The world-leading provider of highly engineered flow control solutions for critical applications
We deliver great solutions for customers tackling the world’s most demanding engineering challenges

IMI Critical Engineering is a world-leading provider of critical flow control solutions that enable vital energy and process industries to operate safely, cleanly, reliably and more efficiently.

As part of IMI plc, we operate a global service network, with manufacturing facilities in 12 countries. We employ over 4,000 talented professionals across a range of disciplines. These include over 400 engineers, 150 project managers and over 250 dedicated aftermarket specialists – all committed to providing excellent service to our customers.

We design, manufacture and install customised, highly engineered solutions for new plant builds and also provide complete plant lifecycle service support. This ensures that our customers benefit from efficient maintenance, speedy issue resolution and plant optimisation at all times.

Our products are at the heart of complex energy and production processes. They control the flow of steam, gas and liquids in harsh environments – they are designed to withstand temperature and pressure extremes, as well as intensely abrasive or corrosive cyclical operations.

Our engineering expertise sets us apart. We combine technical knowledge, engineering design capability, application experience and innovative custom-designed products to deliver safe, reliable and durable solutions.

“Global trends are generating rapid growth in a number of sectors. Our business is strategically placed to support our customers’ challenges with proven technology, application optimisation and solutions that are reliable and cost-effective”

Roy Twite
IMI plc
Chief Executive
Our market-leading companies

The unique combination of our IMI Critical Engineering companies’ know-how and worldwide experience underpins our reputation as a leading global supplier to the major energy and industrial process sectors.

We help our customers control critical in-plant processes by providing superior, custom engineered valves, actuation and control systems.

Established over 135 years ago, based in Mannheim, Germany IMI Bopp & Reuther is a highly regarded control valve business designing a wide range of valves, making plants and processes safer and more efficient.

A key supplier of butterfly isolation valves to the Oil & Gas, Sugar, Ethanol Production and Water Treatment process industries throughout Brazil and South America.

Presenting an unrivalled portfolio of technologies, including DRAG®, BTG, ABJ® and technology acquired from Sulzer®, to meet extreme pressure and temperature control needs.

An international leader in the design and manufacture of triple eccentric metal seated butterfly valves, specialising in refining processes and cryogenic valves for LNG.

One of the world’s leading designers and manufacturers of silencer technologies within custom-designed products, which are engineered for a lifetime of service.

A world leader in slide, gate, goggle and through conduit valves, actuation and control units, specialising in Fluid Catalytic Conversion (FCC) applications.
Providing control solutions for actuation in critical applications, especially where reliability and performance are vital for process efficiency, plant safety and integrity.

High integrity valves for faultless performance in extreme applications, with technology developed in the Naval Marine industry.

IMI Zikesch provides total aftermarket service along with a comprehensive valve product range.

100 years of experience in the design and manufacture of butterfly and gate valves and blast furnace valves for the Iron & Steel, Power, and Petrochemical industries.

A leader in the Petrochemical, LNG, and shipbuilding industries, producing a range of gate, globe, top & side entry ball valves.

With over 100 years of experience, IMI Zikesch provides total aftermarket service along with a comprehensive valve product range.

A leading provider of bespoke valves for the Oil, Gas, Chemical and Petrochemical industries, used in applications where safety integrity and performance are critical.

Our market drivers
Market drivers that guide our growth

Like never before, a number of long-term global trends are driving the demand for cleaner sustainable energy, generated with efficient and reliable production processes. Each of the following market drivers pose significant challenges.

**Urbanisation**

> Mega cities and transport systems
> 24-hour demand

Energy is an essential building block for the cities of tomorrow. The IMI Critical Engineering businesses design and deploy the technology necessary to support the growth with:

> Attemperators for the most efficient combined cycle plants meeting “time of day” demands
> Turbine bypass systems for super critical plants that serve primary power
> Oil pipeline – transportation infrastructure
Environmental emissions

> Lower greenhouse gases
> Higher energy efficiency

Environmental legislation is striving for a balance between safety and quality. IMI Critical Engineering is at the forefront of innovation to make this happen with:

> Fugitive emission packing for LNG anti-surge valves
> Next generation renewable resources

Resource scarcity

> Coal and gas
> Demand for iron and steel

The demand for resources is driving existing and new facilities to be more efficient. IMI Critical Engineering is working with its industry partners to:

> Harness energy from remote locations
> Enhance efficiency for major industries
Engineering great solutions

We deliver great solutions to our customers through a unique combination of engineering know-how and fluid controls technology. At the heart of our ‘Engineering great solutions’ ethos is customer value.

Our relentless drive to solve customers’ fluid control problems has resulted in the creation of two proprietary training programmes: The Valve Doctor® programme and IMI Learn.

The Valve Doctors®
Our dedicated team of Valve Doctors® are the industry’s leading valve specialists and are focused on solving process flow problems for power, oil & gas and petrochemical plants around the world.

Our focus extends beyond valve design to include plant operation, system layout and control system integration. The Valve Doctors® are the product of a comprehensive training programme that demands our specialists to work in partnership with our customers to achieve the highest levels of performance, safety and reliability.

IMI Learn
IMI Learn further helps to establish our employees at the forefront of valve technology. It provides detailed learning modules to assist all of our businesses to understand more about how to achieve the highest levels of performance and reliability.

Worldwide engineers
Our staff of over 400 engineers worldwide understand how to convert industry knowledge, market insight and our customers’ toughest challenges into solutions that give our customers a competitive advantage.

Our key customers are the world’s leading players in the energy and process sectors and include Arcelor Mittal, Thyssen, Tata, Petrobras, Sinopec, Alstom, Mitsubishi Heavy Ind, Siemens, Shanghai Electric, Westinghouse, Urenco, Areva, Chevron and Bechtel.

We serve the following sectors:
- Oil & Gas
- Fossil Power
- Petrochemical
- Iron & Steel
- Process Industries
- Aftermarket & Service

Our elite team – The Valve Doctors® operate on-site wherever they are needed around the world, diagnosing problems, evaluating process requirements, and optimising configurations.
Oil & Gas

As the fastest growing sector, investment in oil and gas is significant. However, producing fields have aged such that the field profiles/mix have changed with smaller, more remote resources being commercialised. This leads to more demanding applications.

Working closely with process licensors and EPCs, our products protect the critical plant component. However, more importantly, our patented IMI STI actuation gives industry leading response times, accuracy and repeatability. This results in LNG trains running optimally, giving operators maximum output. As a result, IMI CCI is the world leader in compressor anti-surge valves.

The LNG process also relies on best-in-class isolation valves: IMI Truflo Rona ball valves and IMI Orton metal seated butterfly valves. Used on the liquefaction plant in a number of applications (cooling system, firefighting, and process valves), we also produce the cryogenic process valves and the loading/unloading valves. Our engineering expertise ensures safe faultless operation at -196°C.

With the need to access remote fields, the growth of Floating Production Storage and Offloading (FPSO) and Floating Liquefied Natural Gas (FLNG) is supported by IMI Critical Engineering. Our valves enable extreme processes to operate safely with the utmost reliability in what will be harsh environments – not only through the process on board, but also the powering and safety of the vessels.

High Integrity Protection Systems (HIPPS)

As demand continues for hydrocarbon resources, higher utilization of fields is a requirement. For older fields this means enhanced oil recovery through injecting media to improve flow rates. However, many more difficult fields also contain significant levels of H₂S (sour gas).

As a result, more field owners/operators want to ensure the safety of the field as well as the equipment investment – and HIPPS is a key application. Leveraging a long history of experience, IMI CCI in Italy designs control and hardware for the system, which we are successfully supplying to onshore fields in the Middle East.

HIPPS ensures your investment and production output is protected
Production chokes

Fire & safety system valves

Surge relief valves

For noise and vibration control, DRAG® is the world leading solution

Emergency depressurising / gas to flare

Isolation valves

Overboard dump valve

“There are 50 valve manufacturers here but only 3 we would trust in this application”

Service Engineer Manager Chiyoda
Industry sector

Fossil Power

IMI Critical Engineering has been the leading provider of customised severe service control valves for over 50 years through its IMI CCI and IMI Bopp and Reuther businesses for the power sector. With vast experience gained from over 20,000 valves installed, the know-how and expertise of IMI Critical Engineering remains unrivalled.

Supported by our engineers and specialists – dedicated teams of The Valve Doctors® – we draw on vast experience to provide the best solution to maximise system performance, reliability and uptime.

IMI Critical Engineering offers a broad portfolio of products. With control valves including DRAG®, BTG, ABJ and technology acquired from Sulzer®, we can assess process requirements and engineer the ideal combination of technologies to provide the optimised solution.

IMI Critical Engineering has 50 years’ experience of working with fossil power plant operators, completing over 20,000 severe service installations worldwide. Over 6,000 turbine bypass valves are currently in operation where our engineering know-how meets plant operators’ requirements for thermal shock, high-speed modulation, high rangeability, repeatable tight shut-off, and low noise with inline design for maintenance.

Supported by over 200 field service specialists, we can commission, service or support your power plant outage anywhere in the world. With manufacturing plants and service centres located around the world, 24-hour customer support is assured.

Critical for pipeline services

As winters are very long and cold in Alaska, keeping the oil sufficiently heated is critical for pipeline services.

In order to ensure production is optimised and flow rates are maintained when temperatures drop to below -50°F, Alyeska Pipeline Services sought to develop a way of mechanically heating the crude oil by cycling the fluid through a pump. A solution was found in a design that could allow large size particulates to flow through the valve disk stack which could also withstand the seismic activity that occurs in the region. The team designed, built and shipped a custom design which would raise the temperature by nearly 14°F, giving the emergency crews the time necessary to repair any issues before the oil pressure decreased or froze.
We have a large population of DRAG® valves at our stations... your product is the Cadillac of the industry....

Florida Light & Power, USA
Petrochemical

IMI Critical Engineering offers niche, highly engineered valves for critical applications in the Petrochemical sector, with world-leading technologies for delayed coking and fluid catalytic cracking.

Operating reliably and safely for the life of a refinery in extreme temperatures of 1,650°C and in erosive environments demands highly engineered solutions – the specialism of IMI Z&J (Zimmerman & Jansen) and IMI Remosa.

With 25-year lifecycles and extremely corrosive media, our products meet the exacting specifications of process licensors such as UOP, CB&I and Exxon, ensuring your plant performance is optimised.

IMI Remosa produces bespoke slide, butterfly, gate and through conduit valves that are designed for a specific plant. These are controlled by IMI Remosa’s actuators and hydraulic control units to match the increasing demand for high availability and reliability, with diagnostic systems to reduce unscheduled downtime. Used in FCC, these are critical products for the conversion of heavy gas oil to gasoline the world over.

IMI Z&J are world-renowned specialists in delayed coker and dehydrogenation processes for ethylene and propylene. Thermal cracking to produce hydrocarbon coke requires control of the drums and process, as well as, critically, the slide gate valves for top and bottom unheading.

A key part of the process, our bottom unheading devices ensure reliable and (most importantly) remote safe unheading to optimise operational efficiency.

For dehydrogenation processes (conversion of propane to propylene for plastics) IMI Z&J produces a range of inlet and outlet valves for air and hydrocarbon, as well as for purging.

Our wide range of products includes IMI Truflo Rona’s top entry ball valves. These highly engineered valves are used in purified teraphahathalic acid (PTA) for plastic production, where the reaction between secondary petroleum and acetic acid is a highly corrosive medium.

IMI Bopp & Reuther offer a full range of safety and safety relief valves for processes which support safe and reliable plant.

Catofin projects

The shale gas revolution in the USA has led to low-cost availability of propane. Propane can be used, via a dehydrogenation process, as the feedstock for the production of ethylene and propylene.

This has resulted in major investment and upgrades to facilities for dehydrogenation units, using the Catofin® process. As a result, customers turned to IMI Z&J, which has 15 references globally for this technology – having worked on every major plant for the last 55 years.

IMI Z&J successfully delivered 42” wedge-in-wedge gate valves and 48” air inlet and outlet valves.
Double disk through conduit
Top unheading and bottom unheading devices
Sliding gate valves
Top entry ball valves
Goggle valves
Turbo expander valves
Propane desuperheating
As a truly global industry, smelting plant owners and operators want to ensure the huge investment is utilised to its maximum in a very competitive sector. To do this, they need the most reliable plants, with highest yield and lowest cost to run. For this, they turn to IMI Critical Engineering – specifically our IMI Z&J (Zimmermann & Jansen) and IMI TH Jansen businesses.

This industry needs tailor-made, non-standardised flow control equipment. IMI Z&J and IMI TH Jansen can design and manufacture such equipment – valves of up to 6m diameter, designed to individual plant requirements for total plant lifecycle duration (25+ years).

Typical products are hot blast valves, up to 2.5m diameter, with temperatures of 1,650°C with energy saving designs that, when closed, are man-safe, and Goggle valves up to 5m diameter for 1,100°C in operation. Other products include lever valves and control valves. IMI TH Jansen also makes flat plate gate valves and air separation valves. We also supply tuyere stocks (hot blast/air nozzles) for blast furnaces. IMI Z&J have also developed new technologies to help reduce owners’ cost of production.

Our two key products are Top-gas Recovery Turbines (TRT) and No-Bell Top Charger (NBTC) for blast furnaces. TRTs are specially designed low revolution turbines that use the hot gases from the blast furnace to generate power. The design has been optimised to reduce all drag and friction to produce a high efficiency turbine – 30 years’ experience results in the lowest losses. They can simultaneously support two blast furnaces.

Innovative technologies

Our No-Bell Top Charger has been designed to optimise burden distribution in the blast furnace. With a flexible chute design, it is possible to charge the burden and the coke to any position in the blast furnace.

The constantly tilting angle is perfectly guided (acoustic gas measurement) to give exact level control. This generates better gas exploitation, leading to increased output from the furnace, but also greatly reduces the consumption of the reducing agents – a significant saving for plant owners/operators.
No-Bell Top Charger
Through conduit double disk valves
Hot blast valves
Air separation valves
Top-gas Recovery Turbines
Across all our sectors, the chemical and process industries, safety and reliability are of paramount importance. It is essential for plants to operate without interruption, and turnarounds for plant maintenance or upgrades are fast and efficient.

We provide world class products across process industries where safety valves are required to protect pressure systems for steam, gases and liquids.

Safety valves have the function of preventing inadmissible overpressure in all pressurized systems like pipe systems, pressure vessels, power boilers and reactors, in order to avoid danger to people, plant and the environment. These are set typically to the Maximum Allowable Working Pressure (MAWP) - a higher pressure than the operating pressure of the system to be protected. For functional and operating requirements, third party certifications and approvals of safety valves are required by laws, code and standards. IMI Bopp & Reuther safety valves fulfil this for all areas of the world (CE-marking, ASME section I, III and VIII designator, Chinese and Russian type test approvals.

The IMI Bopp & Reuther Si series are most commonly used in process plants. The closed spring bonnet traps the process fluid in the valve and prevents a release to the environment. The straightforward design and reliable guidance of the stainless steel inside parts ensure free and repeated discharge cycles.

Conventional safety valves are usually selected where a short outlet pipe leads to the atmosphere, where fluid is safely discharged into low pressure systems and where the fluid is non-critical.

Our safety valves with bellows between the body and bonnet are designed for where there is excessive build-up of back pressure, where the fluid is highly viscous or contains solid fractions that could have a corrosive effect on inner parts, where there is media with a very high temperature, or where use of safety valves with lifting devices the environment should be 100% protected against pollution.

IMI CCI has process steam turbine bypass, steam conditioning and desuperheating products to ensure plant uptime and the most cost effective output. With class leading products, including BTG technology - IMI CCI are leaders in applications for sugar, ethanol, paper and pulp processing industries worldwide.

Our range of products serve high temperatures and ensure high repeatable quality, such as our range from IMI Z&J for production of float glass. IMI Th Jansen provides air separation valves used across the world and approved by process licensors for the production of oxygen, hydrogen and other gasses.
Side entry ball valves

Top entry ball valves

Turbo expander butterfly & isolation valves

Through conduit slide valves

Bespoke gate isolation valves

Propane desuperheating
Our products are designed for the most extreme of environments – extremes of temperature, pressure, erosive media and severity of operation. Our engineers in IMI CCI, IMI Remosa or IMI Z&J in particular act as consultants partnering with customers through the design stage. It is crucial that we therefore support commissioning with our field service technicians – whenever and wherever your project is in the world.

We have our own in-house field service technician team, backed up with planners, coordinators and health & safety to ensure true 24 hour service capability - 7 days a week across the world.

With 15 manufacturing plants supported by service centres across the world, we can provide OEM parts to meet your outage or turnaround requirements. With portable workshops, we can set up on site to ensure outage or refinery turnarounds are managed to time and cost safely.

Our field service technicians can also support service and repair on any installed valves and regularly asked to replace, upgrade or repair competitor’s valves due to performance or reliability issues. We have a team able to engineer upgrades and replacement to meet your existing installation and configuration. This is critical for major refinery projects, where existing infrastructure to support the valves must be used.

IMI Critical has over 250 field service technicians across the world. These are also supported by our world renowned Valve Doctors® for any plant operation issues you have. In addition with IMI Bopp & Reuther and IMI Zikesch we have built even further on our capability.

We can provide aftermarket services for every valve, across all phases of a valve’s lifecycle, all over the world. This has added over 100 service technicians to the IMI CCI team with, 4 additional manufacturing facilities and an efficient back office, providing fast and effective support – assisting you from the erection and commissioning of the plant, through regular maintenance and any retrofits as may be required.

Since 1955, IMI Remosa has been operating in the field of industrial maintenance and specifically within refineries and petrochemical plants. With its proven experience in these areas, we are an excellent source of problem-solving as a consultant for engineering, retrofitting and repair work for any type of valve installed in FCC Units and Expander Power Recovery Units. This capability allows the replacement of the internals, along with the modification of the valve inside geometry, without removing the valve from the line.

IMI Z&J has a field service team which will oversee installation and commission of what are the largest valves in the world. We are experts in refinery turnarounds with technicians based out of our manufacturing locations in Duren, Germany and Houston, USA. Our expertise will ensure your plant is optimised whether it is delayed coking in petrochemical, blast furnaces in iron & steel mills or the glass industry.
Valve Doctors solve your plant problems

More than 250 service engineers

24 hour response to all global locations

Health and Safety of paramount importance

Turnarounds on refineries planned and managed
Our global reach

For more than 50 years, our business has been synonymous with innovation and performance in the severe service valve and controls industry. We have manufacturing operations in 19 countries and support our customers on the ground via local manufacturing facilities and our global service network, which includes 200 dedicated aftermarket specialists.

Europe

1. IMI Critical Engineering HQ
   Birmingham, UK

2. IMI Bopp & Reuther
   Mannheim, Germany

3. IMI CCI Aberdeen
   Aberdeen, UK

4. IMI CCI Austria
   Vienna, Austria

5. IMI CCI Brno
   Slupnice, Czech Republic

6. IMI CCI Florence
   Montelupo, Italy

7. IMI CCI Manchester
   Manchester, UK

8. IMI CCI Milan
   Milan, Italy

9. IMI CCI Sweden
   Säffle, Sweden

10. IMI CCI Switzerland
    Blattern, Switzerland

11. IMI Orton
    Piacenza, Italy

12. IMI Remosa
    Cagliari, Italy

13. IMI STI
    Levate, Italy

14. IMI Th Jansen
    St. Ingbert, Germany

15. IMI Truflo Marine
    Birmingham, UK

16. IMI Truflo Italy
    San Nicolo, Italy

17. IMI Z&J Germany
    Düren, Germany

18. IMI Zikesch Wesel
    Wesel, Germany

Asia

19. IMI Critical Engineering Chennai
    Chennai, India

20. IMI Critical Engineering Greater China
    Shanghai, China

21. IMI CCI Bangalore
    Karnataka, India

22. IMI Critical Engineering Japan
    Kobe, Japan

23. IMI Critical Engineering Korea
    Paju, Republic of Korea

24. IMI Critical Engineering Malaysia
    Kuala Lumpur, Malaysia

25. IMI Critical Engineering Singapore
    Singapore

26. IMI CCI SriCity
    Andhra Pradesh, India
We operate a global manufacturing and service network.