



INDUSTRY TRENDS AND MACHINE MAINTENANCE PRACTICES FOR INJECTION MOULDING MACHINES



SHELL
LUBRICANT
SOLUTIONS

MEET WITH OUR SPEAKERS



Mr. VK Baheti
Director - Technical,
Manjushree



Mr. Ranjit Jadhav
Chairman- IPI
Chapter, Pune



Mr. Pavan Potukuchi
Technical Manager,
Shell Lubricants

HEAR FROM THE BEST!

Industry Trends

Role of Lubricants in plastic moulding machines

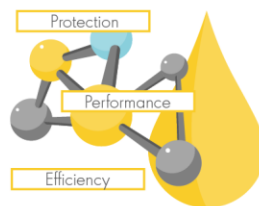
Lubrication related best practices for machine maintenance

Q&A



SHELL NAMED #1 GLOBAL LUBRICANTS SUPPLIER FOR THE 14TH YEAR IN A ROW¹

FIRST TO MARKET
PREMIUM LUBRICANTS
**MANUFACTURED
FROM NATURAL GAS**
IN 100+ COUNTRIES²



**WORLD-CLASS LUBRICANTS SUPPLY
CHAIN INVESTING TO MEET MARKET
DEMAND**



4 BASE OIL
PLANTS

9 GREASE
PLANTS

29 BLENDING
PLANTS

STRONG NETWORK OF APPROX.
80 MACRO-DISTRIBUTORS
AND **1,200 DISTRIBUTORS**



**DIGITAL SERVICES FOR B2B AND
B2C CUSTOMERS**



MOST PREFERRED LUBRICANT BRANDS³



PREFERRED
TRUCK
OIL BRAND



PREFERRED
PASSENGER CAR
OIL BRAND



PREFERRED
MOTORCYCLE
OIL BRAND



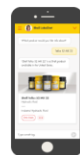
PREFERRED
INDUSTRIAL
OIL BRAND



**NETWORK OF TECHNOLOGY CENTRES
WITH 200+ R&D SCIENTISTS**
IN USA, CHINA, GERMANY,
INDIA AND JAPAN



**EXPERT TECHNICAL SERVICES SAVE CUSTOMERS
MILLIONS OF DOLLARS A YEAR⁴**



Shell
Lube**Chat**

Shell
Lube**Analyst**

Shell
Lube**Coach**

Shell
Lube**Match**

Shell
Lube**Expert**

Shell
Lube**Advisor**

MAKING OUR OPERATIONS AND PRODUCTS
MORE SUSTAINABLE FOR THE FUTURE



Solar panels



Packaging



Shell Helix 0W⁵



Shell E-Fluids

**DELIVER CUTTING-EDGE PRODUCTS
TO ALL KINDS OF INDUSTRIAL MACHINERY**



**SUCCESSFUL COMMERCIAL RELATIONSHIPS
WITH MANY GLOBAL COMPANIES**

DAIMLER

KOMATSU



GEELY

FCA

FIAT CHRYSLER AUTOMOBILES



Mahindra
Rise.



RENAULT NISSAN MITSUBISHI



**PUSHING THE BOUNDARIES OF
LUBRICANT TECHNOLOGY ON
RACE TRACKS AROUND THE WORLD**

NISSAN
e.dams



Technical
Partner



Mahindra
RACING



TEAM
PENSKE

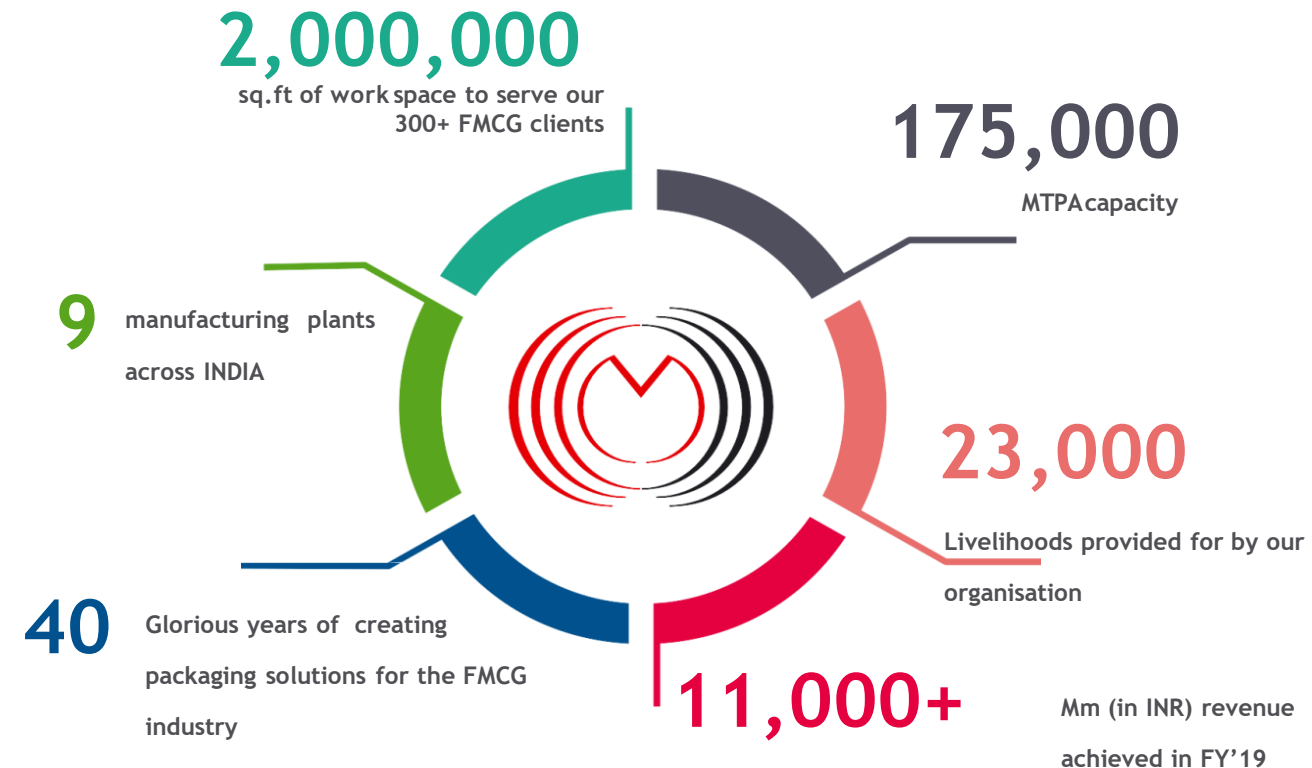
GEELY

BMW M Motorsport
Premium Technology Partner



About Manjushree Technopack Limited

- Manjushree is India's largest Rigid plastic packaging convertor
- Established in 1983, we today have the largest capacity in bottles, containers, preforms, films and we have recently ventured into recycled resins
- Strong and long lasting relationship with major Indian and Global brands
- We offer 360 degree rigid packaging services to industries varying from – Food & Beverages, Spirits & Liquor, Personal Care, Home Care, Pharmaceutical, Agrochemicals, Lubricants
- We offer packaging with fill volumes ranging from 5ml to 20l

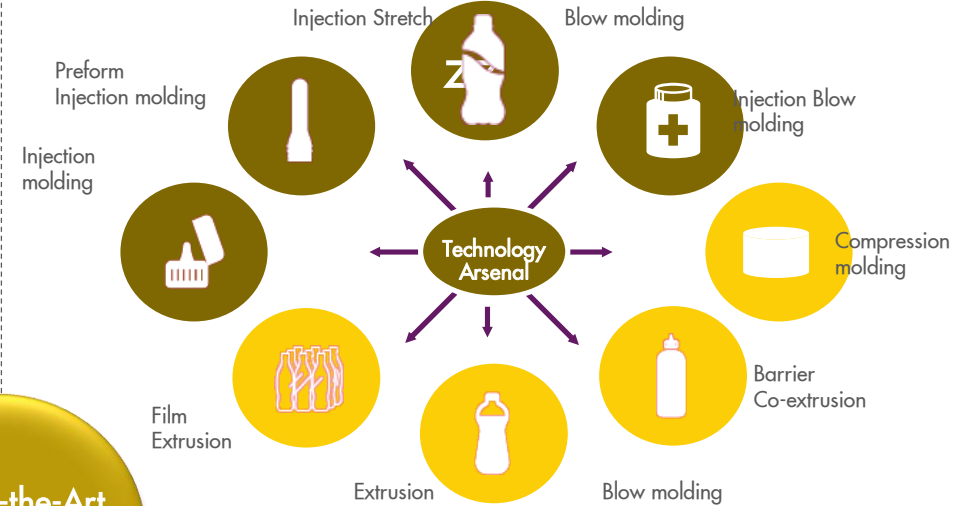


Best-in-class asset base | High quality standards

Best-in-Class Equipment



Breadth of Technology Platforms



State-of-the-Art Manufacturing Capabilities









Significant Scale of Operations

Plant	Region	Capacity(MTPA)	Technology
Bangalore	South	100,000	Preform, ISBM, IMM, Film
Bangalore	South	21,000	ISBM, IMM, EBM, IBM
Pantnagar	North	14,000	EBM, ISBM, Preform, IMM
Baddi II	North	11,000	EBM, ISBM, IMM
Baddi I	North	3,000	ISBM, EBM, IMM
Guwahati	East	4,000	ISBM, EBM, Preform, IMM
Manesar	North	2,000	EBM, IMM, ISBM

Certifications & Standards



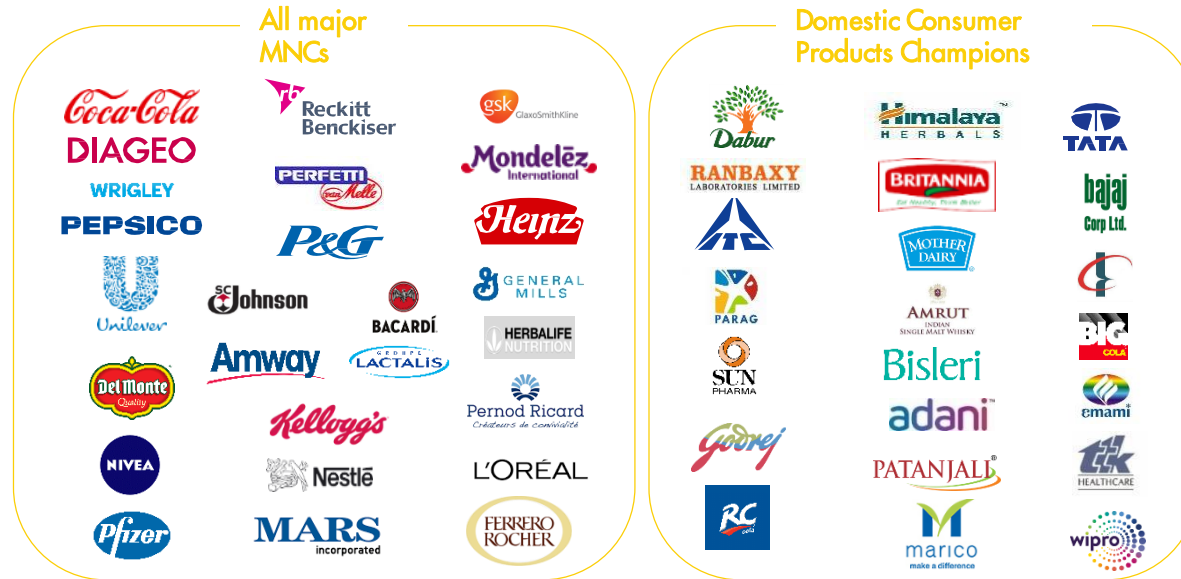
Diverse product range | Multi-Technology platform

	PET/ PP Bottles	Wide Mouth Containers	Angular Neck Bottles	Multilayer / Squeezable Bottles	Sterile Containers less than 250 ml	Flip Top Closures	LED Diffusers, Housings & Holders	Triggers & Sprays
								
Application	Beverage industry	Food products with scooping applications	Home care products with dispensing applications	Sauces and condiments requiring oxidation protection	Pharma industry	Promotional products for diversified end markets	Electrical products industry	Personal Care Home Care Automotive Pharmaceutical Others
Resin	PET / PP	PP / HDPE	PP / HDPE	PP / HDPE with EVOH / nylon barrier	PP / HDPE	PP / HDPE	Polycarbonate	PP/HDPE
Technology	Injection stretch blow molding	Extrusion blow molding	Extrusion blow molding	Barrier co-extrusion molding	Injection blow molding	Injection molding	Customized injection blow technology	Injection molding

Our marquee customers across key end markets

Strong Portfolio of Blue Chip Customers

Highlights

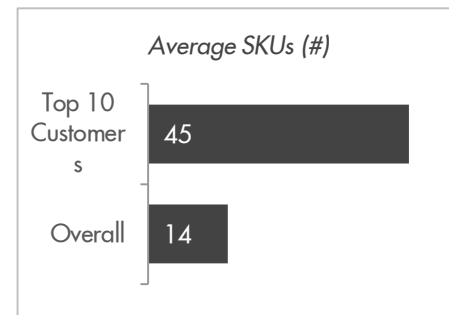
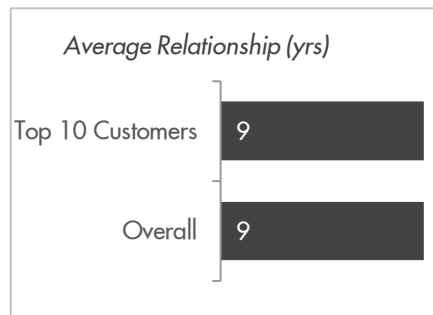


✓ Stable and diverse customer base with portfolio of c.100 customers

✓ Track record of growing existing customer relationships and building new relationships through product line and geographic expansion

✓ Key customers with more than 9 years average relationship length

Customer Relationships



✓ Minimal churn in customer portfolio, demonstrating high degree of customer confidence

✓ Portfolio distributed across various customers and end markets, demonstrating **breath of experience**

Design to delivery

Manjushree has a tailored approach to fulfill customer needs – from early design to commercial production – to reduce lead time, accelerate customer product launches, and reduce overall cost for customers.



1

Design

- **In-house design capabilities** from ideation research to conceptual design
- **Developing low cost India innovation (“INDOVATION”)** solutions for the customer with significant investment in research & development and cutting edge technology
- **R&D department recognized by** the Department of Scientific & Industrial Research (DSIR) under the Ministry of Science & Technology, Government of India



Jar Library

The best of the world of packaging in a single room



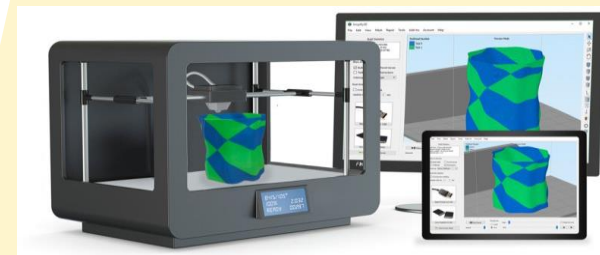
Sparsh Centre

Over 180 proprietary designs

2

Validation

- **In-house tool shop** ensures quick customization to molds
- **3D printing capabilities** to ensure fast and accurate turnaround time of designs
- **Rapid prototyping** supports easy decision making
- **Smaller machines for trial lots** and to test and validate molds
- **Expertise in troubleshooting**



3

Delivery

- High quality **best in class manufacturing** capabilities and capacities
- **Quality and consistency** in production
- **Fail safe detection** and 100% backup of critical equipment
- **Advanced automation** to reduce human error



Our existing facilities

South – Bidadi, Bangalore



FY2013

ISBM

IMM

2 Stage

Preform



South – Bommasandra, Bangalore



FY2003

ISBM

EBM

2 Stage

Multilayer



East – Guwahati



FY2017

ISBM

EBM

IMM

Preform



West – Silvassa



FY2020

ISBM

EBM

IMM



Baddi II, Himachal Pradesh



FY2001

ISBM

IMM

EBM



Pantnagar, Uttarakhand



FY2011

ISBM

IMM

EBM

2 Stage



Manesar, Haryana



FY2018 (shifted from Noida)

ISBM

IMM

EBM

2 Stage



Amritsar, Punjab



FY2020 (acquired Napla)

IMM

Pumps

Dispensers

Trigger Sprays



Plant Commencement

Technology⁽¹⁾

Machinery

Plant Commencement

Technology⁽¹⁾

Machinery

Born Again – Enabling Circular Economy

- Born Again will have a chain of recycling units set up across India.
- The first unit is commissioned and will be operational in Bidadi, Bangalore
- The process is vertically integrated with the plastic waste collection ecosystem, to collect better quality pre-sorted rigid plastic waste
- We will process PP and HDPE material initially and expand to PET recycling

Advantages to customer

- We guarantee quality of PCR resin, backed by appropriate certifications
- We guarantee supply consistency of PCR resin
- We will provide certificate for EPR obligation and PCR usage



We are keen to partner with PVM for your sustainability and circular economy efforts

Welcome Indian Plastics Institute

**Registered in April
1985**

**15 Chapters & 2370
members**

21 Student chapters

- Events include National Conferences, Full day & Half day Seminars, Technical lecture meets, Endowment & Memorial Lectures, Corporate Learning Program, Awareness programs at schools & colleges, NGOs, local Municipal corporations & Government bodies.
- Diploma course (DIPI)
- Webinars
- IPI Journal

Email : indianplasticsinstitute@ipiindia.org; info@ipiindia.org

Web : www.ipiindia.org

INDUSTRY OVERVIEW: PLASTIC INJECTION MOULDING MANUFACTURING

1

Emerging needs in Plastic Injection Moulding industry

1

A NEED TO REDUCE MAINTENANCE COSTS

maximize productivity while reducing maintenance spend

2

DRIVE EFFICIENCY WITH INDUSTRY 4.0

new plastic injection molding machinery will drive efficiencies and data driven maintenance and production decisions (Industry 4.0).

3

PROFITABILITY WITH INCREASED PRODUCTIVITY

Downtime is costly, (especially with 'just in time' delivery in the auto industry).

The biggest contributors to overall profitability of production is increased productivity, reduced energy consumption and short cycle times

Key Trends in the Plastic Injection Moulding industry today

Building an efficient, innovative and a sustainable business

1

Efficiency with automation

Automation and robotics are improving production and precision in processing plastic parts - helping to reduce mistakes and risk while cutting costs and labour needs.

2

Eco-friendly / Sustainability

New regulations are helping to reduce waste & emissions with recycled/eco-friendly materials and solutions that prevent leakages.

4

Energy Consumption

Regular upgrades to energy efficient machines are reducing unplanned downtime and playing a huge role in reducing operational costs.

3

Micro-moulding

New technologies are allowing the precise manufacture of complicated microscopic items without sacrificing quality – for example, for medical equipment.

5

Automated Quality Control

Mechanised quality control is reducing errors and enhancing reliability and efficiency.

ROLE OF LUBRICANTS: PLASTIC INJECTION MOULDING MACHINE

2

Why are lubricants important to the plastics industry?

- The injection moulding machine is one of the most valuable assets to a plastics business.
- A robust maintenance strategy is business critical.
- High quality lubrication is essential for effective equipment maintenance.

IMPACT OF LUBRICATION ON PIM

5-10%

Reduction in a factory's productivity due to poor maintenance¹

1 in 4

manufacturers believe unplanned equipment shutdowns due to their incorrect lubricant selection and / or management have cost their business \$250,000 or more¹

50-70%

of equipment failures are related to 'improper hydraulic fluid condition' according to multiple surveys carried out by hydraulic equipment manufacturers and other industry bodies²

1. This study commissioned by Shell Lubricants and conducted by research firm Edelman Intelligence, polled 493 decision-makers in the manufacturing industry in eight countries (Brazil, Canada, China, Germany, India, Russia, the UK and the US) from November to December 2015

2. Multiple surveys by industry bodies including additive companies, filter manufacturers, hydraulic equipment manufacturers. One source includes Parker Hannifin GmbH Bulletin: HY30-3248/UK: Hydraulic Fluids for Parker Axial Piston Pumps Series PV

The impact of lubrication on Total Cost of Ownership (TCO) for manufacturers

COMPANIES UNDERESTIMATE POTENTIAL PRODUCTIVITY IMPROVEMENTS FROM EFFECTIVE EQUIPMENT LUBRICATION

43%

do not believe choosing higher quality lubricants can **help improve productivity**



6 in 10

companies are unclear how lubrication can influence **unplanned down time or equipment availability**



THEY RECOGNISE BUT UNDERVALUE THE OPPORTUNITY FOR TOTAL COST OF OWNERSHIP¹ SAVINGS

59%

of companies believe they can **reduce costs by >5%** through lubricant selection and/or management



But fewer than

1 in 10

think savings could **exceed 25%**



In reality, lubricants can impact up to

30%

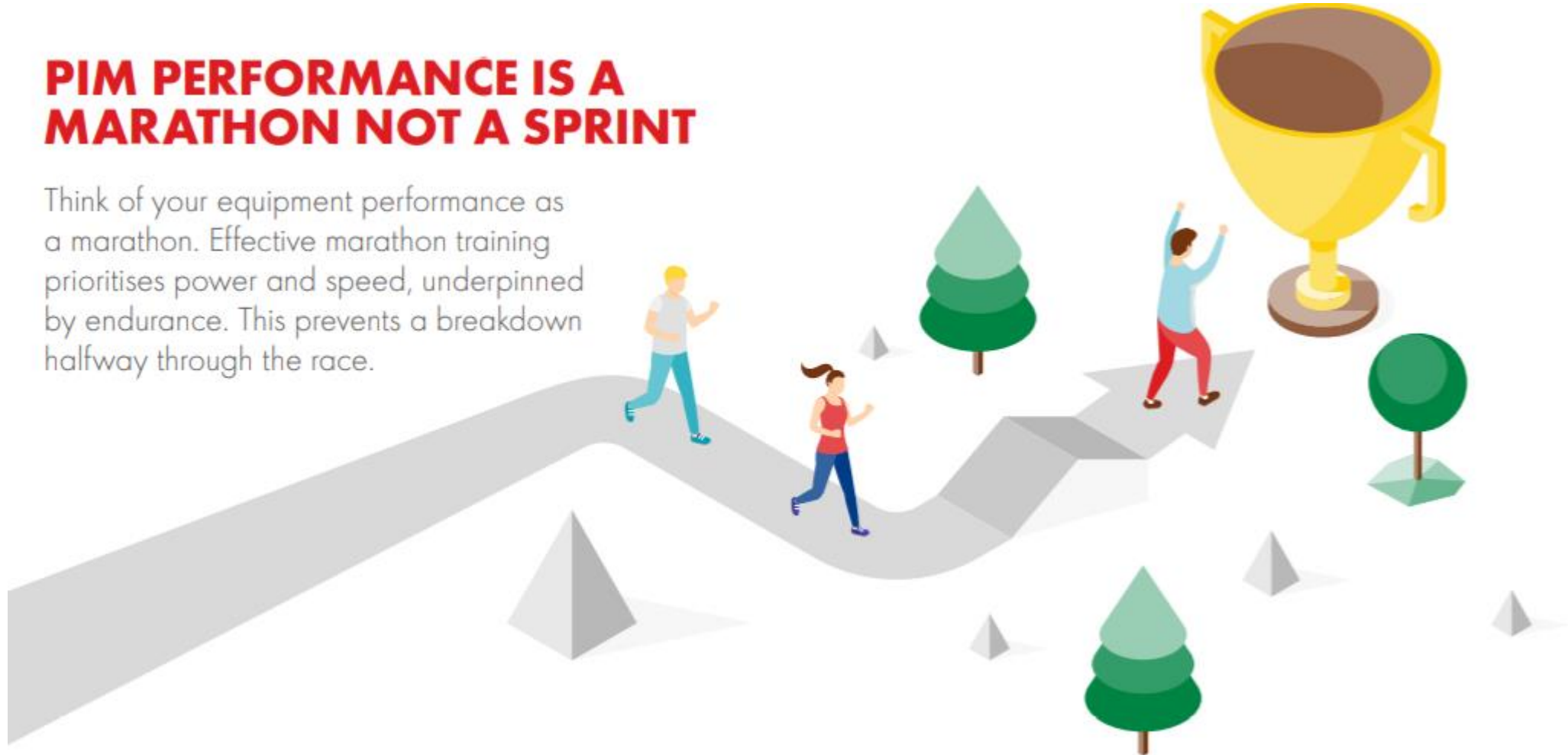
of maintenance budget²



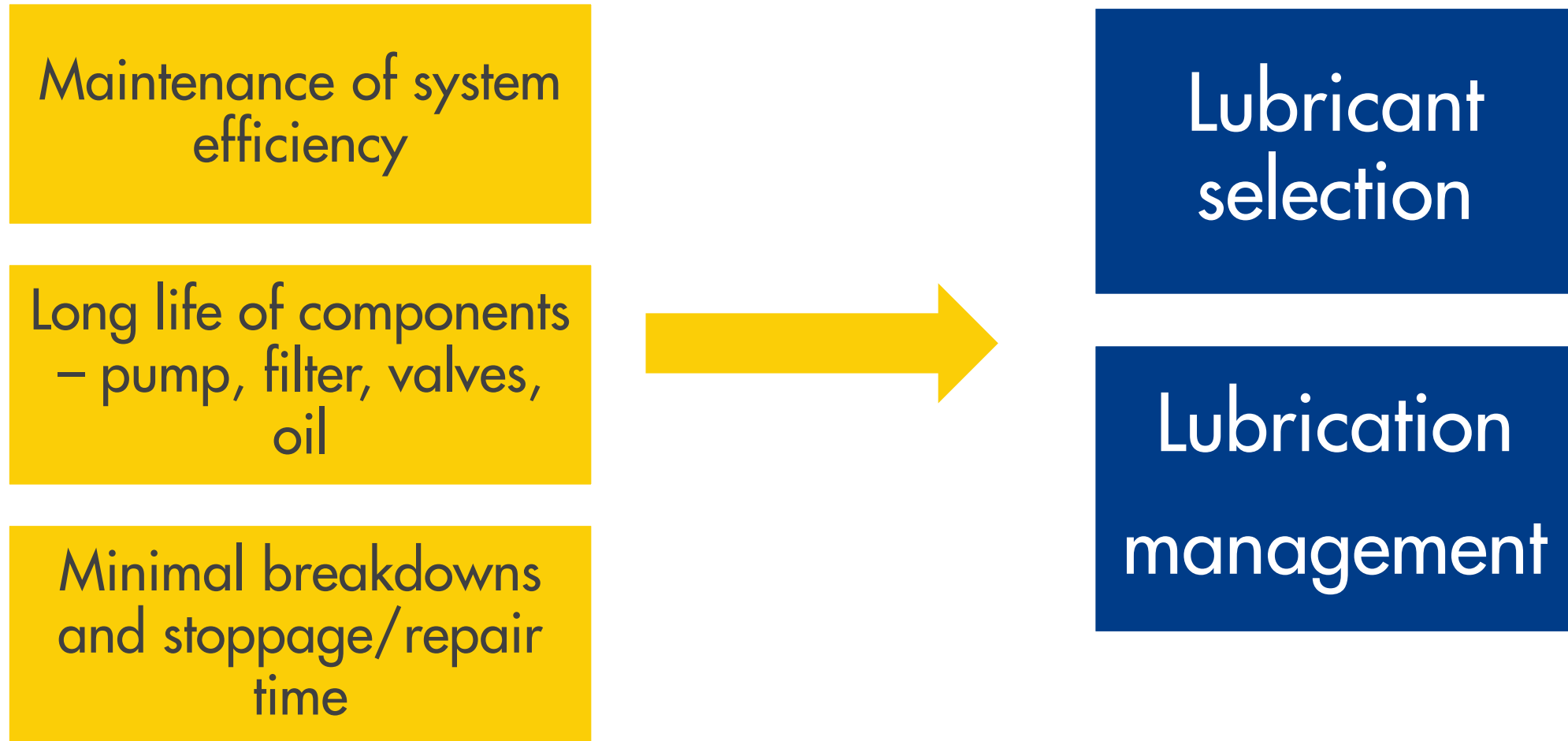
Plastic Injection Moulding (PIM) machines performance is a marathon not a sprint

PIM PERFORMANCE IS A MARATHON NOT A SPRINT

Think of your equipment performance as a marathon. Effective marathon training prioritises power and speed, underpinned by endurance. This prevents a breakdown halfway through the race.



How does Shell Lubricants translate cost saving into lubricants?



Our support to your operations

Shell Tellus

HYDRAULIC SYSTEM

Shell Tellus S2 MX
Shell Tellus S3 M
Shell Tellus S4 ME

Shell Omala

RECIPROCATING SCREW

Shell Omala S2 G
Shell Omala S4 GX

Shell LubeAnalyst

Oil condition monitoring

Shell Lube Optimiser

Reliability Services

Shell LubeCoach

Upskilling customers

Shell Corena

Compressor Oils

Shell Heat Transfer Oil S2

Thermic Fluid

Shell GADUS

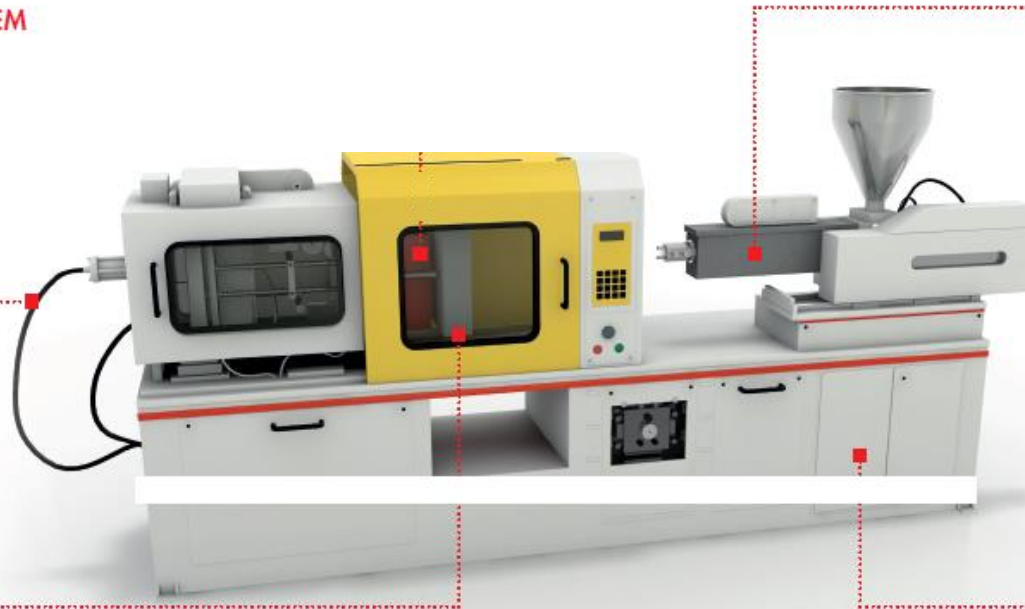
BUSHING

Shell Gadus S2 V220 2
Shell Gadus S2 V220AD 2
Shell Gadus S3 V460D 2

Shell GADUS

ELECTRIC MOTOR

Shell Gadus S2 V100 2
Shell Gadus S3 V100 2
Shell Gadus S5 V100 2



OEM approvals with plastic moulding machine manufacturers



Keeping our customers in the lead



Shell Tellus – one of the largest hydraulic oil brands in the world

Portfolio for plastic hydraulics



Shell Tellus S4 VE

Energy-efficient synthetic hydraulic fluid made with gas-to-liquids (GTL) technology

Shell Tellus S3 M

Zinc-free, high-performance hydraulic fluid

Shell Tellus S2 MX

High-performance hydraulic fluid

Shell Tellus S1 M

OEM performance hydraulic fluid

1 Productivity savings

Up to
4%



2

Synthetic base oil with
gas-to-liquids (GTL)
technology



Improved reliability, productivity & ROI

SMOOTHER VALVE OPERATION

DUE TO LESS DEGRADATION²

Less sludge



Tellus S2 MX

Higher sludge



Competitor

PROVEN PUMP WEAR PROTECTION,

PASSES TOUGHEST PUMP TESTS⁴

Better
Protection



Tellus S2 MX

Lower
Protection



Competitor

CLEANER SYSTEM LESS DOWNTIME³

Cleaner



Tellus S2 MX

More sludge



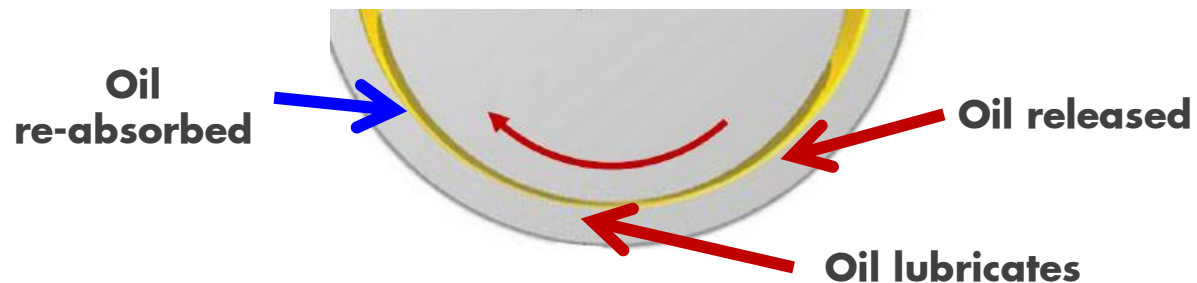
Competitor

Shell Gadus S2 V220 range of greases - high load carrying capacity

How a grease thickener works



Actual operation



Higher oil viscosity and protection
with Shell greases

Shell Gadus S2 V220 0





Oil viscosity in
other greases

100-160

Complete fluid management solutions with Shell Services

Shell
LubeAnalyst
Oil condition monitoring

Monitor oil every 3 months, including wear pattern, additives and cleanliness

Detailed report in 15 minutes









Full fledged lab for advanced tests

Detailed report in 15 minutes

Shell
Lube Optimiser
Reliability Services

End to end services on the spot to help customer maintain a clean system



 <p>Flushing</p>	 <p>Filtration</p>	 <p>Tank Cleaning</p>	 <p>Water Removal (Vacuum Dehydration)</p>
 <p>Machine/ Equipment Lease</p>	 <p>Oil Sampling Test</p>	 <p>Contamination Check</p>	 <p>Varnish Removal</p>

Questions and Answers

Q&A

