

# Bishop GmbH



composites  
CRC



# Bishop GmbH

Presented by: Peter Bishop BSc(Eng) Hons, FRAeS, CEng, CPL/IFR (FAA)



Certified



Corporate Member



Engineering Working Group Member



Member



Member



Corporate Member

## Bishop GmbH – Aeronautical Engineers

- **Resource Strength**
  - ✓ Highly diverse mix of international experts
  - ✓ Experienced in air and ground vehicles, wind turbine design and Oil & Gas disciplines
- Global Supplier & Partner Network of Companies in Europe, North America and Asia Pacific region
- Turnover 2009 €15.0 M, 2010p €18.3 M
- Employs circa 200 Aeronautical Engineers
- Certified EN 9100: 2003, Airbus audited
- Owner of AFCS – Aircraft Fuel Cell Systems GmbH
- Bishop Aeronautics Inc., Alabama USA



### Global Presence

**Germany** – Hamburg, Bremen, Cologne

**France** – Toulouse

**UK** - Filton

**Spain** – Madrid

**USA** – Alabam

**Hongkong**

## BISHOP GmbH - Services

### Bishop GmbH

#### Aerospace & Aviation



#### Automotive



#### Wind Energy



#### Oil & Gas



## ***Bishop GmbH – Aeronautical Engineers***

### **AUTOMOTIVE**



- We provide comprehensive services in the whole development spectrum.
- Projects range from concept design support till manufacturing We can support our customer to manufacture their parts with the help of our partners.
- We can assume project responsibility from the pre-programme phase until the product is ready for series production and beyond.
- Specialists in the individual areas work together in a closely woven and inter-departmental network, thus guaranteeing an effective development process.

## *The Business models.....always adapting to a new, and changing world*

### Where we can support

#### Design support

- Concept Design Support
- Mechanisms Design
- Kinematics
- Parametric modeling
- Legacy data conversion
- Reverse Engineering
- 2D to 3D conversions
- Creation of production drawings with GD&T

#### FEA

- Durability and structural analysis
- Load calculations like wind load, aerodynamic loads
- Multi Body Dynamics
- Static and quasi static analysis
- Resonance analysis
- Linear System Analysis
- Non Linear Transient Behaviour analysis
- NVH Studies
- Optimizations
- Technical documentation

#### CFD

- Entire vehicles aerodynamic characteristics and optimization
- Air-conditioning systems flow analysis
- Engine flow analysis
- Cabin air current and temperature analysis
- External airflow analysis

#### Factory Automation

- Design support for assembly lines
- Fully automatic
- Manual
- Hybrid
- Design support for gripper and fixtures design
- Ergonomic studies

## Bishop GmbH – CAE / CAD Tool & General Experiences

Tool Experience	CAD	CATIA V4
		CATIA V5
	FEA	ABAQUS CAE
		ABAQUS Standard
		ABAQUS Explicit
		ANSYS Pre / Post
		ANSYS Structural
		LS-DYNA
		MENTAT
		MARC
		NASTRAN
		PATRAN
	Simulation Tools	V5 Robotics
		Robcad
		Delmia I Grip

Operating systems	Windows
	UNIX
	LINUX
Programming Experience	ABAQUS scripting (Phyton)
	ANSYS scripting (APDL)
	C
	Fortran
	ISSY / ISAMI scripting
	MARC / MENTAT scripting (Phyton)
	Matlab scripting
	NASTRAN / PATRAN scripting (PCL)
	Shell scripting
	VBA
MS Office Tools	MS Word, MS Powerpoint
	MS Excel

## *Bishop GmbH – CAE / CAD Tool & General Experiences*

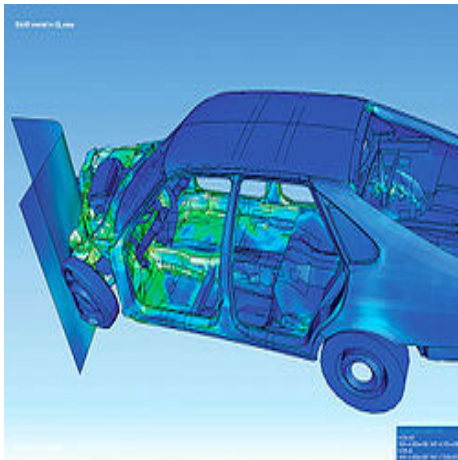
Test	Specification
	Life Data Sheet development
	Supervision
	Test data evaluation
	Validation of FEA models
Language skills	Chinese
	English
	French
	German
	Italian
	Russian
	Spanish
PM	Group / Project coordination
	Technical coordination

## Body and Chassis Systems

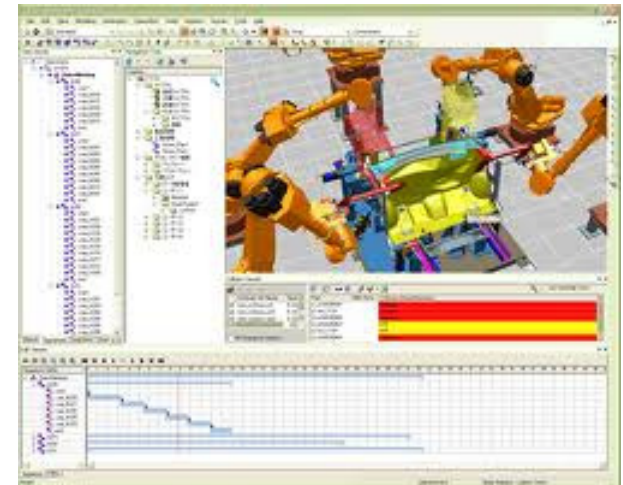
### Different systems and sub systems where we can support

1. **BIW:**
  - a. Design support for automatic, manual and hybrid assembly lines,
  - b. Catia V5 and Robcad Simulation
2. **Sheet Metal Design:**

Design support for different components like roof frame, rear panel, rear floor assembly, fenders, interior B&C columns, front module etc.
3. **Different FE Analysis: Impact, Crash analysis, damage and fatigue analysis**



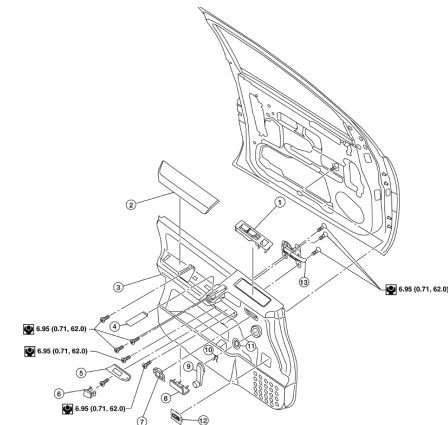
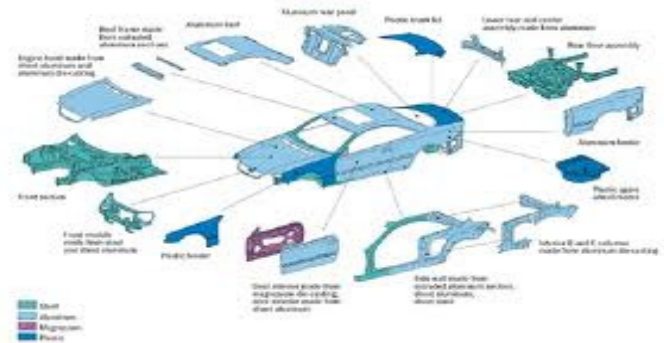
**Software Expertise**  
Delmia D5 (IGRIP)  
Delmia V5  
eM-Workplace (Robcad)





## Body and Chassis Systems

- Detail design of components – Modeling and Drafting
- Assembly designs including
  - Door Panels
  - A,B and C pillars
  - Engine Compartment
  - Passenger Cabin
  - Panels
- Component Sub assembly and CAE analysis at BIW level
- Cost and weight analysis and optimization
- Manufacturing feasibility study with stamping and welding simulative



## 2. Automotive Power Train Systems

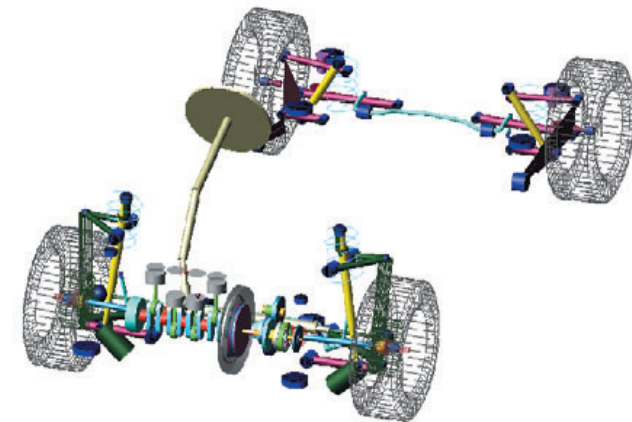
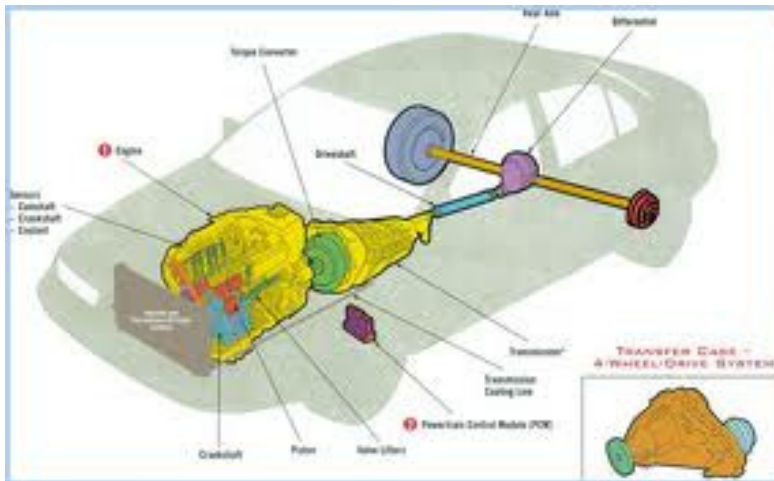
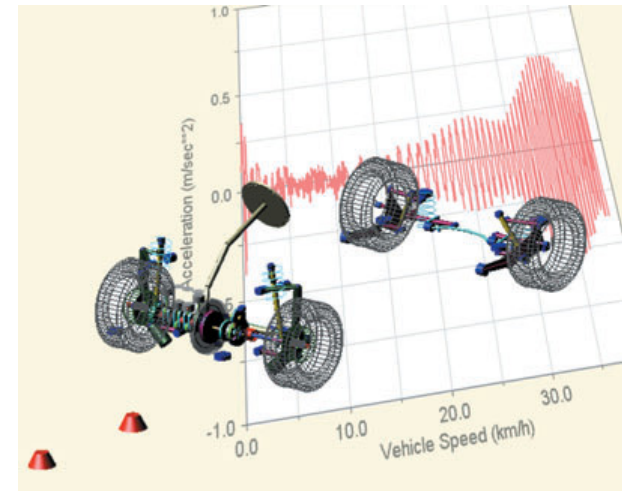
### Engine and transmission detailed design

**Engine simulation and validation:** core engine sealing and thermo-mechanical reliability, coolant and underhood fluid flow, combustion, multi-body simulation, structural dynamics, system dynamic response, exterior acoustic, noise and vibration

### Casting and forging

### Powertrain machining

### Powertrain assembly planning



Analysis of velocity universal Joint

### 3. Automotive interiors and exteriors

Trim Design

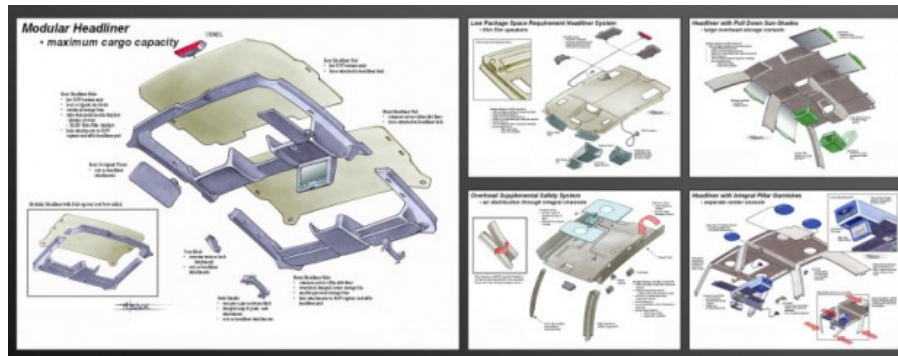
Multi-CAD support

Ergonomic study

Packaging

Simulation and validation: realistic simulation, climate control, acoustic, interior component and sub-assembly level strength and durability, occupant safety simulation

Plastic Part Mould Design



## 4. Seating Systems

Product Development and Design,

Embedded Systems and PLM solutions.

Product Design services include  
Concept Design,  
Detailed design,  
Analysis and Optimization,  
Digital Prototyping,  
Testing and Engineering Project Management.

Offerings include Consulting,  
Implementation and Value-added services.



**We have also a team of engineers researching aircraft seat rails, and we have specialisations in dynamic crash modelling, simulation etc**

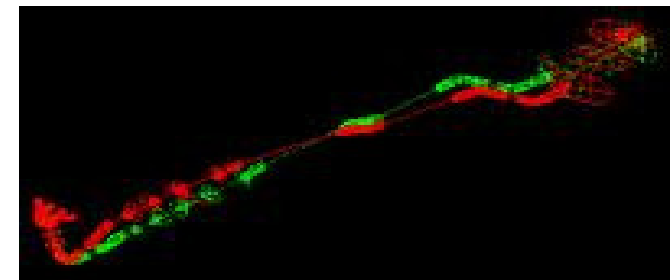
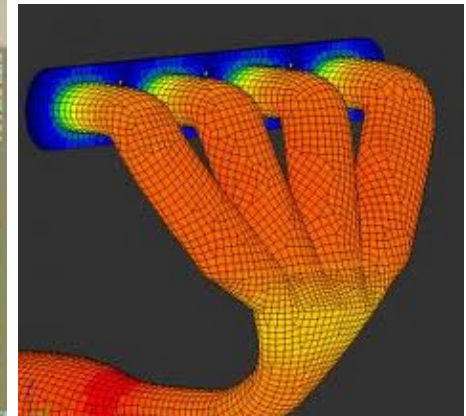
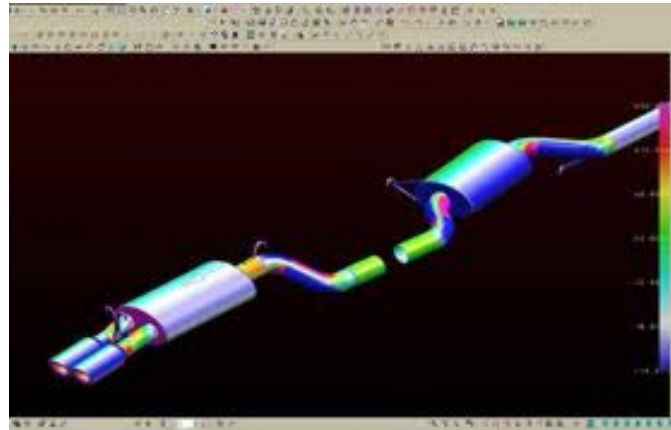
**The team of the Bishop GmbH inspired the jury of the Crystal Cabin Award in the category F&E with the 1cm seat track. Mr. Christian Körfgen (Vice President Product management F& E & Innovation) of Lufthansa AG handed over the award**



## 5. Automotive Exhaust Systems

### Different Type of Finite Element Analysis

- Vibration Analysis
- Static Analysis
- Dynamic Analysis
- Temperature Analysis
- Non linear Analysis
- Hand calculations





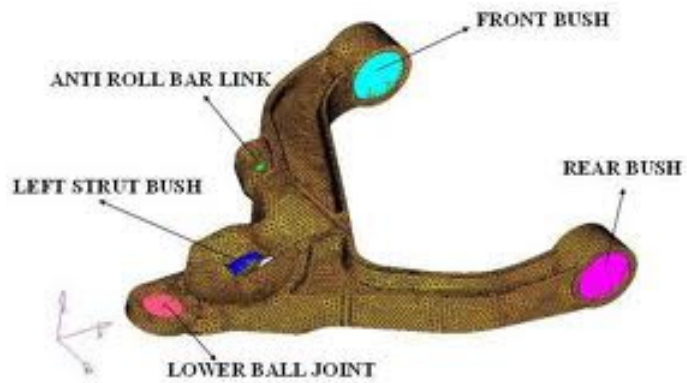
## 6. Automotive Suspension systems

NVH Analysis

Fatigue analysis

Durability analysis

Non linear calculations



# Certificates & Approvals



## Awards for innovation



### Crystal Cabin Award 2010

*The team of the Bishop GmbH inspired the jury of the Crystal Cabin Award in the category F&E with the 1cm seat track. Mr. Christian Körfggen (Vice President Product management F& E & Innovation) of Lufthansa AG handed over the award*



### TOP 100 Award 2010

*The Top 100 accolade goes to the most innovative firms in the country. Bishop GmbH – Aeronautical Engineers is one of this year's prize-winners.*



## R&T initiative from Bishop

### Northern Aeronautical Think-tank [NATT]

#### Green Freighter Spitzencluster

**NATT** (Completion 2012)

- Northern Aeronautical Think-tank
- Faculty Club
- Company HQ
- Business Club
- Conference/meeting facilities
- Training facilities
- Restaurant
- Open air events



## Alabama Office



### Excellence for the US Aviation

- Aeronautical Engineering
- Composites, Fuels Cell Technologies
- Stress & System Design



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## Cologne Office

### Addressing Europe's Future Aviation Challenges

- Institutional & Governmental Consultancy
- Support to Aviation Safety, Air Navigation and Aerospace
- High Quality Knowledge in European Regulation and Certification
- Provision of Temporary Workers



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*Bishop with Capt. Ian Whittle pictured at Airbus*



## *Additional information*



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