

wipro infrastructure engineering



Wipro Group

Wipro Group

Wipro Enterprises

Wipro Limited



Wipro Infrastructure Engineering

- Hydraulics
- Aerospace
- Water Treatment
- Additive Manufacturing
- Automation Solutions



Wipro Consumer Care & Lighting

- Personal Care
- Wellness Products
- Lighting, Furniture and Switches



Wipro Kawasaki Precision Machinery

Hydraulic Pumps and Swing Motors for Excavators

Joint Ventures



Wipro-GE Healthcare

Healthcare Equipment and Solutions



- IT
- BPO
- R&D Services
- Consulting Services

wipro infrastructure engineering



40 + years of
manufacturing
excellence



2300+
global workforce



16 manufacturing
facilities



across 4
continents



Wipro
Infrastructure
Engineering

Leadership



Pratik Kumar
Chief Executive Officer

HYDRAULICS



R. Vasudevan
Global Sales



Prasanna Simha
Global Operations



Jan Nilsson
Global Engineering

GEOGRAPHY



Dr. Joseph Thomas
Americas

WATER



T M Nagarajan
Wipro Water

ADDITIVE MANUFACTURING



Ajay Parikh
Wipro3D

AUTOMATION SOLUTIONS



G Sundararaman
WIN Automation

CORPORATE FUNCTIONS



R. Swaminathan
Finance*

AEROSPACE



Ronen Givon
Wipro Givon

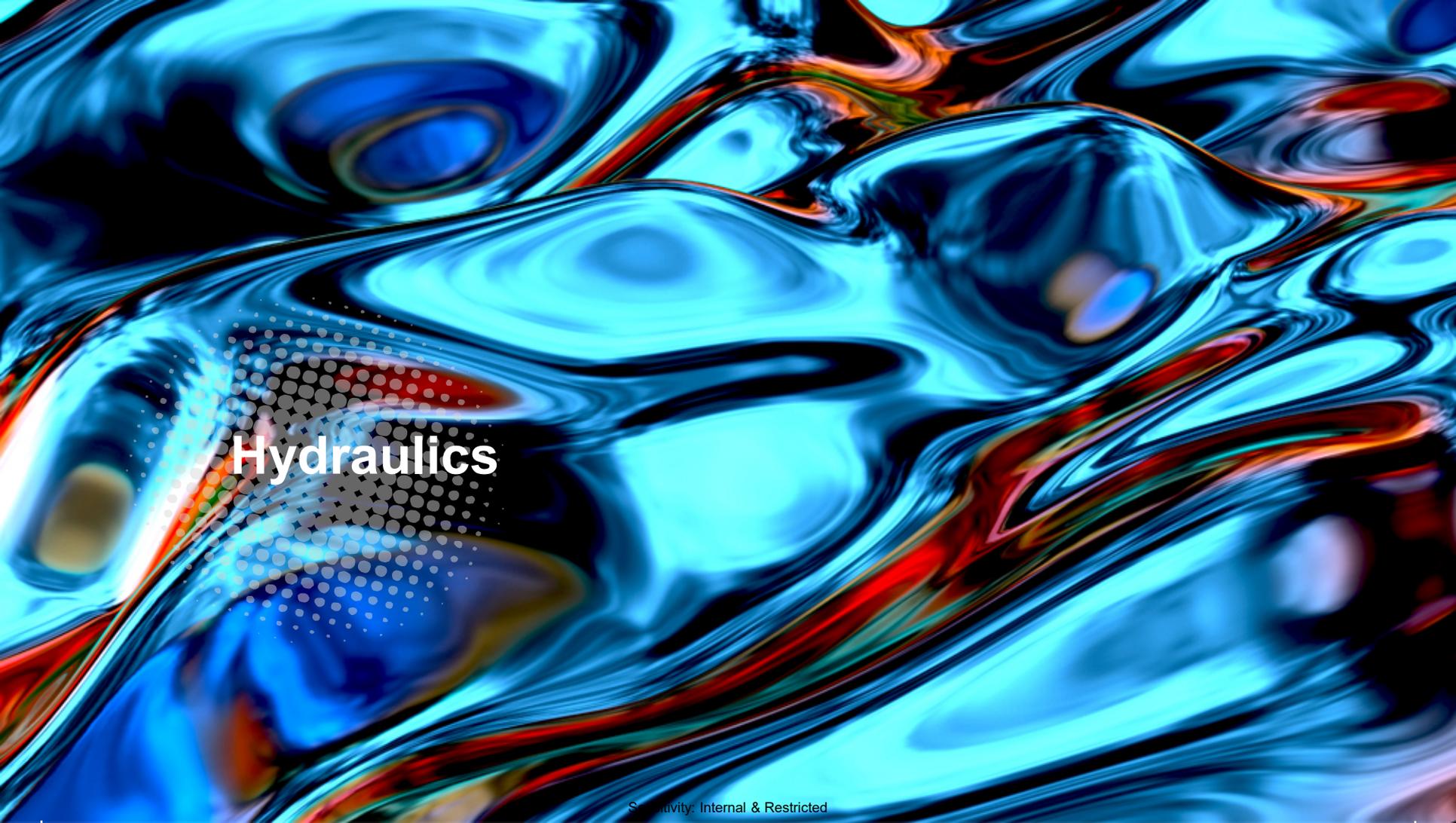


Srinivas Devareddy
Wipro Aerospace



Isaac George
Human Resources

*Chief Financial Officer – Wipro Enterprises and Wipro Infrastructure Engineering



Hydraulics

Hydraulics for every application



Construction and Earthmoving

- Backhoe Loader
- Dozer
- Dumper
- Excavator (Mini, Midi, Large)
- Motor Grader
- Wheel Loader



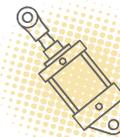
Lifting and Utility

- Aerial Work Platform
- Container Handler
- Fork Lifts
- Loader Cranes
- Hook Lifts and Refuse Collector
- Tail Lifts
- Tele Handlers



Farm and Agriculture

- Harvester
- Planter
- Sprayer
- Sugarcane Transporter
- Tractor Steering and Attachments



AMONGST THE LARGEST
INDEPENDENT MANUFACTURERS
OF HYDRAULIC CYLINDERS

Hydraulics for every application



Truck Tipping Solutions

- Aggregates
- Cabin Tilt Cylinders and Latches
- Car Carrier
- Front End and Under Body Tipping Gears
- Refuse Trucks
- Truck Steering
- 3 Way Tipping System



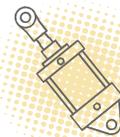
Mining and Special Applications

- Industrial Applications
- Surface Drill Rigs
- Underground Haulers and Loaders
- Windmills



Forestry

- Forwarders
- Harvesters
- Harvesting heads
- Grapples



AMONGST THE LARGEST
INDEPENDENT MANUFACTURERS
OF HYDRAULIC CYLINDERS

Global Sales Profile



Construction and Earthmoving

44%



Lifting and Utility

27%



Truck Tipping Solutions

11%



Mining and Special Applications

8%



Forestry

7%



Farm and Agriculture

3%

Global Reach



USA

Chambersburg
Plant area: 3,500 sq.m.

BRAZIL

Piracicaba
Plant area: 9,000 sq.m.

EUROPE

Pernio – Finland | *Plant area: 16,000 sq.m.*
Bispgarden – Sweden | *Plant area: 3,500 sq.m.*
Ostersund – Sweden | *Plant area: 8,000 sq.m.*
Rm Valcea – Romania | *Plant area: 12,000 sq.m.*
Skelleftea – Sweden | *Tech and Protoshop*

INDIA

Bengaluru | *Plant area: 15,800 sq.m.* | *Tech and Protoshop*
Chennai | *Plant area: 10,500 sq.m.*
Hindupur (plant 1) | *Plant area: 9,675 sq.m.*
Hindupur (plant 2) | *Plant area: 19,000 sq.m.*

Design Engineering and Validation



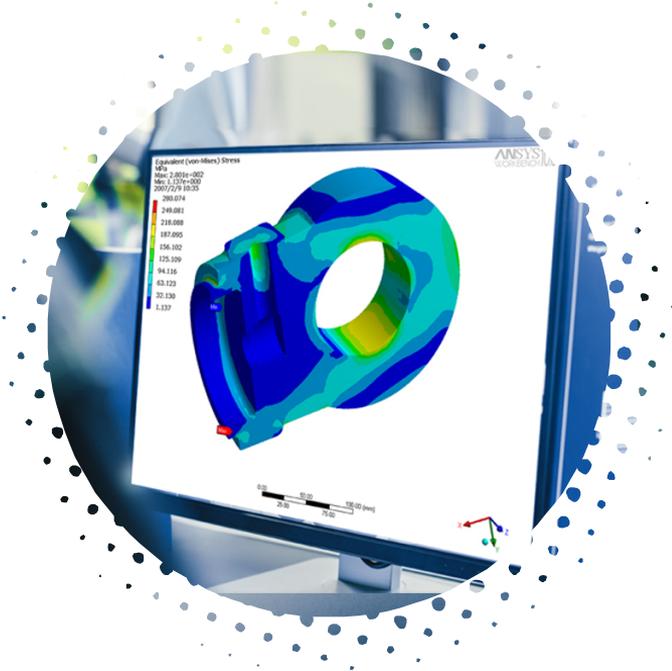
60+
Engineers



8000+
Successful
designs



1000
Diverse
applications



- Design processes driven by Six Sigma methodologies
- Optimised by analytical and simulation tools like Finite Element Analysis (FEA) using Ansys, Creo Simulate etc.
- Supported by the latest 3D modelling, design and product management tools such as PTC Creo, Windchill PDM Link etc.
- Test rigs to determine Functionality, Reliability and Endurance
 - Pulse testing | Back-to-back testing | Bell crank
 - Steering simulation | Forklift test simulation
 - High temperature cycling

Truck Tipping Solutions



Telescopic Cylinders

- Front End Tipping Telescopic cylinder : Cover type | Eye type
- Underbody Tipping Telescopic cylinder : Single Ram | Twin ram

Pumps : Axial piston pumps | Gear pumps

Valves : Direction control valves | Cabin/air control valves

Hydraulic Elements : Power Take Off's (PTO) | Power Packs | Hydraulic Tanks | Hoses | Adaptors | Body Lock Mounting Brackets

Tipping Safety : Tilt Sensor

Special Applications : Power Steering Cylinders for multi axle trucks | Car Carrier Cylinders with power pack

Under Body Tipping Cylinder

Under Body Tipping Cylinders

- Cylinders are manufactured with high strength, precision tubes.
- The cylinder rams are ground, polished and super finished
- Specially developed high strength, fatigue resistant, high nodule count ductile iron pistons and end covers help enhance cylinder life and increase duty cycles
- High life nitrile rubber seals are used to ensure durability
- The use of self-lubricating non-metallic bushes at rod eyes and end covers helps reduce maintenance



Range
70 - 120 mm
diameter



**Tipping
Capacity**
1 – 25 tonnes



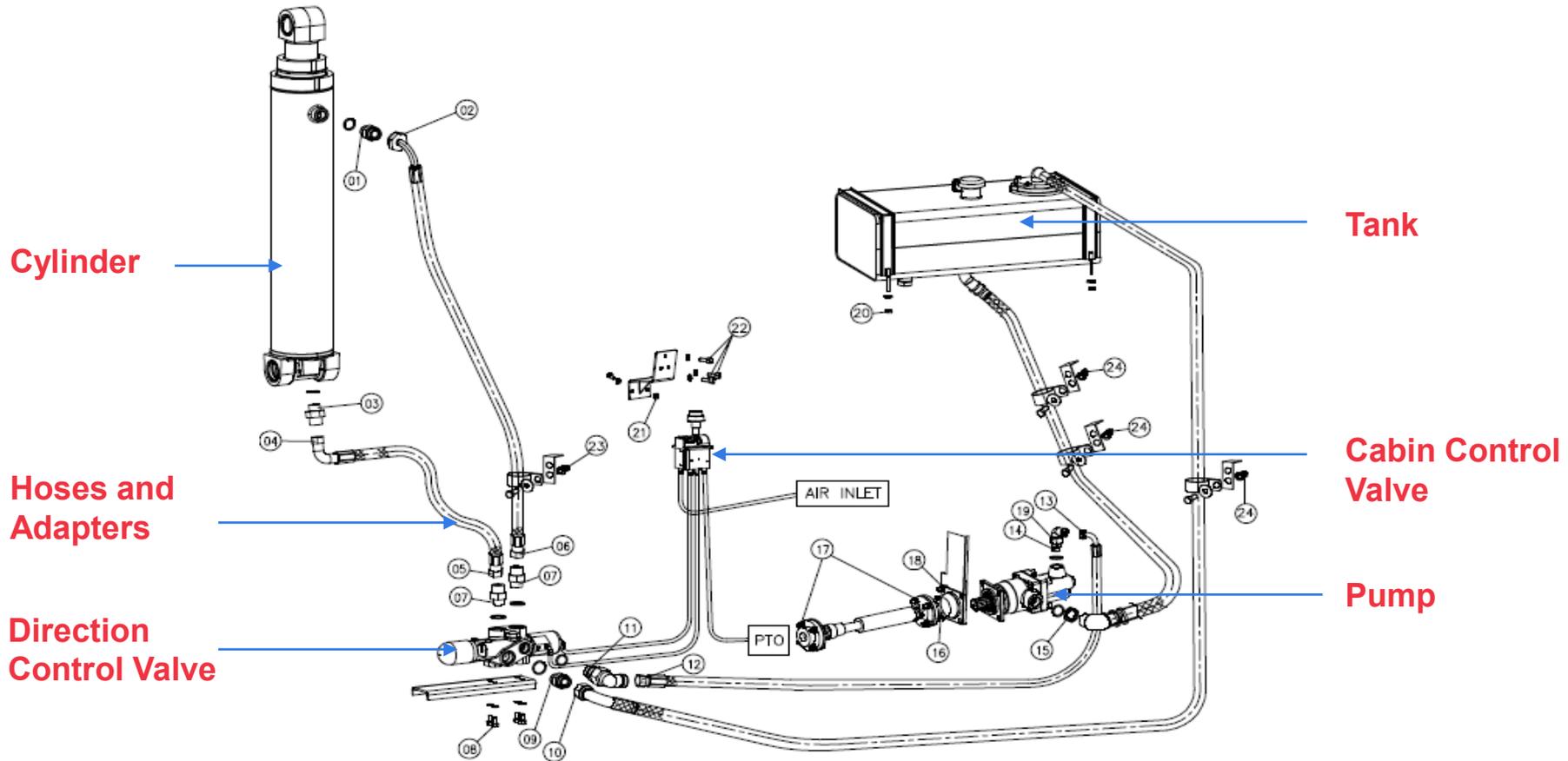
**Working
pressure**
≤ 230 bar

Single Cylinders



- Bore: 70 mm to 120 mm
- Payload: Up to 12 tons
- Pneumatic/mechanically operated control valve
- Piston pump : 44cc

Single cylinder kit layout

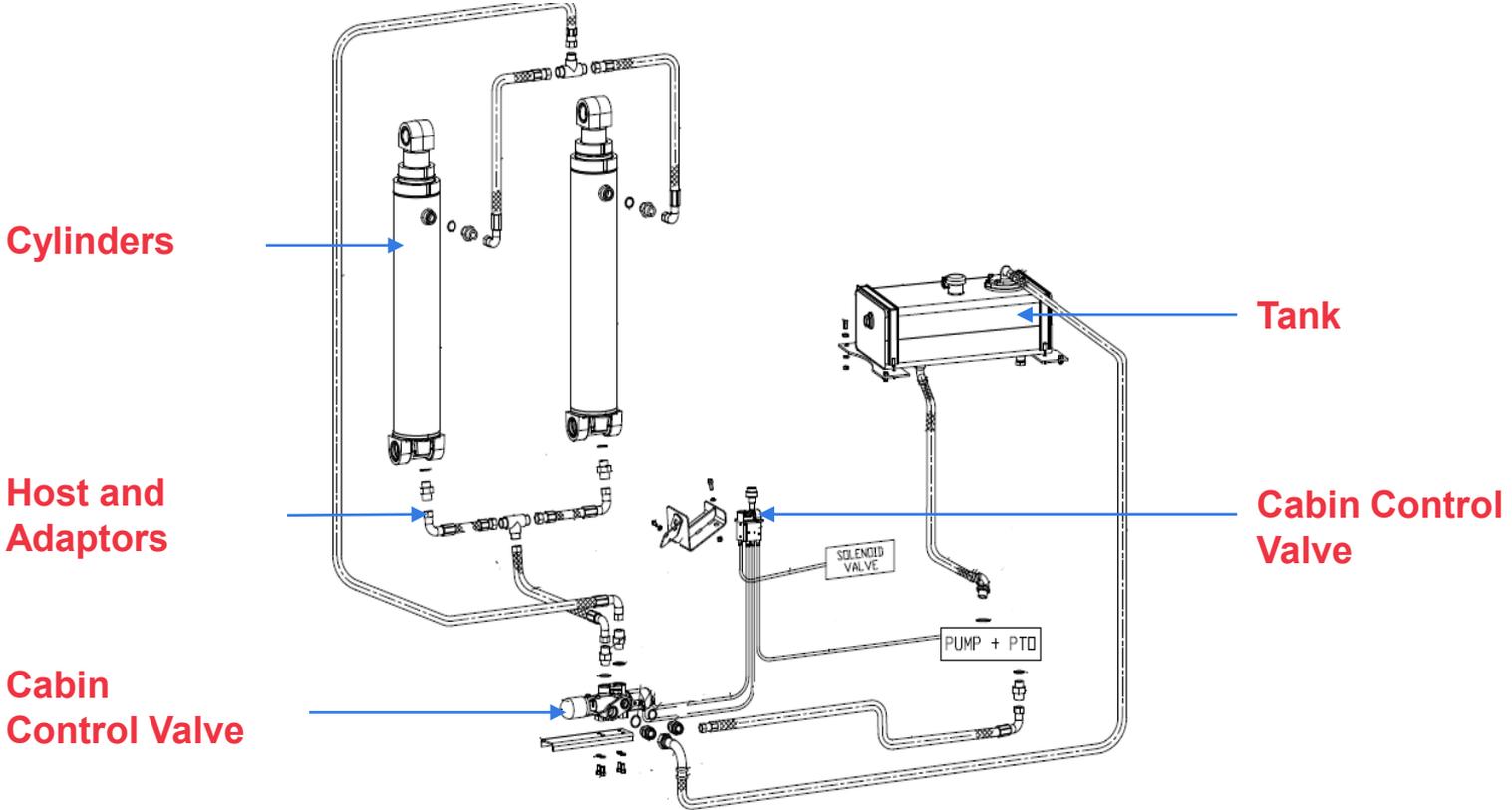


Twin Cylinders



- Bore: 70 mm to 120 mm
- Payload: Up to 25 tons
- Pneumatic/mechanically operated control valve
- Piston pump : 50 cc

Twin cylinder kit layout



Wet Kit



Front End Tipping Cylinder

Front End Telescopic Cylinder

Deliver better performance, increase sturdiness and extend the cylinder's life

Salient Features

- Bigger size trunnion pins which can withstand high bending and shear load
- Special wipers will prevent dust entry into the rams
- Secondary sealing system for leak free rams
- High strength spring steel stoppers to withstand compressive and side load
- Piston bearings designed to withstand high compressive and side load
- Wider piston bearings and rod guides to support rams under dynamic load
- External stopper rings to take relief pressure load at stroke end
- Positive locking for rod eye threads to arrest loosening
- Combination of fixed and floating trunnion for cylinders helps take side load and any misalignment between the mounting



Range
110 - 238 mm
diameter



**Tipping
Capacity**
16 – 100 tons



**Working
pressure**
≤ 250 bar

Eye type (DFE) Cylinders



Salient Features

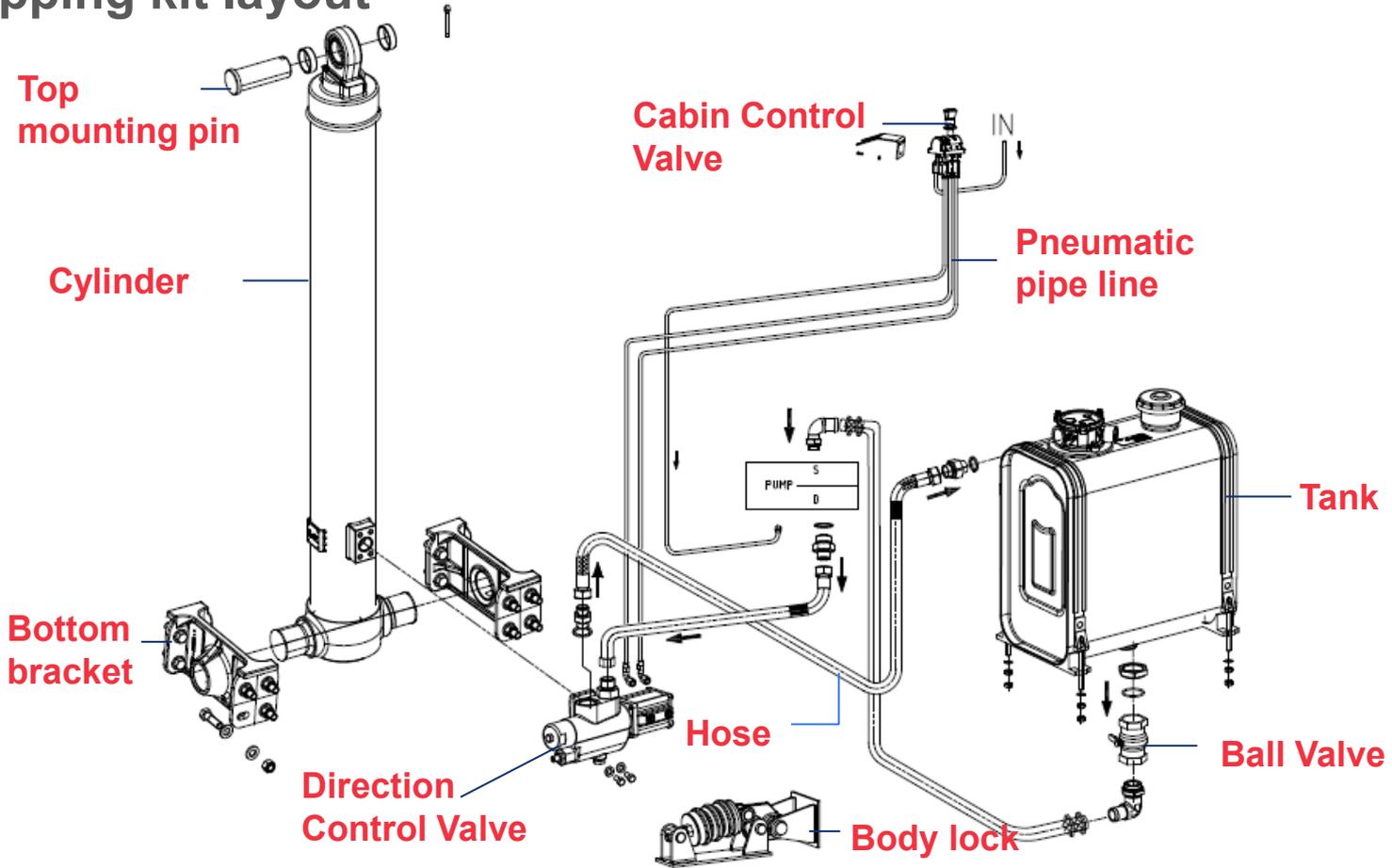
- The Eye Type Cylinder with its trunnion mount at the bottom and rod eye mounting at the top is ideally suited for medium chassis tippers with inclined tipper bodies.
- Mounting, assembly and disassembly can be managed with short turnarounds.
- The cylinder is manufactured with maintenance free steel on the PTFE spherical bearings to take care of misalignments to an extent.

 **Range**
70 - 120 mm
diameter

 **Tipping
Capacity**
16 – 100 tons

 **Working
pressure**
≤ 230 bar

Tipping kit layout



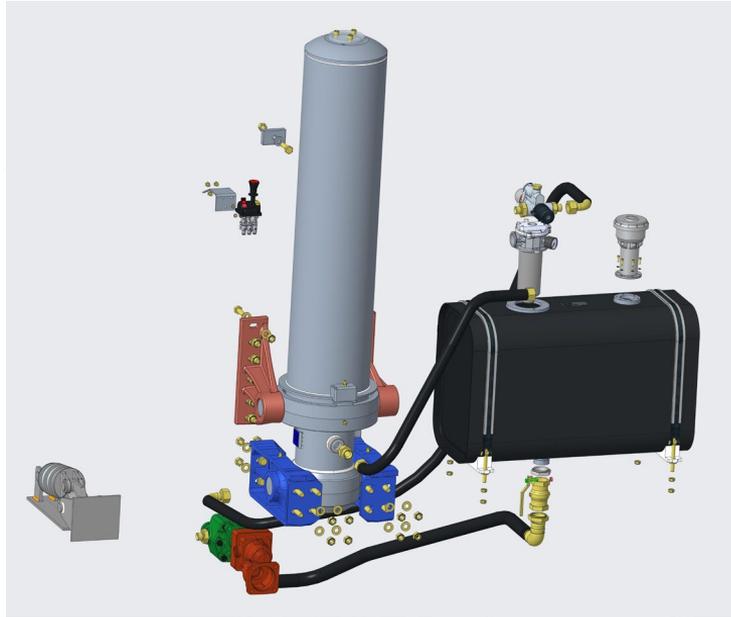
Cover type (DFC) Cylinders



Salient Features

- The Cover Type Cylinder requires mounting on fixed (bottom) and floating (top) trunnions. The cylinders are sturdier and best suited for both short and long chassis tippers.
- The floating trunnion allows tippers to handle torsional and side loads
- The low mounting point and large span of mounting provides better buckling strength and a low center of gravity which offers better stability
- The combination of a fixed and floating trunnion helps manage side loads and misalignment in the mounting
- The double trunnion helps increase the stability of the cylinder and the payload of the tipper body
- The cylinder comes with shock absorbing rubber dampers

Piping layout

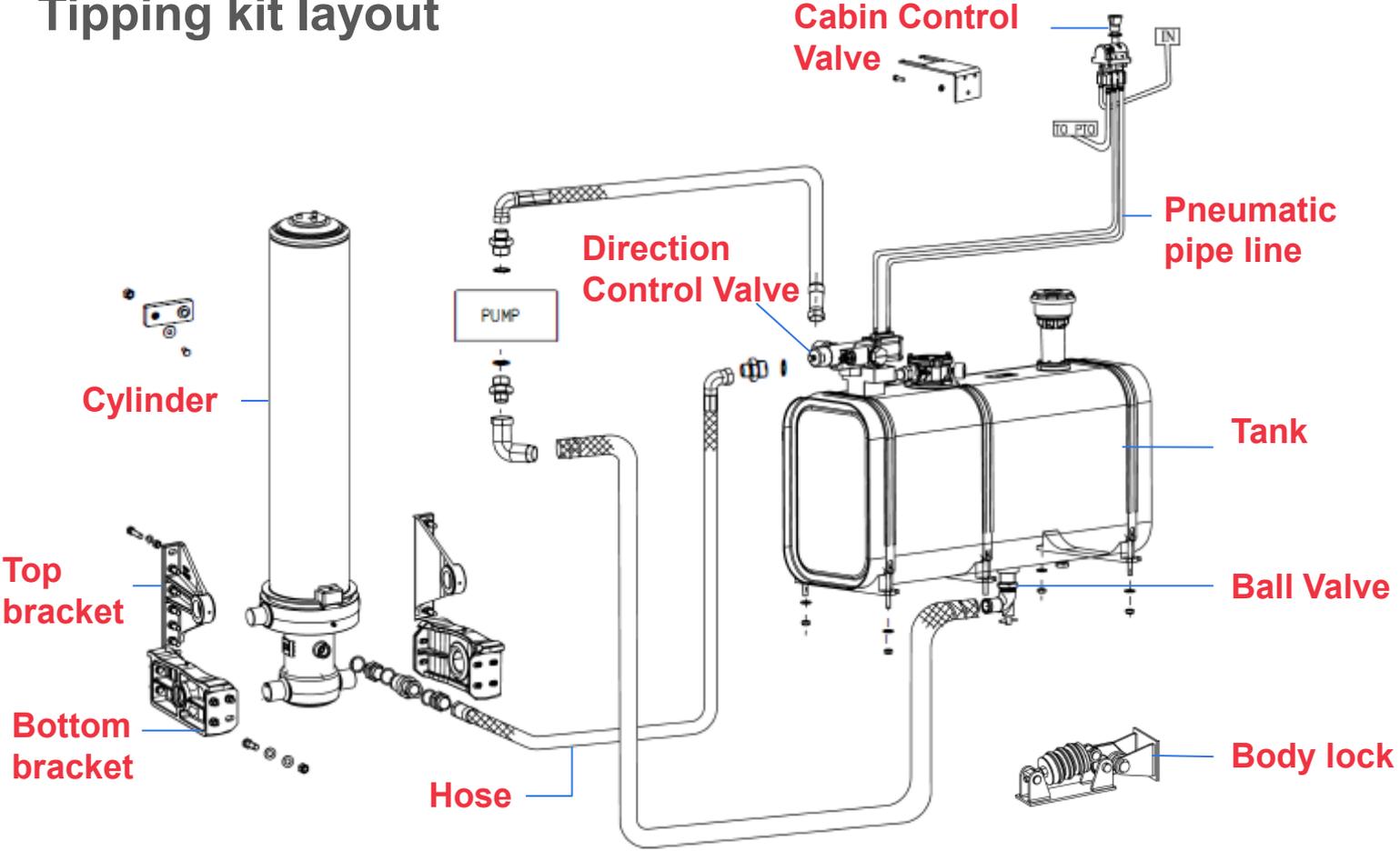


DFC Layout



DFE Layout

Tipping kit layout



FET Wet Kit



Other Applications

SCV Tipper and power pack



- Single and Double acting cylinder
- Bore: 80 | Rod : 40
- Power pack : 12V & 24V
- Compact solenoid valve with remote operation

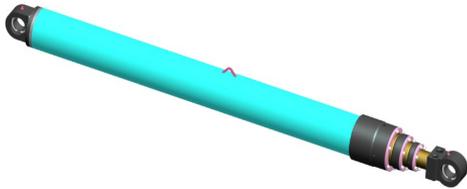
Refuse trucks and steering cylinder

Refuse Trucks

Double acting telescopic cylinder : 135/105/78 -2600 mm

Features

- Robust Design with dual seals
- Ports at Rod eye
- Rust Free Chrome Plated Rod
- Spherical bearing at both ends



Power Steering Cylinders

For multi axle trucks - 35,42 and 48 ton

Features

- Induction hardened
- Hard chrome plated rod
- High strength bi-metal bearings



Tail gate and car carrier cylinder



- Decks: 80 x 45 x 1000 mm
- Doors: 63 x 40 x 850 mm
- Power packs : 24 V

Tilt Sensor

Tilt sensors for Tippers

Designed for safe operations of tippers/dump trucks/tip trailers.

Ensures the tipping system will function only if the unloading is happening within the set limit of vehicle inclination.

Prevents vehicle toppling due to unsafe unloading practices by drivers and related accidents.

Tilt switch senses tilting in all the four directions (Nose up, Nose down, RH side, LH side)

Benefits:

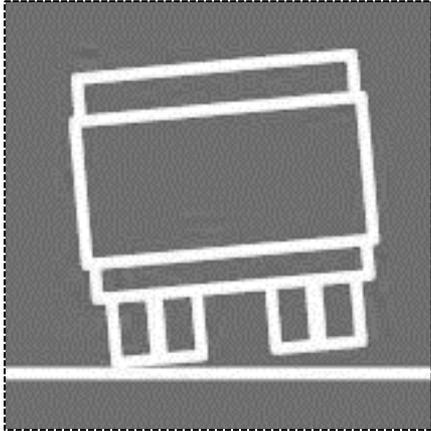
- Prevents tipping system (cylinder) damage under heavy sideloads
- Prevents damage to tipping body and hinges
- Reduces strain on the vehicle, hence enhanced chassis frame and axle life
- Works as a stroke limiter and avoids tipper butting pressure

Components



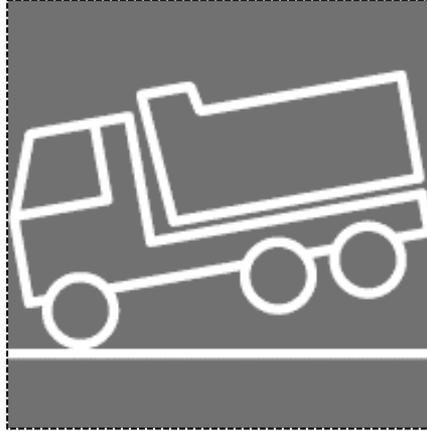
- Tilt sensor
- 3 x 2 Pneumatic solenoid valve
- Wire harness with fuse and end connectors
- Mounting fasteners
- Installation manual

Roll and Pitch angles



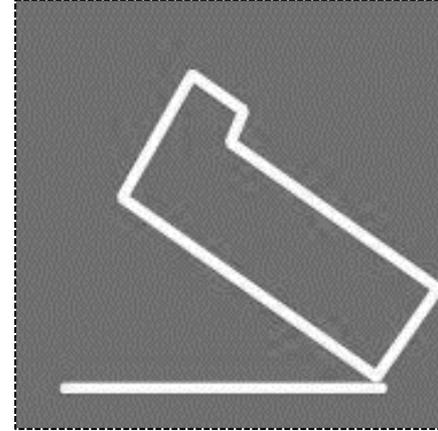
Roll angle

- Roll angle can be set in both the direction
- Left and right side
- Recommended angle is 5 deg



Pitch angle (Nose down)

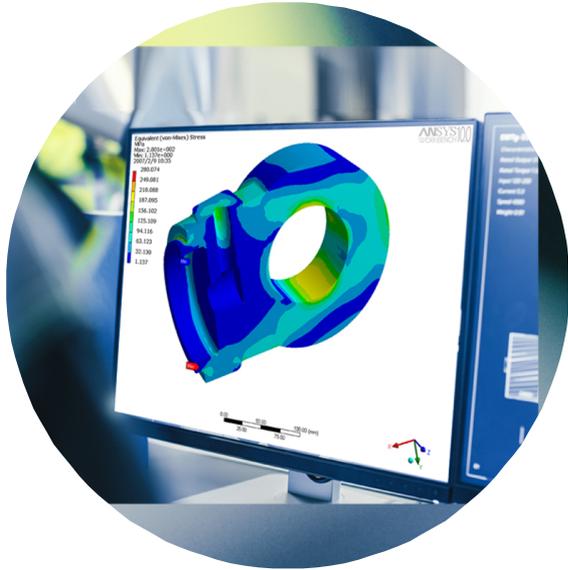
- Pitch angle can be set in both the direction
- Recommended Nose down angle 9 deg



Pitch angle (Nose up)

- Tipping angle can be set to avoid tipper experience the butt pressure
- Recommended Nose Up angle is 48 deg

Validation and Testing



60+
Engineers



8000+
Successful
designs



1000
Diverse
applications

- Factor of Safety (FoS) for our cylinders are in the range of 3-4
- Our cylinders undergo rigorous and extensive testing –Pulse, break away, side load, burst, dust ingress, water ingress, and endurance
- Performance test
 - Static Friction test – less than 10 bar
 - External Leakage Test – 1.2-time relief
- Proof pressure test : 1.5 times relief | Burst pressure test : 500 bar
- Environment test : Water Ingress Test - Static | Dynamic
- Side load test on tipper
 - Hold test : with 32 tons load
 - Load cycling test : 40,000 cycles with 33T load in lifting and lowering
 - Durability test : 72,000 cycles

Manufacturing Process



Lean and Flexible
Systems



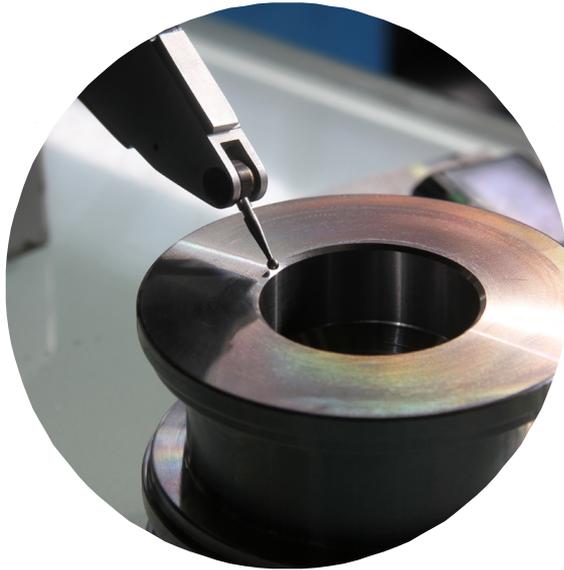
Mechanized
assembly



Automated
testing

- Continually invest in world class facilities, latest technologies and equipment
- Build quality into the product through processes and improve product reliability
- Lean and flexible manufacturing systems
 - CNC Turning Centers
 - Skiving & Burnishing
 - Robotic Welding
 - CNC Machining Centers
 - Ultrasonic Washing
 - Contamination Measuring with Millipore Test
 - Painting Line
 - Mechanized Assembly
 - Automated Testing

Quality Management



ISO
9001



IATF
16949



TS
16949



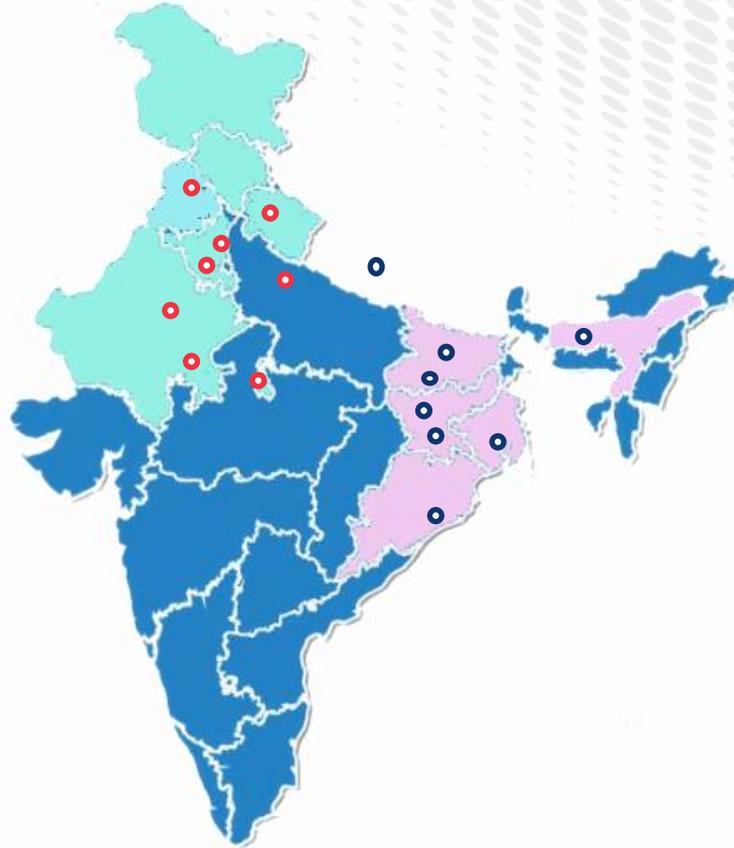
OHSAS
18001

- Two integral dimensions of our quality
 - **Consistency**
 - **Continuous Improvement**
- Wipro plants are powerhouses of sophisticated technology and manufacturing know-how.
- Robust process for supplier selection and quality management
- Corrosion resistance: Standard: 100 hrs. – Rating 10
Component cleanliness up to NAS level 7
- Superior rating to meet specific customer requirements through chrome plating process

Channel Partners

North

- Adsar Hydro Controls
- Jain Automobiles Private Limited
- Munish Motors
- Jitender Kumar & Co.
- Modern Hydraulics & Metal Works
- Vishal Earth Movers
- Rajsons Engineers & Fabricators
- Rajasthan Motor Parts



East

- K.S. Earth Movers
- G D Motors
- Mahavir Auto Spare Pvt.Ltd
- Sunrise Enterprises
- Sunrise Enterprises
- CARGOVAHN
- P.R. ENTERPRISES
- Maurya Motors Pvt Ltd

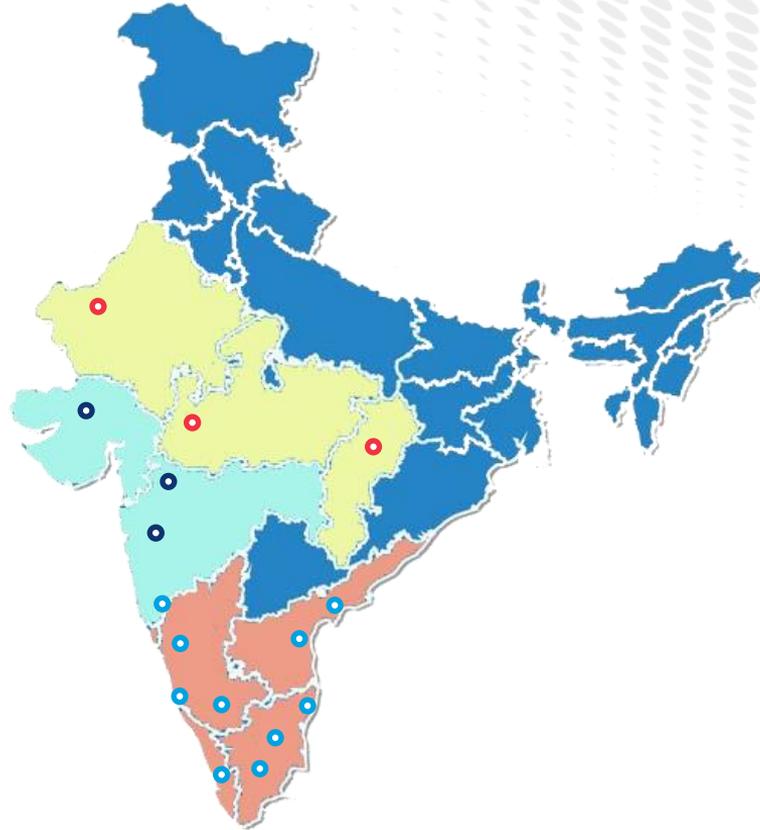
Channel Partners

Central

- GSS Hydraulic
- Shradha Sales And Services
- Silver Trail

West

- Natraj Fluid Power
- Radhika Sales
- Shivom Enterprise



South

- Altech Marketing Services
- Pavan Hydraulics
- Jaidev Hydraulics
- Telsa Marketing Private Limited
- Telsa Agencies Pvt Ltd
- Geekay Industrial Services
- Geekay Industrial Services
- Sree Dharani Hydraulics
- Sri Raaga Auto Parts

Customers

India

Rest of the World



Values we live by

Spirit of Wipro

Be passionate about client's success

Treat each person with respect

Be global and responsible

Unyielding integrity in everything we do

Strategy and Goal



INNOVATION

Leadership in engineering,
technology and quality



BUSINESS EXCELLENCE

Partnering with customers
across the globe



SCALABILITY

Leverage a global delivery
and engineering model

