

FLEXIBLE SOLUTIONS

***Geared for
Growth***

**DRIVING THE
POWERTRAIN SYSTEM**



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Editor's note

Welcome to the first edition of Jendamar Junction for 2017. This year brings with it many exciting opportunities and also fresh challenges for the automation industry.

Last year, we saw some major developments worldwide, such as Britain's exit from the European Union, a new US president and currency demonetisation in India, which have changed world dynamics. These unexpected turns of events have strengthened our belief in being prepared for all eventualities at all times.

Changes in emission norms continue to have ramifications for the catalytic converter industry (page 15), and are among the global trends influencing powertrain development (page 3).

Jendamar, as always, responds positively to these challenges by staying flexible and thinking ahead before the need arises. This approach reflects in all aspects of our business from first contact right through to design, manufacturing and installation. Good design (page 13) is not necessarily complex but rather simple and easy to implement, with flexibility a standard feature.

The Group has begun flexing its muscle as a global player with some major expansion and investment in South Africa and India (page 6), while our MD, Quinton Uren, has set up a base in Germany to be closer to our customers in Europe (page 2).

Jendamar Techcellency Automation India Pvt. Ltd launched formally in India late last year – you can see photos from this colourful event on page 8. The company's seamless integration into the Group continues with our exchange programme (page 16).

Last but not least, we have taken your feedback from the first issue and included information on tightening technology and Industry 4.0. We hope you'll find this issue packed with insights designed to help our customers succeed.

Yours in automation,

Himanshu Jadhav
EDITOR (GLOBAL SALES MANAGER)



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Moving into the **FUTURE**

Jendamarck Group managing director Quinton Uren is spearheading the company's mission to entrench itself as a major global player by setting up his European base in Germany for 2017.

Uren will be overseeing the Group's research and development projects from the Jendamarck GMBH offices in Penzing. He has also committed to spending one month per quarter in South Africa, while keeping an eye on the international operations.

"Jendamarck has done a really good job of exceeding global expectations as a South African company coming up with world firsts," he says.

"But it's important to keep that momentum going and capitalise on the opportunities that abound in Europe. Building a strong presence on the continent can only increase our competitiveness."

Uren says Jendamarck will not be establishing a manufacturing entity in

Germany, opting to use its cost-effective bases in SA and India instead.

"My role as R&D liaison will be to focus on long-term, future-oriented projects. These machines are not for immediate release. We work closely with customers to understand and anticipate their needs down the track and design machines to fit this future."

He says there are so many aspects involved that the team has been expanded to cover mechanical, electrical, safety and software components, and also frontier aspects such as Industry 4.0 and the Internet of Things.

"We have formulated our strategy in this regard and are confident that we will remain at the leading edge of

design. Because of our flexible concepts, we come with a unique proposition. Sometimes people overlook the elegant simplicity of manual solutions as part of an automated line."

Uren believes the move is as much about relationships as it is about R&D, adding that face-to-face contact is essential in overcoming cultural barriers that sometimes cause miscommunication.

"Sitting across the table from each other, discussing potential issues and coming up with solutions – that's what builds a business."

He says the USA would be the next obvious move, with the first step being the set up of an American service partner in 2017. 

Driving global powertrain trends

The powertrain system lies at the literal and figurative heart of any vehicle assembly, but shifting regulations, trends and technologies are combining worldwide to change the shape of things to come.





Foremost among these is the growing international crusade against global warming, in which efficient ways of reducing harmful carbon dioxide emissions will play a critical role.

Rather than viewing this as a threat to production, many vehicle manufacturers have already begun exploring a multitude of possibilities, including alternative fuels, hybrid powertrains, lightweight material solutions and the downsizing of engines for greater fuel economy.

While future trends point towards fully electric cars, with hybrid vehicles representing the first steps in that direction, there are still massive infrastructural changes required before this vision is adopted wholesale by societies.

Stricter controls have not had a detrimental effect on the international vehicle market, with massive production in the Asia-Pacific region and increased demand for vehicles worldwide leading to consequent growth in the powertrain market.

Globally, this is predicted to expand at a compound annual growth rate of 5.3% over the next four years. According to a recent study, the powertrain market is also set to increase in value from US\$365.6 billion in 2013 to US\$524.6 billion by 2020.

REVAMPING POWERTRAINS

Revisiting the total powertrain system – which includes the engine, drive shafts, transmission and differentials that power the vehicle and make it go – has led to some exciting holistic innovations.

The trick, however, is to ensure that power and performance are not sacrificed in pursuit of economy and efficiency, and that, at the end of the day, the environmentally-sensitive vehicle still meets the consumer's needs in terms of delivering performance.

Engine downsizing, for example, has resulted in growing global sales of turbochargers to boost smaller engines and make them more powerful and efficient.

According to insights from international growth strategists Frost & Sullivan, between 34% and 36% of all petrol-driven engines sold in India are expected to be below one litre by 2017. Furthermore, they add that “the trend in the Asian market is that the majority of the passenger vehicle engines will have displacements below 1.5 litres after 2020.”

ICE STAYS SOLID

Although major modifications are afoot, the European Road Transport Research Advisory Council (ERTRAC) says the internal combustion engine is here to stay and that more than 60% of new passenger vehicles in Europe will still be powered in this way by 2040.

The inherent weakness of the internal combustion engine is that its conversion efficiency can be as low as 20% due to losses from mechanical friction pumping actions, and wasted heat. By integrating hybrid solutions and using renewable fuels, original equipment manufacturers (OEMs) are looking to optimise the system and target zero emissions and efficiencies above 50%. In fact, an article by PwC's Strategy & consultancy states that industry experts believe that “petroleum-based vehicle fuel economy can be improved by as much as 75% with combustion breakthroughs focused on maximising engine efficiency and minimising the formation of emissions within engine cylinders; exhaust aftertreatment technologies that reduce emissions; and the recovery of energy from waste heat.”

REGIONAL REGULATIONS

On the global map, Europe and the USA remain the dominant markets for powertrains, with tough yet vastly differing regulations on the monitoring of environmental pollution and stricter fuel economy driving innovation and compliance in the sector. The challenge for manufacturers remains in finding ways of customising the powertrain to meet the particular requirements in each local market.

According to the Frost & Sullivan report, the trend will be towards the development of modular components that can be shared across various vehicle models and regions, and those such as exhaust catalyst and direct injection systems that need to be customised for regional compliance.

The result would be improved cost savings for OEMs, which can be reinvested in the continued research and development of electric vehicles and other emerging technologies. 



Geared for growth

With a rapidly expanding global business, the Jendamarck Group has invested heavily in its products, premises and people to better serve its customers worldwide.

Jendamarck's South African and Indian operations have recorded double-digit growth, expanding in manpower, land and revenue.

To forge ahead on the technological front, the Group has expanded its research and development department by 30% – a critical differentiator in the automation field.

At the international headquarters in Port Elizabeth, South Africa, nearly R8 million was invested in expanding the machine shop, with another 1 300 square metres of floor space added to accommodate the increase in business. The staff complement now stands at 230 people, with more than 30 positions created in the past year alone.



Across the globe, in India, the emergence of a rising middle class has driven demand for motor vehicles in the local market, while government and industry leaders have been working hard to establish the country as a manufacturing export base through initiatives such as the Make in India campaign.

To cater for this automotive boom, Jendamarck Techcellency has expanded its staff complement from 35 to 88 employees over the past three years, with revenues more than doubling over the same period. In Pune, a new on-site design office and a control systems department are taking the company's automation aspirations forward.

In addition, the company will be expanding its almost 1 400 square metre premises (15 000 square feet) to include the adjacent property, adding a further 1 115 square metres (12 000 square feet) in the process. The new area includes additional office space and will

also be used for setting up new assembly lines and the Eepos rail system. It will be fully operational by April this year.

Jendamarck sales and design director Yanesh Naidoo believes these are all necessary investments, as there is still a significant gap in the market – and the Group's presence in India fills this critical niche.

"In India, there are many component suppliers, but few with Jendamarck's experience in integrating components, such as PLCs, into a complete solution," says Naidoo.

What distinguishes Jendamarck from local competitors, he says, is the brand's international footprint, which has created an understanding of the vastly differing requirements for each regional market. While Europe accounts for a third of Jendamarck's business, the Asian market runs a close second at around 27%, followed by South Africa (22.5%) and the Americas (16.5%) respectively.

"Our broad experience means we are able to understand a customer's requirements and offer them a low or high volume solution that is either manual, fully automated or a mix of the two," says Naidoo.

Being able to adapt to customer needs is key, he says. "We're from Africa, where you have to be flexible to be successful."

To better understand Jendamarck South Africa's standards and solutions, a few design engineers and programmers from India have been placed on a 12-month training programme in South Africa, while other members of the mechanical design department are taking part in a rolling two-month exchange programme.

Director of finance Dominique McQueen continues to visit India every month to ensure that business systems, standardised controls and procedures are implemented in line with Jendamarck standards. 

Open for business

Customers, partners, employees and friends gathered at the Holiday Inn Pune on August 26, 2016, to celebrate the official launch of Jendemark Techcellency in India. The cocktail function was a feast of information, entertainment and the latest in automation technology.



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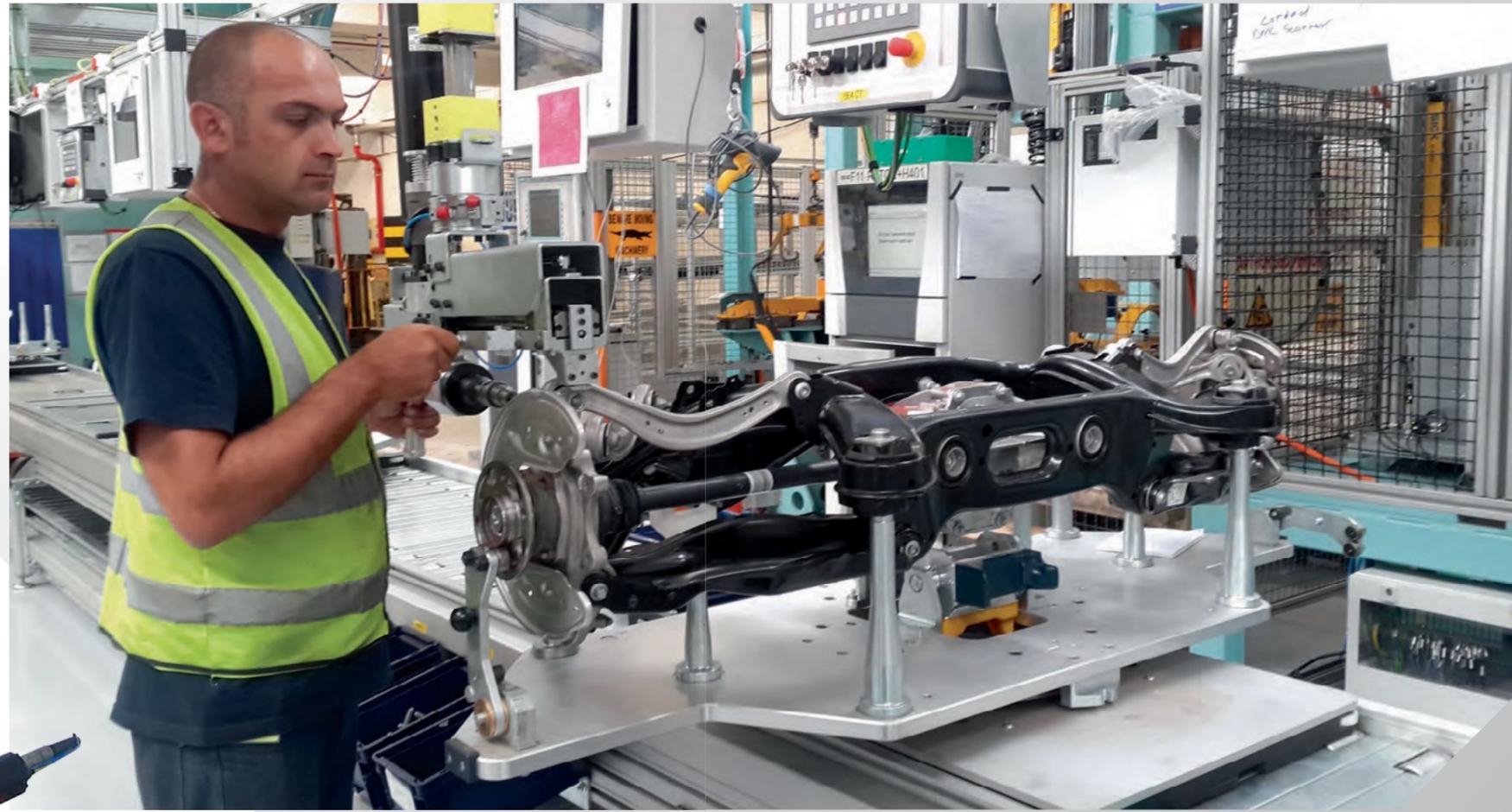


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1 & 9. Yanes Naidoo (Sales and Design Director) and Himanshu Jadhav (Global Sales Manager) spoke passionately about Jendemark's products and new developments.
 2. The winning team of Jendemark Techcellency.
 3. Guests and customers cheer for the new Jendemark Techcellency company.
 4. Representatives of Mahindra Heavy Engines meet the Jendemark Techcellency team.
 5. Jendemark Techcellency customers take centre stage.
 6. The director of the SAI Test Plant, Rujuta Jagtap, shares her thoughts about Jendemark Techcellency's products during the question-and-answer session.
 7. Cultural dancers wave the South African and Indian flags with pride as Africa meets India with the launch of Jendemark Techcellency.
 8. South African Consul (Political) Lerato Mashile (second from left) lights the ceremonial lamp with Jendemark executives (from left) Dominique McQueen, Nimesh Desai, Yanes Naidoo and Siegfried Lokotsch.



Getting with to grips TIGHTENING



TYPES OF TIGHTENING

Automated: A machine carries out the tightening operation without operator assistance. Parts are loaded manually or automatically in an enclosed facility and all torque reaction and part clamping is contained in this safety environment.

Semi-automated: Tightening is automated with some operator assistance, using hand-tool operations or tools mounted on a torque manipulator. The operator guides the tool towards the bolted joint and starts the process. The system tightens to a pre-set value and the operator manually removes the tool once done.

Manual: Modern assembly lines rarely use manual procedures, except in Disaster Recovery Mode, when an operator might use a manual click or torque wrench for limited component assembly during a breakdown on the main line. This is done under strict guidelines.

Modern vehicle assembly requires different types of joining technologies, including welding, clinching, riveting, pressing and bolted connections.

Each one has an important role to play, but bolted connections are used for critical joints, which are subject to heavy loads and vibration. As cars have become faster and demands on these joints have increased, tightening technology has improved accordingly. A loose bolt could be life-threatening at high speed.

Tightening systems have developed from simple wrenches, to wrenches with torque measurement, to computer-

controlled systems. High production volumes make fast assembly processes essential and the checking and verification of bolts critical.

Tightening technology focuses on the controlled and monitored assembly of bolted joints and making sure that every bolt is tightened to specification. Jendamar's tightening systems range from manual to semi-automated and fully automated solutions.

For special manual operations, an operator might use a smart-wrench with built-in torque transducers and gyro sensors, which electronically detect the torque and angle applied to the bolted joint. These computer-controlled manual operations are used mainly where normal tightening tools cannot reach or in production areas with low volumes.

SELECTING A TIGHTENING TOOL

When designing a bolted operation, the designer goes through lengthy calculations to work out the theoretical torque for the tightening required. Here's how to make the right choice.

Torque and angle

The designer will come up with a required torque, which could look something like this: 90Nm + 180°. This is typically known as a "torque and angle" type joint, which means that the bolt needs to be tightened to 90Nm, and when this point is reached, the system needs to keep tightening the bolt down for another 180° of rotation.

That means the final torque will be greater than 90Nm, possibly 150Nm to 170Nm for a soft joint. Normally, these final torque values cannot be easily determined, due to a multitude of influencing factors, so physical trial builds are done to find this range, which will determine tool selection.

Final range

Once the trial builds are complete, a range will be chosen, such as 150Nm to 170Nm, as per our example. The tightening tool must be able to handle 170Nm, but it is best practice to add a safety factor, so that the tool does not work to its maximum every time. While it differs from application to application, 20% is a good safety factor. Adding that to 170Nm determines a safe requirement of 204Nm.

Tool options

Possible tool options should therefore have a maximum output of at least 204Nm. Check the position in which the tightening will be done, as access to the bolting operation is critical. Generally, a straight spindle is the most cost-effective solution, but an access issue might necessitate an angle head output tool instead. In most cases, standard tools will work, but modern vehicle design does not take this into account. It is becoming commonplace to see specially designed output drives on tightening tools to access special areas where a bolted connection is required.

JENDAMARK JTM

Jendamar has worked extensively with tool manufacturing companies and delivered more than 1 200 tightening solutions worldwide. The Jendamar JTM is our most popular torque manipulator and its role is to take up the torque reaction during various tightening operations. If no other torque reaction devices, bar a simple hand-tool, are fitted, the JTM absorbs up to 400Nm of torque.

It is a cost-effective solution for:

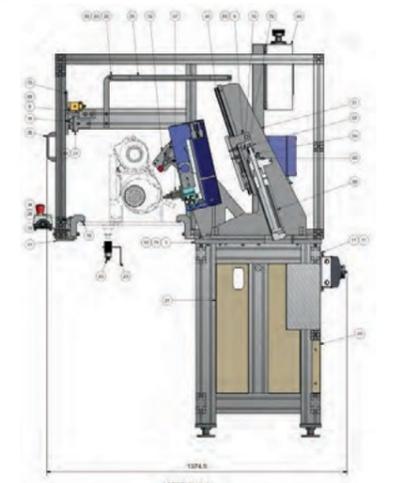
- normal tool handling
- mounting special tools such as friction test tools, pin stamp marking devices and manual driveshaft insertion tools



Bringing solutions to life



From a simple pencil sketch to a fully functional machine on the shop floor, the Jendamar design team makes automation solutions come to life.



Being involved from concept to execution allows Jendamar's team of design engineers to evolve their thinking in developing a workable solution. Each individual is encouraged to contribute in the team environment to produce the simplest and most sound mechanical solution to what is often a complex problem.

Multiple concept meetings follow the initial sketch phase, during which the design is scrutinised and critiqued by all relevant departments, including research and development, electrical design, IT programming, key accounts and project management.

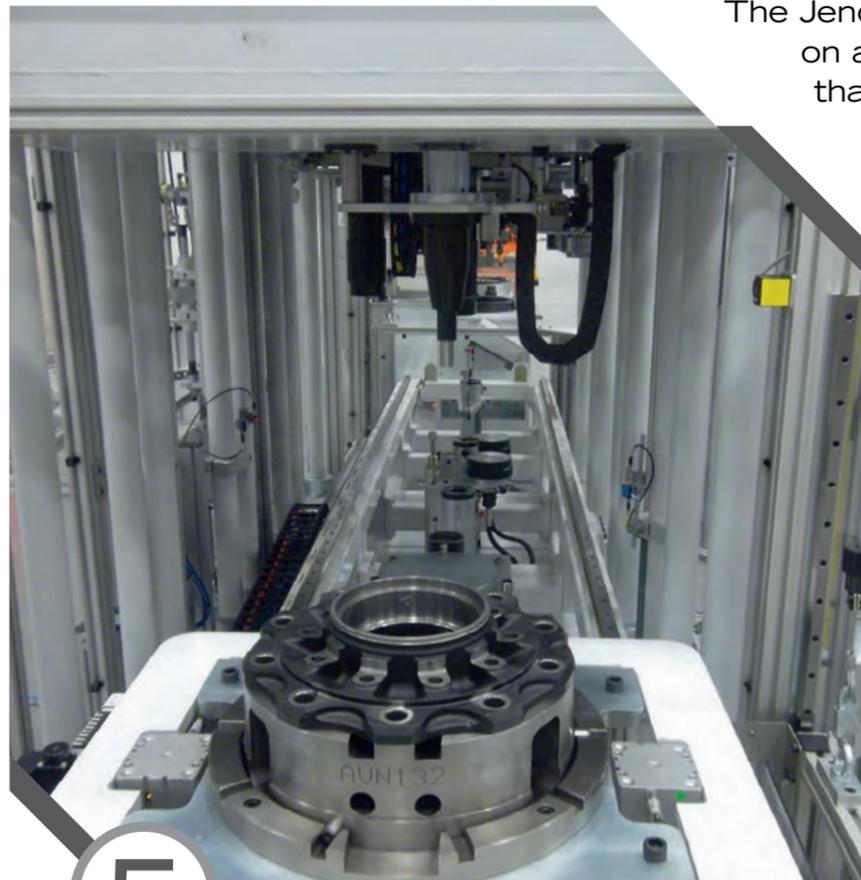
"This has the added benefit of identifying potential problem areas for

those departments while still in the planning phase," says mechanical design manager Marinus van Rooyen. He says Jendamar engineers are hired for their ability to think innovatively in solving any potential problems that may arise.

As much as other departments are involved from the outset, the design team are equally involved beyond the concept phase into the manufacturing, assembly and commissioning of the project.

"The value of this exposure can't be emphasised enough," says Van Rooyen. "It provides a better understanding for the design engineer and also cements the communication between departments, making the end product that much stronger and more effective." 

Advancing AXLE assembly



The Jendamar Group has embarked on an exciting large-scale project that is earmarked to become its flagship axle assembly line in South Africa this year.

Jendamar has been nominated to design, manufacture and install the rear and front axle, corner assembly lines and strut compression machines for this project.

According to Jendamar South Africa's key account manager for powertrain, Saleem Noorshib, this is one of the largest powertrain projects for this year, due for installation in July.

"We're making this line better than ever to provide a world-class, yet cost-effective, solution." Noorshib says the Group's Indian operation, Jendamar Techcellency, will produce the work piece carriers for the project.

"This is a fixture that holds the axle components in place while assembling," explains Noorshib, adding that a new design philosophy has revolutionised the way these carriers are made.

"Previously, they featured fixed tooling, with each model requiring its own carrier. The tooling can now be replaced with a different changeover set for each model, so you can do all your front axles on one carrier and your rear axles on another," he says.

While this project will not require changeover sets, Jendamar Techcellency will be implementing this new philosophy for a BMW powertrain assembly line in Thailand. The company was nominated to design, manufacture and install the complete engine to transmission and axle assembly line.

The project includes supplying work piece carriers as well as the steel structure for the line. Jendamar Techcellency is also manufacturing changeover sets for customers in India, Malaysia and Thailand. 

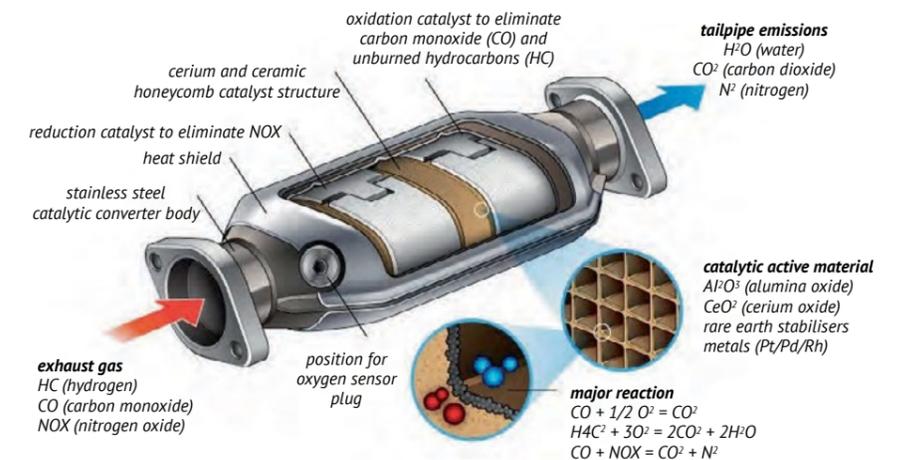
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FIVE BENEFITS OF THE NEW PHILOSOPHY:

- Changeover set fitment done in-house
- One workpiece carrier for all models
- Easy manual tooling set change
- Less storage space required
- More cost-effective

CATALYST for change

With international emission control regulations continuing to tighten, vehicle manufacturers are hard pressed to produce increasingly complex catalytic converters to deal more effectively with emissions.



The function of a catalytic converter is to reduce harmful pollutants in exhaust gases by converting toxic elements via a chemical process. The more stringent the local regulations, the more complex and comprehensive this cleaning process must be.

EMISSION TECHNOLOGY
Emission reduction technologies for gasoline-powered vehicles focus on controlling hydrocarbons, carbon monoxide and nitrogen oxides, while the focus for diesel-powered vehicles is on nitrogen oxides and particulate matter. The technologies are divided into in-cylinder and aftertreatment controls. Manufacturers must improve both to meet emissions limits.

For both gasoline and diesel-driven vehicles, this means upgrading the ignition systems, air and fuel mixture systems and engine control management. Additionally, gasoline-driven vehicles require improvements to the three-way catalytic converter system, while diesel versions require upgrades to the selective catalytic converter, diesel oxidation catalyst and diesel particulate filters.

Ultimately, this increases vehicle costs and requires more technologically advanced assembly systems.

EXTENDED WARRANTIES
A further concern for original equipment manufacturers (OEMs) is the drive towards extended vehicle warranties. While some countries require it by law, others are prompted by market trends, in some instances up to seven years.

Complex catalytic converters are expensive to produce and replace, therefore OEMs are finding new assembly methods to promote longevity. Jendamar has been at the forefront of this technology, building machines that assemble catalytic converters to rigorous standards. The machines required to build the parts that meet today's emissions regulations were developed years ago.

ASSEMBLY SOLUTIONS
Jendamar's flexible machines can be incorporated into manual and fully automated assembly lines. They are designed with multiple part variants and single-minute exchange of die in mind and include:

- Measuring machines
- Stuffing presses
- Forming machines
- Shrinking machines
- Marking stations
- Can orientation stations
- Mat weighing machines. 

CURRENT GLOBAL STANDARDS

Europe – Euro 6: Diesel engines must have carbon monoxide emissions below 0.5g/km, and gasoline engines below 1.0g/km.

USA – Tier 2: Nitrogen oxide emissions must be below 0.05g/mi, while non-methane hydrocarbons are capped at 0.075g/mi.

India – Bharat 3 or 4: The Ministry of Road Transport and Highways has announced that India will move directly to Bharat 6 by 2020. This is a massive jump in emissions standards, bringing it on par with Euro 6, which will have major implications for the Indian motor industry. Jendamar Techcellency builds on Jendamar's vast experience in the design and manufacture of catalytic converter lines for OEMs to provide innovative, cost-effective solutions that keep pace with the change.

Going global

Jendamark Group employees commute between India and South Africa to share experience and knowledge in pursuit of global excellence.

Johan Labuschagne Head of Powertrain Assembly

As a frequent traveller to India, my main focus has been mechanical design, assembly and commissioning support for Jendamark Techcellency. Much of our powertrain work is manufactured there, so I also check the assembly and testing of designs. In my new role as head of the powertrain business unit, I will visit every second month to build relationships with customers and support our sales team. All JMKT solutions are backed by the Jendamark Group, and are designed and produced with the support of the head office in South Africa. It is crucial for us to offer sound technical solutions that are cost-effective and tailor-made for the competitive Indian market.

Satish Dawale Senior Mechanical Design Engineer

During my two-month stay in South Africa, I have started working on the Faurecia India double-sided horizontal press machine. My experience working with the Jendamark design team has been fantastic. The system they use in the design process and implementation is especially something from which to learn. I have developed a very good understanding of design and manufacturing, which will definitely help me in the future. Everyone is very co-operative and helpful which is highly motivating.

“I am glad to be part of this positive change.”



From left: Abhimanyu, Sandesh, Johan, Timothy, Ratnesh and Satish.

Sandesh Gaiwad Mechanical Design Engineer

I came to South Africa to work with the mechanical design team and understand the design workflow system, which will be implemented in India shortly. I will be working with different departments such as the CAT system, tooling and powertrain to understand Jendamark's systems while working on live projects. *Sandesh was named Jendamark Techcellency's 2016 Employee of the Year.

Timothy Joubert Project Manager

I spent nine days in Pune, following up on the status of the VW India engine line project and meeting all the players involved. My first impression of India was that it is a very complex country. The people are proud and respectful but also friendly, helpful and positive. As one of the fastest-growing economies in the world, India is changing and hopefully with it the number of people who live in poverty. I am glad to be part of this positive change.

Ratnesh Patil Junior Control System Engineer

I am spending a year in South Africa, gaining international work experience. My role is to improve my programming skills for programmable logic controllers (PLCs), human-machine interfaces (HMIs), robots and other third-party devices as part of Jendamark's experienced team.

Abhimanyu Joshi Junior Mechanical Design Engineer

I had previously worked with Jendamark South Africa on a tooling project for Benteler in India. I have come here for six weeks to gather further experience in the same field. Having gained clear insight into Jendamark's tool design techniques and design methodology, I will help to introduce it to colleagues in India, where it will be implemented in the near future. Very friendly co-workers and helpful seniors have made my learning experience easy and comfortable. 

Ahead for engines

When Jendamark ventured into the Golf 1 engine assembly line project back in the early 2000s, it marked the start of a solid and significant partnership with Volkswagen South Africa (VWSA).

The A1 project, as it was known, was a watershed moment for both parties as it represented the introduction of smart tool tightening technology at VWSA.

“Before that, we used to build engines with spanners,” smiles Richard Reid, head of component production at VWSA's engine plant in Uitenhage. “But then things changed – volumes, quality requirements and customer expectations increased. We needed a more accurate and controlled method of tightening.”

After successfully integrating this new technology into the manual line, Jendamark went on to deliver other lines, through all the VW Golf and Polo ranges.

“Our approach has changed completely over the years,” says Reid.

By far the biggest challenge that VWSA set Jendamark was the flagship EA111 engine line, which started production in 2010. It is still rolling today, having produced more than 815 000 engines to date and, at the time of writing, operated at a year-to-date overall efficiency of 96.5%.

“This is the most successful line that we've installed in the engine plant. It's still operating flawlessly and at an output performance level far exceeding the initial target,” he says.

The main reason for this, he believes, is the strong, flexible design concept that underpins it. “We've been able to tweak it and improve the output capacity without affecting the quality or stability.”

Originally installed with a capacity of 540 units per day, the line currently runs at 648 units per day. Planning for it started as far back as 2008, borrowing best practices from Volkswagen engine plants in Germany and China, and modifying them to fit the South African context.

“We wanted a complete design shift from previous lines, with independent stations, smart tooling, data logging and product traceability. We also wanted a paperless environment with all work instructions displayed on human interface panels,” explains Reid.

From a controls perspective it was revolutionary, says Jendamark design director Yanesh Naidoo, but mechanically it drew on previous lines. The key differentiator, he says, was that it was a completely manual line but still 100% process secure.

“There are lots of checks and balances built into the control system that guide the operator and prevent a mistake from happening.”

But, Naidoo admits, it was not all plain sailing, as production was ramped up significantly in the first few months, resulting in various technical challenges.

“It wasn't the easiest project to execute – technically, commercially or cost-wise. If it weren't for our strong partnership, it might not have worked out.”

Reid agrees. “One of the biggest successes here is that we entered into this project as a team and not as a customer and supplier. If it wasn't for our joint effort, we wouldn't have achieved this success.” 



Richard Reid



Big projects take off

Jendamark Techcellency has secured an order to manufacture structural assemblies for TASL. These fabrications form a major part of a production facility for helicopters, which are built by Tata Advanced Systems Limited in Hyderabad, India.

As a key supplier to TASL's helicopter manufacturing programmes, Jendamark Techcellency was ready to lift off and rise to this new challenge.

Jendamark Techcellency has been tasked with manufacturing the structural assemblies, Splice 1 and Splice 2, which will be produced over a three-year period. These structures will be the biggest project of their kind for TASL, Hyderabad.

With timelines of 12 weeks for each of these projects, the scope of work included the complete manufacturing of the structural assemblies, inspection of fabrications by a certified welding inspector, on-site jig setting support and verification with a laser tracker at the TASL operations.

This project marks the continuation of a four-year relationship with TASL, which has included the Vertical Stabiliser Assembly and other assembly tools among other fixtures. As a Tier One supplier,

all aerospace projects have been completed according to the stringent processes and systems demanded by the international AS9100C:2009 standard.

According to assistant project manager Meet Desai, the recently expanded Jendamark Techcellency is equal to the task of machining big structures for aerospace customers. "The welding requirements on the big fabrications and achieving assembly accuracy over a distance of 10 to 14 metres are challenges," says Desai.

But, he says, the company's expanded infrastructure and investment in equipment has increased its capabilities in managing big projects.

"We have added a couple of vertical machining centres, or VMC machines, with a bigger bed size, as the aerospace tooling has bigger structures and huge components. We have a FARO laser tracker now too, which is a necessity and differentiates us from our competitors." 

Leading Industry 4.0

Jendamark and Festo have been supplying state-of-the-art Industry 4.0-compatible machines and components for years.

FESTO



WHAT IS INDUSTRY 4.0?

It is the fourth industrial revolution where factories and machines become 'smart' by incorporating these design principles:

- **Interoperability:** Machines and devices communicate over the Internet of Things.
- **Transparency:** More sensors and inputs from the machine environment provide high levels of information.
- **Technical assistance:** Systems are able to provide a high level of support and enable better decision-making by humans.
- **Decentralisation:** Machines and modular elements make decisions and perform tasks autonomously.

WHEN WILL IT BECOME A REALITY?

Industry 4.0 is already a reality. It is not a new concept, rather a design definition applied to standard functionalities that companies like Festo and Jendamark have been providing for years. Future production systems will be based on autonomously functioning mechatronic assemblies or intelligent components. Data processing is increasingly taking place at local levels, and a growing number of functions are directly integrated into the modules. They network, organise and configure themselves to take on orders from the superordinate control level. Jendamark's flexible machines and production facilities incorporate these technologies.

WHAT ARE ITS CHARACTERISTICS?

Components are characterised by the four 'I' properties:

- **Intuitive** to operate.
- **Intelligent** thanks to functional integration with, for example, a programmable logic controller or the ability to communicate. Individual components are able to provide information about which order they belong to or processing instructions.
- **Internet-capable** and locally networked on WLAN or industrial Ethernet.
- **Integrating** as modules log on to the master computer, communicate their capabilities and are then scheduled into the production process.

WHAT ARE THE BENEFITS?

Preconfigured controllers and adaptable interfaces minimise the time spent on assembly, configuration and system integration. Intelligent components have 'plug and produce' capability. In the factory of the future, connected components, subsystems and machine modules are expected to log in to the production facility independently and communicate directly with it. Jendamark and its partners make use of intelligent components to facilitate and speed up the engineering process when it comes to configuring, commissioning and operating facilities. 

Q&A Festo SA

Festo business development manager Russell Schwulst shares why the brand has partnered successfully with Jendamark for more than two decades.

Q: Tell us about the partnership.

A: Festo is Jendamark's preferred supplier of automation components in the field of pneumatics, as well as a major supplier of electric and electronic automation components. We share the same passion for detail, never compromise on quality, and invest in dependable business relationships.

Q: What combined strengths do you offer?

A: Festo and Jendamark are at the forefront of industrial automation. The machines Jendamark designs and the automation solutions Festo provides are perfectly matched. Like Jendamark, Festo has a comprehensive global footprint, and vast industry and application knowledge.

Q: What does the recent awarding of Red Dot status mean?

A: Festo won the international Red Dot Award for product design for our VZQA Pinch Valves and EXCT Linear Gantry. Manufacturers and designers from all over the world submit their latest products in the hope of being awarded this sought-after symbol of quality.

Q: How hard are Festo and Jendamark driving Industry 4.0?

A: This is a core focus areas for us, from the Bionic Learning Network to our intelligent products, where we implement the latest technology and control. Jendamark and Festo have been supplying Industry 4.0-compatible machines to the local and export market for years.



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