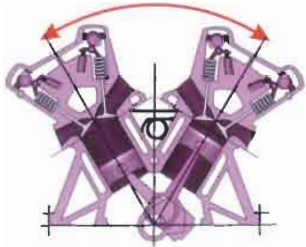
■ CONCEPT DESIGN ■ PARAMETRIC MODELING ■ DETAIL ENGINEERING ■ GD&T ■ LEGACY DATA MIGRATION

Concept Design



Equipped with information acquired from our experience and knowledge base, Chakrika's team *transforms initial concepts into innovative, appropriate and thoughtful design solutions.*

CHAKRIKA's goal is to transform the client's strategic vision into a product with ideas and concepts that enables them to implement their design goals. CHAKRIKA's engineers work closely with the client and encourage their involvement early in the design process.



These concepts and ideas are created using realistic computer models of free form shapes depending upon the functional requirements and performance criteria defined by the client. By doing this way, we increase the likelihood that our design solutions meet the design intent well exceeding their expectations.

3D Math Modeling and Intelli CAD services

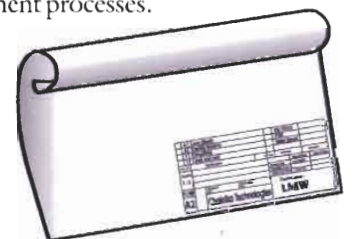


With the highest-quality technology, top of the line engineering talent and knowledge base, proven methods of conversion, excellent infrastructure equipped with secure data environments - CHAKRIKA has the ability to offer the best 3D Modeling, Remastering of


Legacy data/data conversion services - both manually & using Raster to Vector. Our expert Designers can build Intelli - 3D parametric models in any CAD software or convert your legacy data involving translation from any CAD format to *Ideas, Unigraphics, Pro/E, Catia, Solid Works, Solid Edge or Auto Desk database* and you will realize time and monetary savings, while leveraging a competitive advantage in your market. Our competitive price and quality work make CHAKRIKA an obvious choice for your data conversion needs.

CHAKRIKA has developed competency and *capabilities to handle the complete packaging design* exploding the assemblies/sub-assemblies and make design improvements in a variety of virtual environment.

Our offshore RECREATE digitization services allow a cost-effective and efficient environment to capture, manage, modernize and archive paper based engineering assets in a secure environment. Our clients can then leverage the benefits of integrating these digitized drawings within their Engineering Management and Product development processes.



TOOLING SOLUTIONS

Engineering excellence 

www.chakrika.com

CHAKRIKA

- TOOLING DESIGN
- PLASTICS MOLD DESIGN
- PRESSURE DIE CASTING DESIGN
- JIGS & FIXTURES DESIGN
- MOLD FLOW & MAGMA SIMULATION

Tool & Die Design

CHAKRIKA's expertise in **Tool Design for Sheet metal, Plastic parts & Metal die casting** makes its position unique in the Engineering service industry.

CHAKRIKA's professional Tool designers design complex tools and multi-cavity injection molds applying their mind from its manufacturing perspective. Using appropriate application software to determine the most effective design and also applying virtual simulation they help optimize the layout, design parameters, ease of handling, productivity optimization, etc.

Using advanced software like **LS-Dyana and Autoform** package - sheet metal simulation is being performed and the concept of rapid, parametric die face design for sheet metal parts are conceived quickly for evaluating the feasibility for development at reduced development costs and time.

While designing plastics molds, depending on the customer requirements **Mold Flow - Plastics flow simulation** software is used to refine the design, simulate the filling, packing and cooling phases of the injection molding process to predict the flow behavior of plastic melt to ensure parts are of acceptable quality that can be manufactured efficiently.

Depending upon customer requirements

Magma Simulation is used while designing Aluminum/Zinc Dies casting molds to ensure your "*First shot - a sure shot*" for complex metal parts.

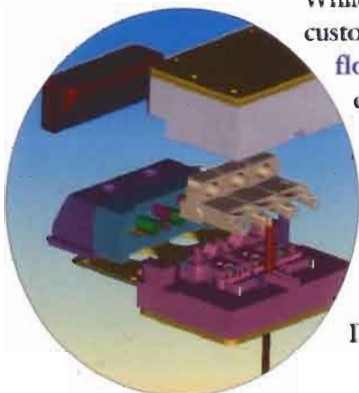
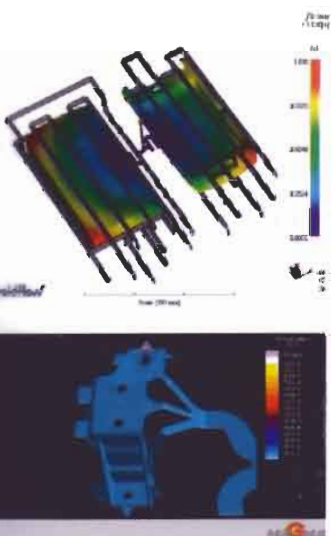
- **Cutting Dies** : Blanking, Fine blanking, Progressive dies
- **Forming Dies** : Bending, Drawing, Deep-drawing
- **Plastic Molds** : Thermoset & Thermoplastic molds
- **Metal Dies** : Pressure die casting design for Al & Zn
- Jigs, Fixtures & Work holding devices
- Special purpose Tooling design



Data Translation Services for Tool Manufacturing

CHAKRIKA provides Ready-To-Manufacture CAD Models for the Tool Making Industry by completely taking over and managing the data translation; fixing errors and repairing the CAD data between different CAD systems as per customer requirement, providing quick turnaround and cost effective services. With this fast and unique service from CHAKRIKA, now Tool Manufacturers do not have to worry working through CAD data complexities.

Following CAD software platforms can be translated (cross-translated from any software to other): **Ideas, Catia V4 & 5 series, Unigraphics, Pro/E, Solidworks, Autodesk MCAD product suites and any other CAD product.**





**For Engineering Services
support in the following industry:**

- . Automotive**
- . Aerospace & Aviation**
- . Material Handling**
- . Machine Tools**
- . Process Automation**
- . White Goods**

**Inspired Engineering
*matters!***

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