Adison Hydraulics India

Industrial Machines| Hydro-Test Rigs

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Innovation by Instinct

Company Profile

Design and Manufacture

- Hydro-Test Rigs
- Hydraulic Test Rigs
- Test Rig for Special Applications
- Special Purpose Equipment
- Manufacturing Automations

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About Adison

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Adison is a **Center of Innovation** which provides **Simple Solutions** for Complex problems. Leading **Flow Engineering** company in Design and Manufacture of Industrial Equipments and Hydro Test Rigs to serve domestic and global market. An unrivalled commitment to Quality, Performance, KIZEN and Innovation in close cooperation with our clients mainly for Industrial Pumps, Valves and Accessories, (**Oil & Gas, HPI, Power, Minerals and other Process industries**), Fluid Power Industry (Hydraulics & Pneumatics), Defense, Medical, ExCON and Automotive and Energy Industries.

Our Services and Products are

1. Next-gen Product development and Engineering services
2. Manufacturing of Hydro Test Rigs, Test Infrastructures and Industrial equipments
3. Design and Installation of Manufacturing line Automation and SPM's.
4. Component development, Contract manufacturing & Production support

We bring value to our customer. .

- Keeping our customer ahead in technology
- Make them cost competitive optimizing the product and process
- Time to Market; to be ahead of competitor
- Resolving Product Challenges / Field failures
- Reduce Engineering & Product Development Cost

Our Core Values :

People: Committed to People, Committed to the Future

Client Value: Creating value being responsive, relevant and consistent

Integrity: Inspiring trust being transparent and honest, matching our behavior to our words and actions.

Excellence: Creativity, Innovation & Lateral thinking challenging status-quo

Our 3C's

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Adison is Leading brand as manufacturers of Hydraulic Test Rigs, Equipments. Our Testing equipments can be employed in a variety of hydraulic components for various applications such as such as **Aerospace, Defense, Automotive, Construction and Mining Equipment and other Industrial applications**.

Adison brand test stands are designed in close collaboration with customer to ensure 24x7 safety, optimal performance, durability, flexibility, user friendly with ergonomic expectations. These Test equipments can be used for both R&D laboratory & Production line Testing.

We provide all the standard features along with oil cleanliness monitoring, proportional control & PC-based data acquisition system. We customize the test stands to attend your production or performance lab requirements. The test stands can be fully or Partially automated using PLC and SCADA controls.

Our 3C's, Competency, Capability and Capacity

Our Competency

- Simple solution to complex problems
- Domain Knowledge
- Out Of Box thinking
- High aptitude to learn
- Enhanced Research Skills
- In-depth knowledge of Product, Process and application

Our Capability…

- Performance tests
- Dynamic / Burst test
- Flow Characteristics
- Fluid Media: Oil, Water & Gas
- Automated with PLC & SCADA
- Remote Control and lab View
- Safety Interlock for 24x7 testing

Our Capacity….

- Capable to build up to 2000 MT machine
- Design and Manufacture Equipments
- Up to 100 HP Electrical Power
- Flow Up to 800 lpm
- Pressure Up to 2500 bar
- Temperature from up to 160°C
- Cryogenic systems (Testing at site)

Verticals under **Adison Hydraulics India**

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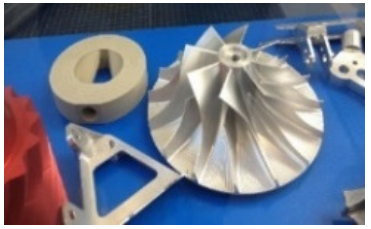
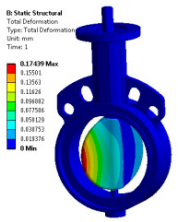
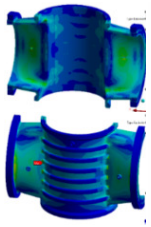
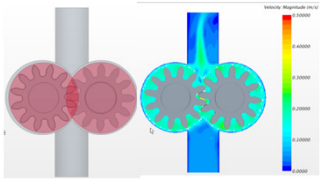
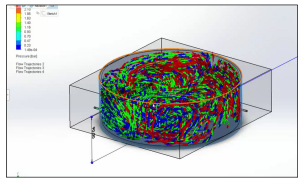
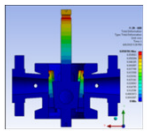
Flow Engineering Inc.

1. Concept Research, Design and Validation
2. Product Design and Detailing
3. Proto development and Testing
4. Product Re-Engineering and Reverse Engineering
5. Product **localization and Technology Transfer**
6. Electronic integration, PLC, SCADA development & **IoT**
7. **CAD :** 3D Modeling and Detailing, Legacy digitization
8. Virtual Analysis : CAE/ CFD/FSI
9. Bio Technology Engineering products



Hydro-Test Rigs and Equipments

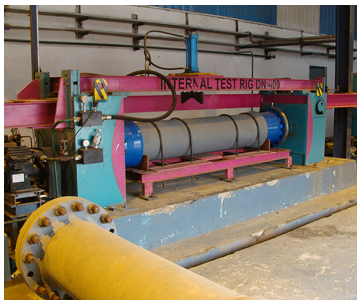
1. Hydro-Test Rigs for Industrial Pumps and Valves.
2. Hydraulic Test rigs for Pumps, Valves and Accessories.
3. Hydro-Test Rig for Gas cylinders, DI Pipes & other products
4. Assembly line automation and EOL tester
5. Customized Testing Equipments











Served Industries

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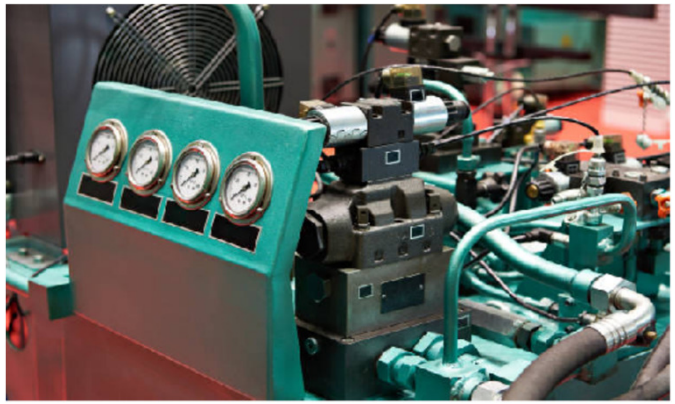
Having expertise and command on **Flow Engineering domains** like Industrial Pumps and Valves, Hydraulics, Pneumatics, Hydro-Pneumatics; Servo-Hydraulics, Electro-hydraulics, Electro-Pneumatic, Electronic Integration; PLC, SCADA and IoT, We serve the following industries to the extent of product life cycles from concept to proto validation.

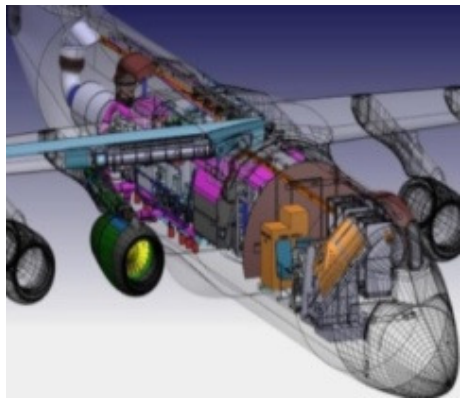
Pumps, Valves, Actuators and Automations



Fluid Power Industries
(Hydraulics, Pneumatics & Servo-hydraulics)

Renewable Energy and Gases

EXCON Equipment Accessories
(Hydraulics and Automations)



Aerospace, Marine and Defence
(Hydraulics, Pneumatics & Servo-hydraulics)

Automotive Hydraulics
(Flow Engineering)

Our Clientele

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Capability, Competency And Infrastructure

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Domain Expertise in

- Design, Development, VAVE / Reverse Engineering of
  - Industrial Valves Pumps & Actuators
  - Hydraulic Products, systems, equipments
  - Hydro-pneumatic systems & equipments
  - Electronic integration, **PLC and SCADA** development
- Design and Manufacturing of
  - Assembly and Testing line Automation
  - Manufacturing Tools, Moulds & BIW fixtures
  - Hydraulic Machines, Systems and SPM's
  - Hydro-Test rigs and Hydraulic Test equipments

Infrastructure and Echo-system

- Two Design Centres in Bangalore and Belgaum with advance legal licences of CAD CAE & CFD
- Well equipped Tool room with conventional machines , manual expertise and Test infrastructure
- CNC Turning Centre, VMC (Machining Centre) and other advance machineries
- Local to global supply chain with project partnerships
- Access to accredited Labs & Institution.
- 13000 Sq. ft land is acquired and Proposed to establish advanced SOA Manufacturing facility

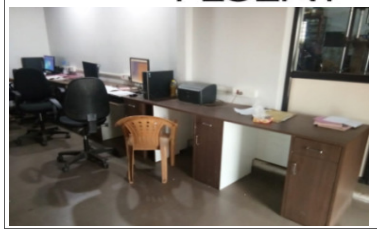
Team strength

- Strong in Engineering Basics & standards
- Well versed and flexible with CAD, CAE & CFD Tools
- Team of Young, Dynamic and multi-skilled Engineers guided by expert consultants
- Innovative, Creative and Out of box ideas
- Disciplined, Quick learner and adaptable to environment & Processes
- Hands on experience in Manufacturing processes
- Knowledge of Product Development process

Infrastructure Images

SolidWorks
AUTODESK
ANSYS FLUENT





Udaykumar Painter Business Head

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Mechanical Engineer with 25+ years of experience in Hydraulic & Process related industries
Proven Global leader who has established and lead the Engineering, Design and Technology Centres
Developed 100+ products, 25+ Systems, Equipments , SPM's & Automations with innovative concepts.
Registered two global **Innovation patents** for new concept**.**
Can do attitude, Lean thinking, Acute problem solving and providing simple solutions to complex problems.

Has proven experience in Product development Life Cycle

CAREER ASSOCIATION

Has hands on experience in Design, Development & Testing of Industrial Valves for Minerals, Oil & Gas, Power and other process industries

- Butterfly Valve, Ball Valve, Pinch Valve, Plug Valves
- Gate, Globe & Check Valve, Auto Changeover Valve
- Safety Relief Valve, Pressure control & Pressure reducing Valves,
- Aero-flow control Valve, Super-saturation Valves
- Pneumatic and Hydraulic Actuators (Linier & Quarter-Turn) with fail Safe features,

- Design & manufacturing of various test station using Hydraulic, Pneumatic & Embedded concepts
- Design & Development of Hydraulic Cylinders, Jacks, Power-packs, Systems & test stations.
- Hydraulic Test Rigs, Tooled up Special Purpose M/c's & Manufacturing automations
- Good knowledge of Engineering standards, ANSI, ASME, API, EN and ISO standards
- Track record of successful completion of multi-million dollar global engineering projects

SULZER

tyco

WEIR

pricol

polyhydron

Career Associations

Sulzer Pumps – Vice President, Global Technology Center

Tyco Valves & Controls (EMERSON) – Head Engineering

Pricol Technologies (CAPAGEMINI) – Vertical Head (Flow Engineering)

Weir India (UK based MNC) – Head – Valve Design Center

Polyhydron Pvt. Ltd - JV with Oil Gear USA – Manager R&D

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Adison's Hydro-Test Rigs

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We Design & manufacture of Hydrostatic Test Benches, as per quality standards conforming to

1. API-598, ANSI-B16.34, ANSI/ FCI 70-2- 2006 and AWWA.
2. Valve testing systems which covers Flanged End, Socket Weld, Butt Welded & Screwed End Valves etc.
3. We also manufacture Fire Safe Test Stand as per API 607 & API 6 FA standards.
4. We have been associated with leading Valve manufacturing companies across India and Globe.

We are specialized in

- Hydrostatic Vertical Test Rigs
- Hydrostatic Horizontal Test Rigs
- Hydrostatic Multi-station Test Stand
- Safety Relief Valve Test Rigs
- Hydrostatic Custom Built Test Rigs
- Universal Test stands for multiple products
- Hydraulic Power Units

Features:

- Proportional Clamping
- Laser based Bubble Counter
- Safety Interlock to avoid de-clamping under test pressure
- Hydraulic Actuator to aid in valve positioning
- Stainless steel water tank
- Modular assembly , Simple and intuitive controls

Optional Features:

- Safety doors with polycarbonate core laminated glass for protection
- Access Platform for actuating the test valves
- High pressure gas testing
- Flow meter to quantify seat leakage
- Data Acquisition and Retrieval using LabView
- Custom Test Certificate printing

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Hydraulic Test Rigs

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We Design and manufacture Hydraulic Test Rigs to serve **Fluid Power, EXCON, Aerospace and Defense** hydraulic components and accessories. Our high precision test rigs are PLC controlled, SCADA / Lab view based, which makes it more advance and accurate. An unrivalled commitment to quality and performance, continuous development and innovating in close cooperation with our clients, have brought us as India's leading manufacturer of high pressure test equipment in Hydraulic

Types Of Test Benches

Product Performance Test Benches	Impulse Test Benches	Leak and Flushing Test Benches
Endurance and Cyclic test Benches	Burst Test benches	End Of Line Test Benches

Products

Hydraulic Pumps & Motors up to 3000 rpm

- Rotary pumps and motors (Gear / Vane)
- Piston pumps and motors
- Ge-rotor Pumps & Motors

Hydraulic Valves & Controls

- Conventional Valves (Pressure, Flow & Direction)
- Solenoid Control Valves
- Proportional and Servo valves
- Cartridge Technology valves
- Transmission control valves
- Loader, Priority & Auxiliary valves

Hydraulic Hoses & Tube Fittings

Accumulators and Cylinders

Hydraulic integrated Systems

Salient Features

- Pressures to 1200 bar ±0.3% accuracy
- Flow : Up to 600 lpm ±0.3% accuracy
- Oil Temperature from -50°C to 135°C
- 24x7 safety interlocks
- Proportional and Servo Controls
- Over-running simulation on Screen
- Partitioned reservoir
- Dedicated fluid conditioning
- Multi fluid test rigs
- PLC Control with SCADA/Lab view
- User Friendly configuration
- On Screen diagnostic feasibility

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Test Stands For Aeronautics and Aerospace Hydraulics

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We are experienced professionals in the design of test benches for fluidic systems and components with aeronautical sector and Ground Support Equipments. Our customers include manufacturers (OEMs) of aircraft, helicopters, UAVs and aerospace equipment, as well as manufacturers of fluid, mechanical or aircraft fuel components. For a wide variety of systems and components, our core business includes:

- R&D test benches
- Test benches for qualification
- Test benches for ATP
- Test benches for MRO
- Test benches for GSE

The products we supply to manufacturers of **hydraulic components with aeronautical applications** include:

- Test benches for hydraulic and electro-hydraulic **actuators**
- **Impulse test** benches with or without thermostatic chambers (between -65°C and +250°C)
- **Burst test benches** with or without thermostatic chambers
- Universal test benches for components such as valves and actuators
- Test benches for landing gear actuation system

Test Stands designed to operate with fluids such:

- Hydraulics Oil, MIL-H-05606, MIL-L-7808, MIL- 7024, SKYDROL,
- Water, Water-Glycol, JP1, JP8,
- Nitrogen and Diathermic Oil.

Test Stands For Defense Hydraulics

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Test rigs can be used for product testing in relation to durability and fatigue testing, this will require a rigorous selection of products to drive the machine to ensure that the rig will stand up to the longevity of the test process. In addition, test rigs we have supplied in the past are used to perform predictive modeling techniques.

Adison design engineers have the experience and knowledge and work closely to ensure that your needs and requirements are met. We can provide you with a complete PLC controlled unit, recording and data logging all parameters that you set, via HMI for easy downloading allowing records to be provided as often as required.

We have Competency, capability and Capacity to design and manufacture following Test rigs for Defense sector:

- Military hydraulic aircraft test rigs
- Civilian aircraft test rigs, hydraulic and pneumatic
- Industrial directional control valve test stands
- Helicopter fuel tank simulator test stands
- Helicopter gearbox pressure intensification test stands
- Oil cleanliness and filtration test stands
- Turbo-charger oil test stands
- Accumulator test stands
- Cartridge valve setting and test stands
- Cooler test rigs
- Flow and purge rigs
- Helicopter hydraulic actuator test rigs
- Off road machinery hydraulic valve pressure, flow and hysteresis testing

Flushing Equipments for Oil & Gas Industries

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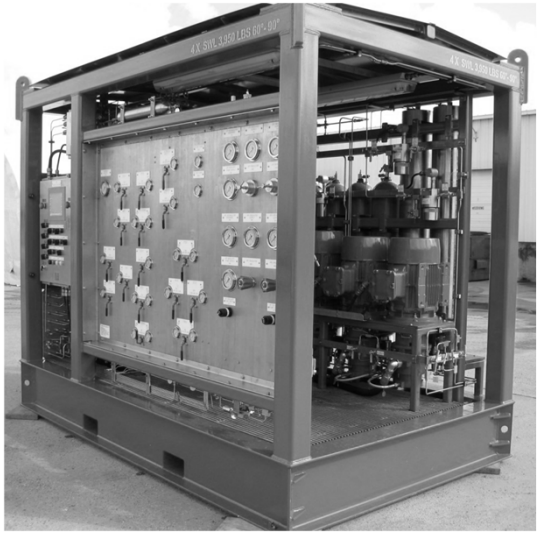
We are one of the leading manufacturers of **Oil Flushing Systems.** Our flushing rig range to flush, filtrate and clean contaminants that can build up in your hydraulic systems. Our Flushing Rigs are highly engineered to cover both onshore, offshore & marine applications.



Our sophisticated systems are at par with global quality standards and parameters. These filtering systems can be configured in many ways to meet the requirements of customer specifications.

Unique Features

- Capable of flushing small components through to large Flow lines & Umbilical's.
- Pressures up to 10,000psi (690Bar).
- Manual or PLC controlled.
- Cleanliness specifications to NAS 1638 class 6 or better.
- Custom designed units to client specifications.
- Robust design with all wetted parts in stainless steel.
- Offshore (DNV lifting frame) available

Types of Flushing Units

- Oil flushing system
- Hot Oil Flushing system
- Turbulent Oil flushing
- Chemical cleaning

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Other Customized Test Rigs

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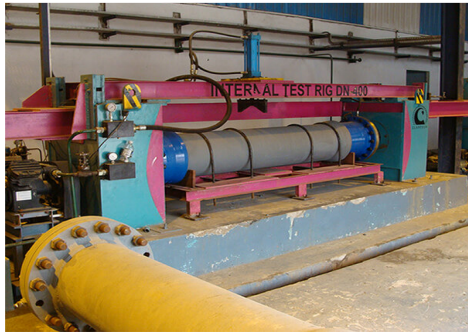
Type test Rig for Ductile Iron Pipe as per IS 5453

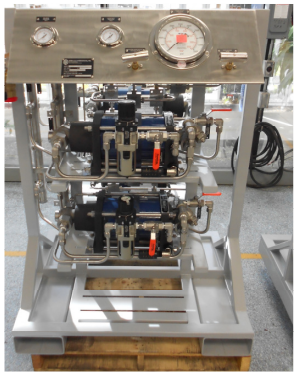
1. Internal Positive pressure test Rig
2. Internal Negative Testing
3. Cyclic test Rig
4. External leakage Testing
5. Diametrical Deflection



Setting up a Testing Lab for CNG, Nitrogen and other Cylinders

(Type 1 to Type 4 Cylinder) (ARAI Requirement) (Under Process)

1. Hydraulic Cyclic test Rig with Safety Enclosure – 1200 bar
2. Burst Test Rig up to 2500 bar



Hydraulic Test Stand for Brake Master Cylinder (HAL requirement)

1. Brake cylinder Calibration (Load v/s deflection)
2. Brake Cylinder internal leakage
3. Pressure Holding

Manufacturing Automation and Special Purpose Machine's

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Adison Flow Engineering offers all types of manufacturing automation integrating **Mechanical, Hydraulic, Pneumatic, Electronic, Proportional and servo technologies** to drive greater through-put and reduce costs to the great advantage of manufacturers who are looking to increase their efficiency.

SPM's Designed and Manufactured:

1. **Single Pass Vertical Honing Machine – CNC** :

   Its CNC controlled machine, which eliminates the person intervention in the process to maintain the size accuracies up to 0.0005 mm and surface finish up to 0.012RA

2. **Fused Sand flushing Machine (Semi Automatic and Tooled up machine):**

   Its tooled up flushing machine, which flushes out the fused sand from critical Casting Cores of Valve and Pump bodies used in Hydraulics Industry. High velocity jet is used to flush out the fused sand from the bodies. Designed and manufactured with great safety and time control

Manufacturing Automations

Manufacturers are increasingly using automation to drive precision, consistency and greater operational efficiency. Automation is Easy and quick to integrate sensors and devices that monitor equipment and produce user-friendly data, graphics, etc. will help connect production lines and serve other benefits:

- Reduce downtime
- Provide predictable maintenance
- Improve decision making

Assembly line Automation with EOL tester

Flow Engineering Inc.

Innovation| Inspiration | Technology

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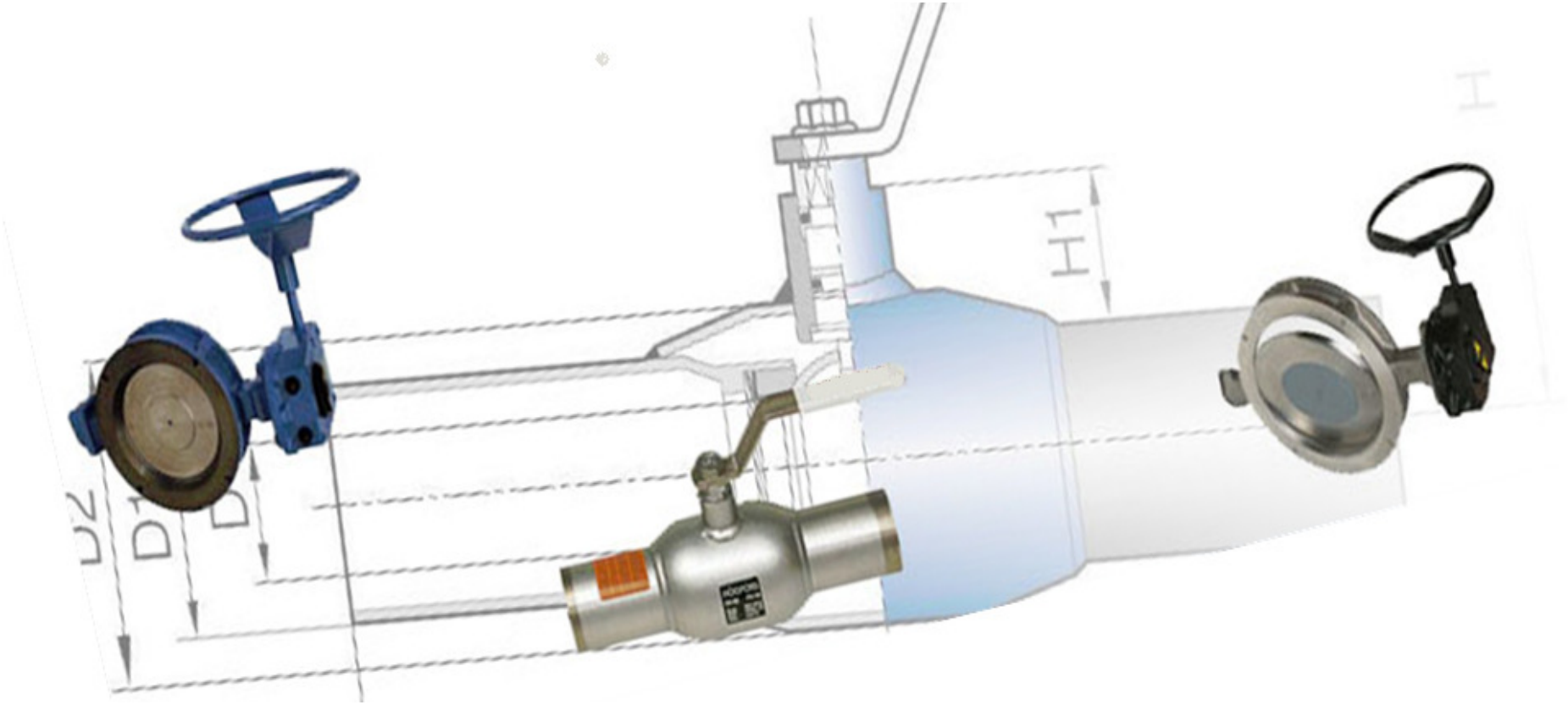

Innovation and Product Development

- Research and Development Services
- Product Indigenization and Technology Transfer
- Re-Engineering (VAVE) and Reverse Engineering
- Virtual and Physical Prototyping and Testing

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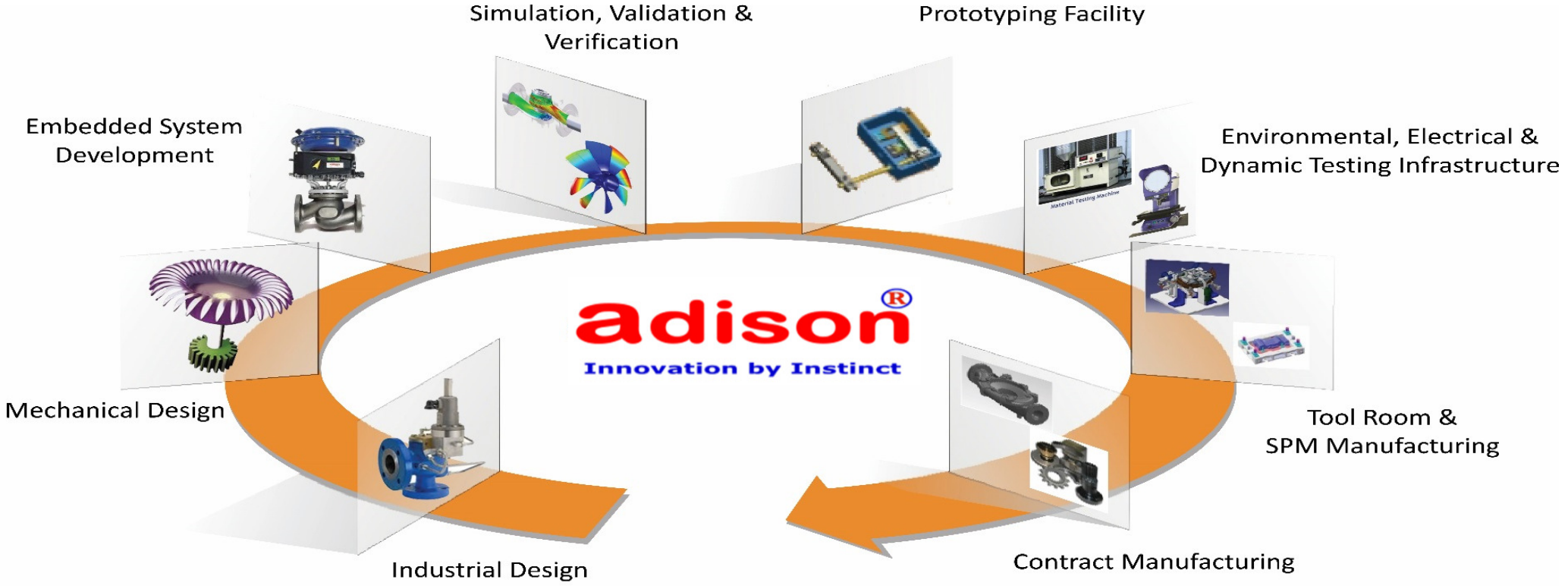
Product Development Services

We provide End-to-End product development solution from Design to prototyping & contract manufacturing. Adison has built a echo-system such that, the customer can rely upon to get hassle-free Product development and VAVE



One stop for End-to-End Product Development solution

Competitive in Market → Flexible for Application → Easy to Manufacture → Optimized Design → Better Value Addition

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What We do

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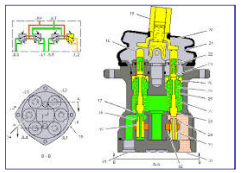
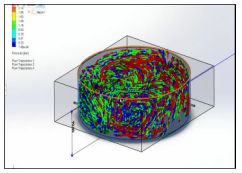
We provide the confidence to our clients with our innovative solution to various challenges providing various design and development services. We have complete infrastructure and expertise which can provide value differentiators.

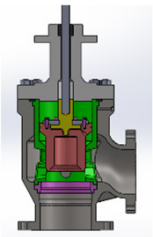
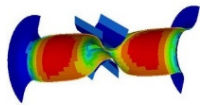
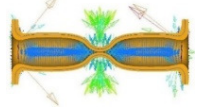
Concept Research & Development



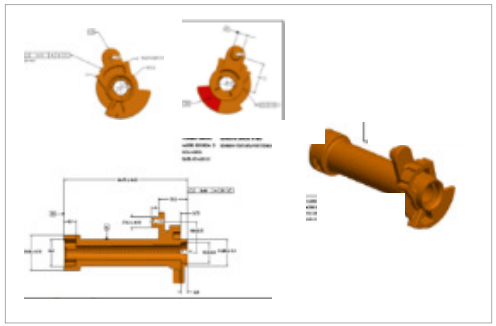
- Radical Innovation
- Incremental Innovation
- Idea Transformation
- Concept Design and Validation
- Concept to Product design
- Patent Research & filing
- Concept commercialization
- Concept certification

Design & Development

- Concept Design & Development
  - New concept / available concepts
  - Mix & match of different concepts
  - Multiple Series or Variants
- Virtual validation (CAE, CFD, FSA)
- Virtual v/s Physical Co-relation
- Design Evaluation & validation
- Localization or Technology Transfer

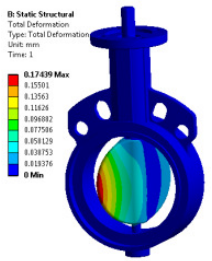
Product Engineering



- 3D Modelling and Detailing
- Product Architecture
- Design and Verification
- Proto Development
- Testing and Validation
- Manufacturing Drawing
- Geometrical Dimension & Tolerance
- Manufacturing Process drawing

Re-Engineering / VAVE





- **Reverse Engineering** to provide
  - Design Verification
  - Product Specification
  - Material Analysis & alternatives
- **Cost Reduction** through
  - Design & Process optimization
  - Weight optimization
  - Alternate Material
- Embedded Integration

Business Models:

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We partner with our customers through various business models according to their convenience. Our USBs are

- Dedicated, Quick-around facility to speed up your time to market
- Innovative Options to save tooling cost
- Skilled People – Scientific approach – Rapid delivery
- Focus on Form, Fit and Function
- Lean paperwork for quick dispatch.

100% Security to your Designs & Ideas

Single-piece MOQ Model

- If an Idea flashes, we make it into a design;
- If there is a design, we make it into a product
- It is a piece of thought, Not everyone can do it.
- Skilled, creative, motivated and smart are chosen

Resource Engagement Model

- The team will exclusively working for a client as an extension of the client engineering team
- Flex team supports the customer for additional workload as and when required

Project Based Model

- This model is suitable where the project scope is well-defined and unchanging with reasonable stand-alone.
- Resources are flexible and limited to the project schedule

Offshore Development Center

- Dedicated setup viz. Computers and resources being managed by Customer directly / Indirectly
- The core team is exclusively working for a client as an extension of the client engineering team

We use creativity over investing in the permanent tools. Budget be spent to try more design.

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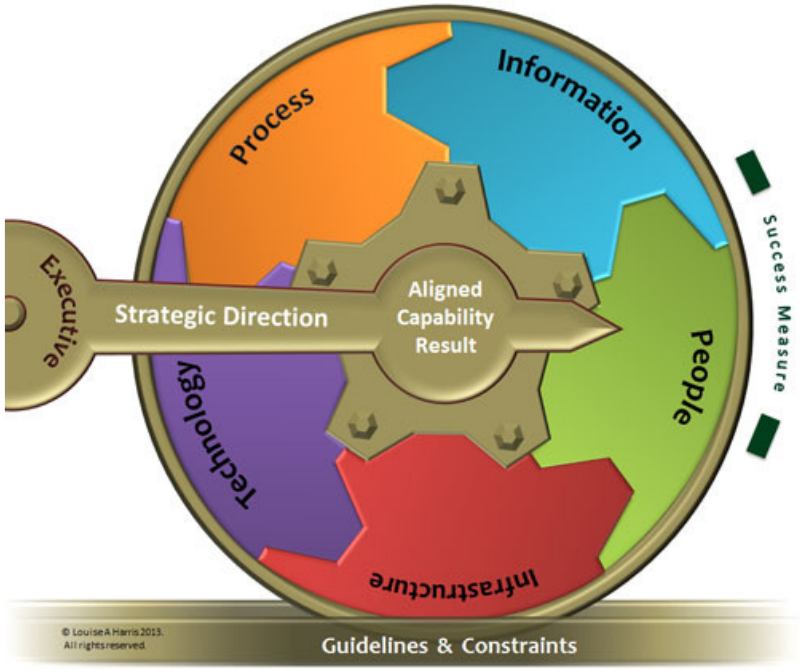

Some Relative Case Studies

Design and Prototype Manufacturing Of Angle Valve

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Product design from Concept

- Skeleton Design from concept
- Preparation Of **Design Calculation sheet**
- Validate Design calculation sheet using CAE, CFD
- Trim Design / Flow path / Shell design
- Mechanical structure Design
- Seal selection / Material selection
- Actuator and Accessories Design
- Design freeze and 2D drawing
- BOM preparation from 3D Cad drawing

Prototyping and Testing

- Pattern and Mould Design
- Casting Development
- Component manufacturing
- Valve Assembly
- Hydraulic Actuator Manufacturing
- Actuator Assembly
- Valve Testing

Indian DI Pipe manufacturing Company

Instructions: add inputs from Customer Select. For designing the valve standards, selec
and actuator sizes available to ensure safety factors are acceptable.

Valve Size	Dvalve	10	inches
Valve Ansi Class	ANSI	1500	-
Body Material	Matl	WCB	-
Actuator Piston Area	Ap_act	133	square inch
Actuator Design Pressure	Pd_act	100	psi
Actuator Design Thrust	Td_act	13300	pounds

Outputs - Safety Factors from BCV Design Standard

DS Pressure Seal Bonnet

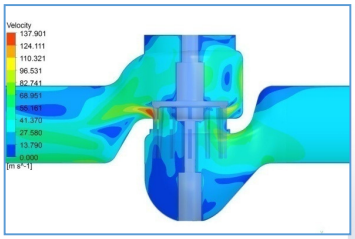
Safety Factor of gasket at MAWP	SFgkt_MAWP	1.8
Safety Factor segment ring (ambient)	SF_sr	1.8
Safety Factor Segment Ring compressive st	SF_sr_c	1.9

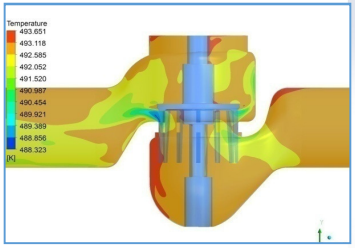
DS Stem Design

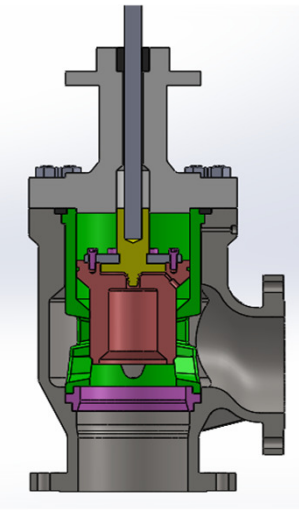
Safety Factor - stem tensile and compressive stress	SFstemtensile	1.0
Safety Factor - thread shear stress	SFstmthread	1.8
Safety Factor - thread tensile stress	SFstmthread	1.0
Safety Factor - buckling stress	SFbuckling	1.3
Safety Factor - flange shear stress	SF_flange_shea	1.0

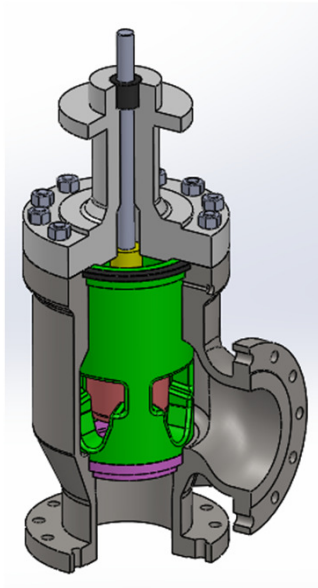
DS Plug Design

Safety Factor - Plate Shear Stress	SF_plate_shear	4.4
Safety Factor - pilot plate compressive stres	SF_pp_comp	7.2









Product Family Design using Design Calculation Sheet

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Objective : Design of complete family of product range from 02” to 12” and selecting suitable actuators

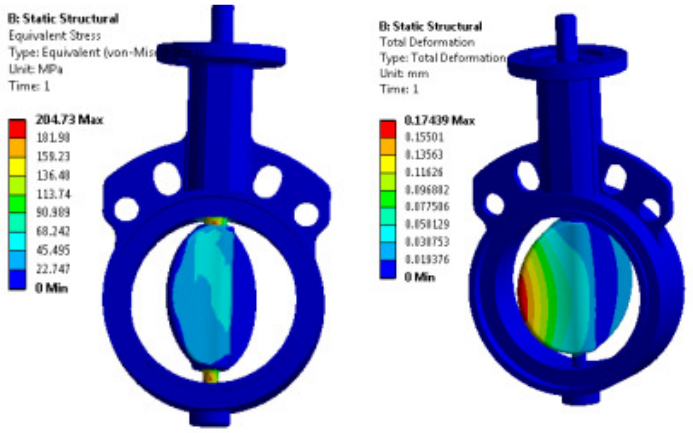
Approach :

- ✓ Design calculations for Cv & pressure related parts
- ✓ Validating the design calculations using FEA Analysis
- ✓ Deriving the data from Design calculation sheet
- ✓ CAD modelling as per design sheet
- ✓ GA drawing with BOM
- ✓ Manufacturing drawing with GD&T

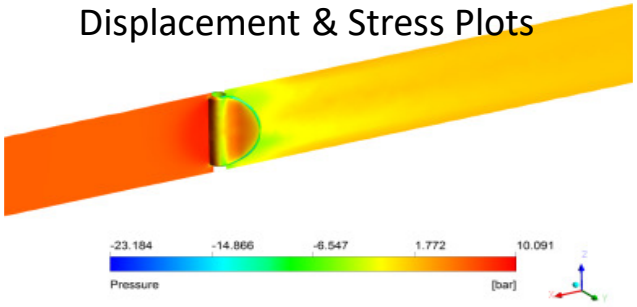
Achievements

- ✓ Design calculations are done as per the standards
- ✓ 02”to 12” valves with Class 150 & 300 are designed
- ✓ CAD automation is done for some simple parts

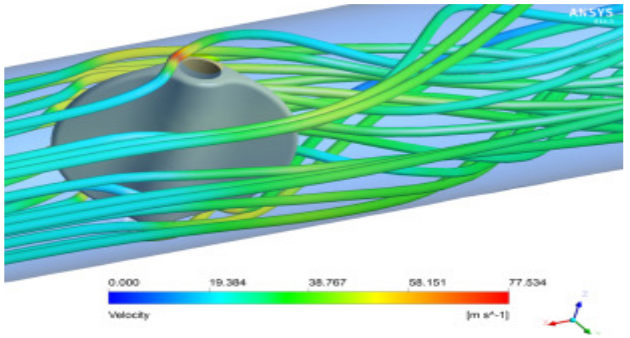
Product: Butterfly Valve



Displacement & Stress Plots



Pressure Plot



Velocity Streamlines

11	Materials Table					
12	Body_Matl	Bonnet_Matl, Segment Ring Matl	Stem_Matl		Segment_ Ring_Matl	Allowable _Stress_ Ambient
13	-					
14	C12A	F91	Inconel 718		A105	20000
15	WC6	F11	Inconel 718		F11	17100
16	WC9	F22	Inconel 718		F22	17100
17	WCB	A105	A476 410		F91	24300
18					Grade410	40241
19						
20	**Material Table Allowable Stress**					
21	Temp index	Mat'l Index	1	2	3	4
22	Material		-20	100	150	200
23	Temp index		1	2	3	4
24	A476 410	3	20	20	20	20
26	A476 410	5	26.2	26.2	26.2	26.2
27	Sa-320 B8	Tensile stress	75	75	73	71

Instructions: add inputs from Circor Select. For designing the valve standards, select valve and ANSI class, and then iterat
actuator sizes available to ensure safety factors are acceptable.

Valve Size	Dvalve	4	inches
Valve Ansi Class	ANSI	2500	-

Body Material	Matl	WCB	-
Actuator Piston Area	Ap_act	133	square inch
Actuator Design Pressure	Pd_act	100	psi
Actuator Design Thrust	Td_act	13300	pounds

Note: fixed at 100 psi maximum.
$T_{d\_act} = P_{d\_act} \times A_{p\_act}$

Outputs - Safety Factors from BCV Design Standard

DS Pressure Seal Bonnet

Safety Factor of gasket at MAWP	SFgkt_MAWP	1.6
Safety Factor segment ring (ambient)	SF_sr	1.1
Safety Factor Segment Ring compressive st	SF_sr_c	1.1

DS Stem Design

Safety Factor - stem tensile and compressive stress	SFstemtensile	1.0
Safety Factor - thread shear stress	SFstmthread	1.8
Safety Factor - thread tensile stress	SFstmthread	1.0
Safety Factor - buckling stress	SFbuckling	1.4
Safety Factor - flange shear stress	SF_flange_shea	1.2

Product Optimization (Value Engineering)

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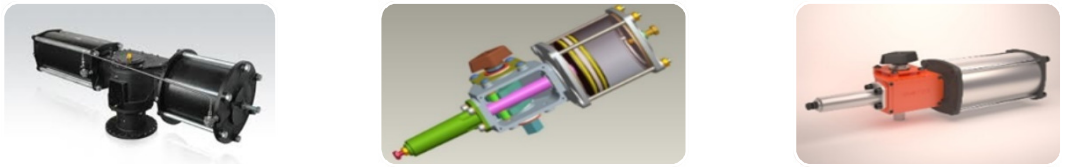
We have executed various projects in different domains and services. We will be intend to share the very specific case study as per your requirement. We will be happy share the relevant case study and our approach to the project

Re-Engineering Of Actuator

Indian Exporter

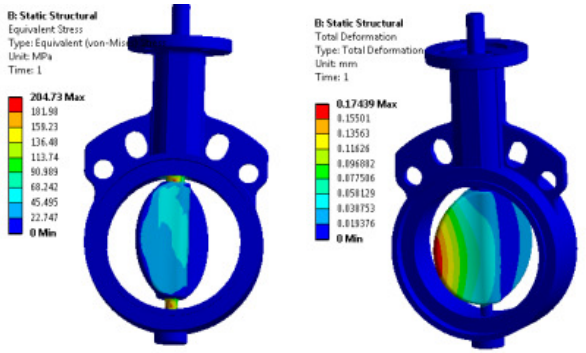
Reverse Engineering → VAVE Engineering → Final Product



Butter-Fly Valve

GMBH Company

- ✓ CAE Analysis
- ✓ Design Validation
- ✓ Design Optimization

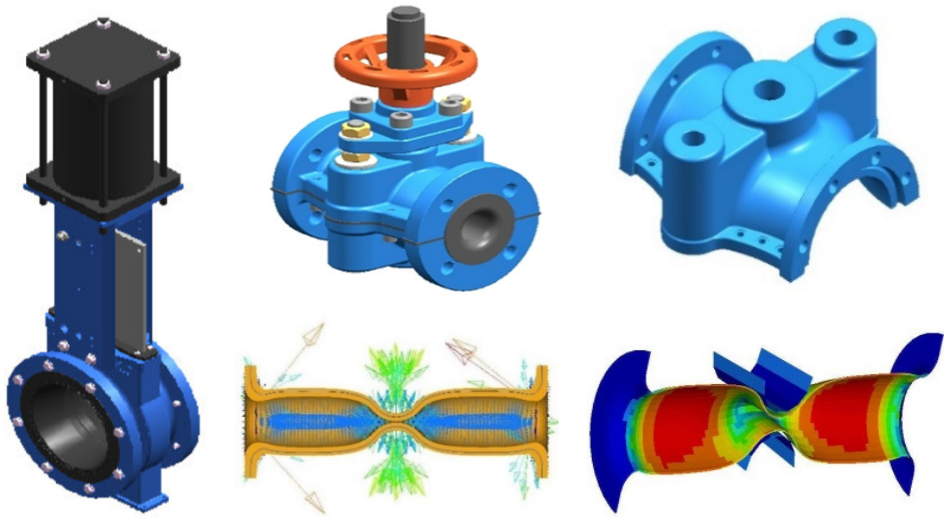


Design, Development and Prototyping

Project Scope:

- ✓ Product Design
- ✓ CAE Analysis
- ✓ CFD Analysis
- ✓ Design Optimization
- ✓ Product Detailing
- ✓ Assembly Drawing
- ✓ Bill Of Material
- ✓ Detail 2D drawing

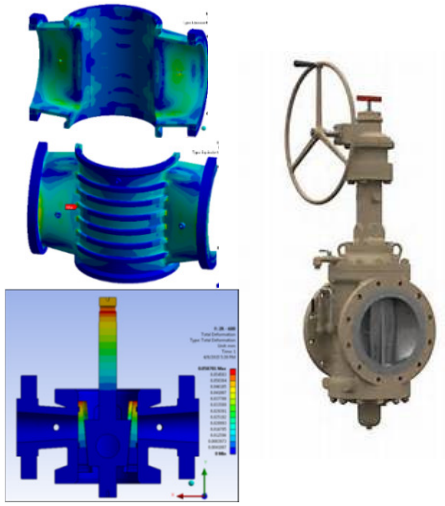
UK Based Valve Manufacturing Company



Knife Gate Valve

Pinch Valve

Indian Valve Company



Plug Valve

Design & Development of Product Family from Sample

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KEY RESPONSIBILITIES

Design and Development of complete range of Actuators from the samples (03 sizes) 006 SA; 025SR; 036 DA

Key Success Factor :

- Final Product Cost for US customer
- Performance at par with sample
- Weight of the product in comparison

Critical To Quality :

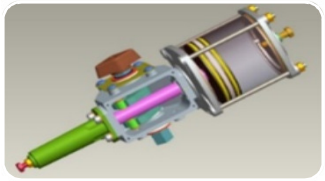
- Force v/s Deflection curve
- Sealing life of Plunger / Sealing elements
- Casting quality and consistency

Phase : 1 Reverse Engineering

- Reverse Engineering of samples
- Design Calculations & design verification
- Material verification of critical parts and seals

Phase : 2 Cost Optimization

- Structural analysis and weight optimization
  - Redesign of Scotch yoke assembly.
  - Redesign of Piston and flanges.
  - Replaced steel barrel with FRP tube
  - Replaced CI Piston head with LM 25 aluminum
- Virtual Validation / CAE analysis
- DFMEA, DFM and DFA
- Fatigue analysis to validate the final design.



Phase : 3 Design Complete Range Of product

- Compete range of actuator design with optimized approach
- Standardization of accessories & bought out items
- Design of pattern and tools

RANGE OF PRODUCTS DESIGNED	Single Acting	Single Acting Spring Return	Double Acting
	006 SA	006 SR	006 DA
	015 SA	015 SR	015 DA
	025 SA	025 SR	025 DA
	036 SA	036 SR	036 DA
	050 SA	050 SR	050 DA
	060 SA	060 SR	060 DA
	072 SA	072 SR	072 DA
	100 SA	100 SR	100 DA

Achievement:

1. 25% cost reduction on existing calculated should cost
2. 33 to 40% weight reduction (Cost of export is reduced)
3. Designed the complete family of products (above table)
4. accessories & fitments are standardized (Inventory)
5. Complete accountability & ownership of product design

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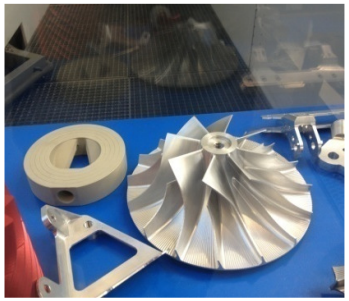
Reverse Engineering and Design Optimization

Objective : Reverse Engineering of Boiler feed pump which is due for replacement in field to wet part wear out

Approach :

1. Scanning of parts using Faro-Arm to achieve cloud points
2. 3D modelling of all the components including impeller and volute liner
3. Design correction to achieve the original efficiency of the pump
4. Development drawing of volute liner and Impeller
5. Detailing of all the components

Japan Based Pump manufacturing Company













Performance validation & optimization by Thermal simulation

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Objectives:

To perform the CFD thermal validation of steam conditioning valve & to optimize the performance by reducing temperature distribution.

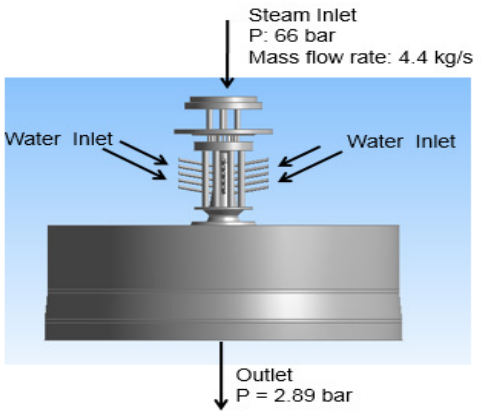
Challenges:

- The attaining the desired flow rate & pressure at the water inlet is considered as the functional purpose.
- The atomisation of water will be achieved only at the operating pressure range, hence the shock waves are considered to be avoided.

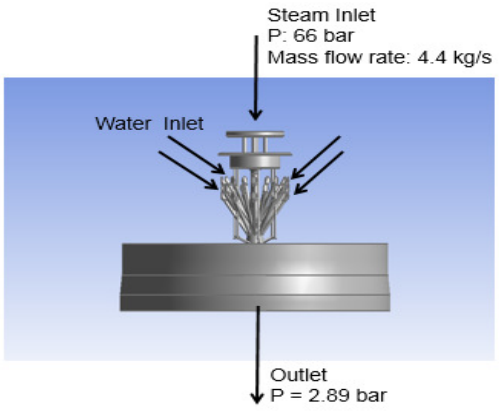
Our Value Addition:

- The optimum pressure range for the steam conditioning valve to operate efficiently is identified and suggested.
- The number of nozzles to achieve the functional purpose is optimized.
- The water injection (inlet) diameter is optimized to operate the valve at maximum efficiency.

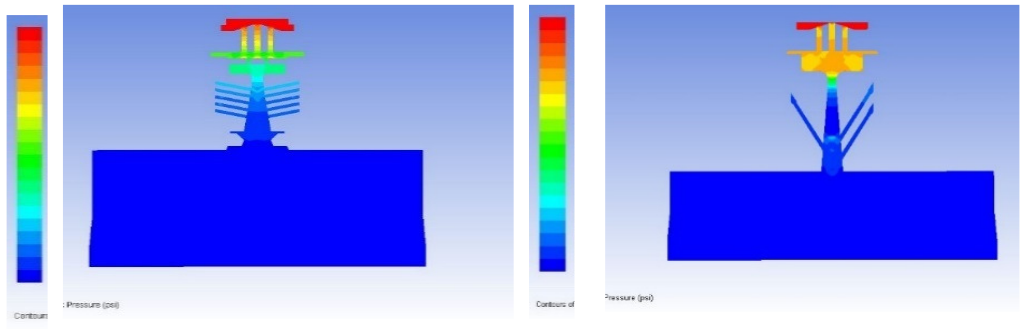
Initial Design



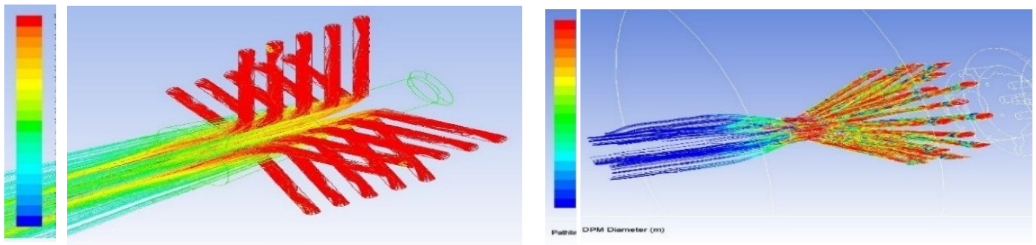
Optimized Design



Pressure Distribution



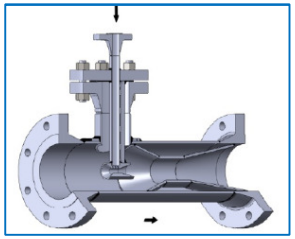
DPM Study



Indian Valve Supplier to NTPC

Trouble shooting of Field failure of Nozzle Valve

Objective : Analyze the field failure of De super-heater Valve and Provide the solution.



Challenges:

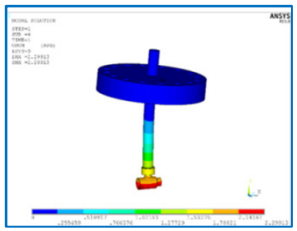
- The Nozzle had continuous failure at site
- Nozzle was getting detached from the assembly.

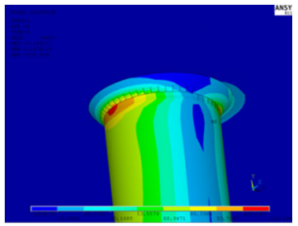
Approach :

1. Visualization and Analysis of Valve failure at site
2. Behavioral Analysis using FEA
   - Structural Feasibility analysis when it is exposed to high temperature of 530ºC under the influence of steam passing over it and Water is flushed @ high pressure @ two stages
   - Primary Load (Pressure loads)
   - Combined load (Pressure + Temperature loads)
3. Optimizing FEA methodology fine-tuning the inputs to achieve reach the field failure condition
4. Working on various options to solve the problem
5. Validating the results using FEA methodology
6. Final solution provided
7. Validation thru physical proto (Customer end)

Nozzle detached

Cracks observed



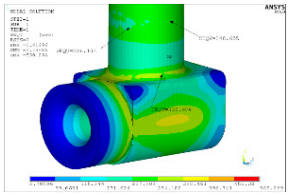


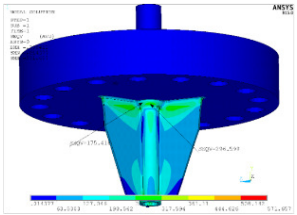
Problem is reflecting in the analysis

Achievements:

- Successful solution to the problem using virtual analysis
- Verified and redesigned other variants for same problem

Indian Valve Supplier to NTPC





Final optimized solution (Virtual Validation images)

Contact Details

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Our USP's

- ***Enable our customers to lower their Engineering operational costs***
- ***Enable Our Customers to Accelerate Product Development Life Cycle.***
- ***Enable our customers improve their response time to their customers.***

We have executed various projects in different domains and services. We will be intend to share the very specific case study as per your requirement. We will be happy share the relevant case study and our approach to the project

We will be happy to work with you for better future. Please feel free connect us for additional and specific information about your expectation.

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Thank You

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