VELAN

Complete valve solutions

for the refining and petrochemical industries

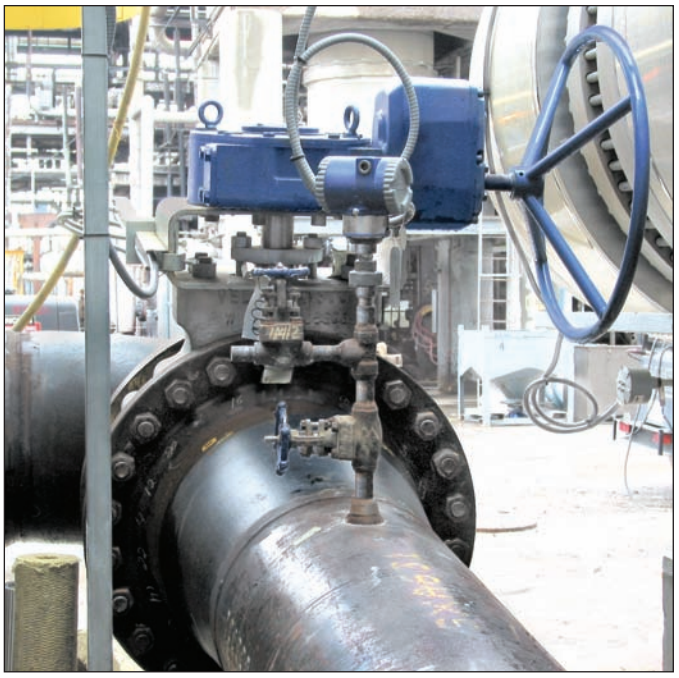
- API 600, 602, and 603 gate valves
- Globe valves
- Check valves
- Dual-plate check valves
- HF acid valves
- Triple-offset butterfly valves
- Metal-seated ball valves
- Resilient-seated ball valves
- API 6D and 6A ball valves
- Coker ball valves
- Steam traps

¼ – 60" (8–1500 mm)

• *Low emissions* • *Easy maintenance*
• *Long and reliable service*

REFINING & PETROCHEMICALS

A world leader in valve design, engineering solutions, and manufacturing



20" (500 mm) class 150 Torqseal™ valve on cooling water isolation to the heat exchanger.

Leading the way...

Velan is one of the world's largest manufacturers of industrial steel valves, recognized as a leader in quality and innovation. Founded by A.K. Velan in 1950, our company leverages advanced engineering capabilities and innovation to continuously expand our offering of industrial valves.

Today, Velan gate, globe, check, ball, butterfly, knife gate, and engineered severe service valves are installed throughout the world, handling diverse applications in the power, oil and gas, refining and petrochemical, chemical, pulp and paper, cryogenics, mining, and marine industries.

Engineered solutions

Velan's Engineering Design Group has vast experience, sophisticated software, and testing tools that enable us to find solutions to any customer challenge.

Whether it is for valves to handle liquid helium at -458°F (-272°C) in the world's largest particle accelerator at CERN, Geneva; four-way switch coker ball valves to handle one of the refining industry's toughest services; or valves for main steam isolation service in an operating nuclear power plant, Velan has been selected by most of the world's leading engineering construction firms and industrial end users. A long-standing commitment to quality has kept Velan at the forefront of industry standards.

Velan holds all major industry certifications, including ASME Section III, ISO 9001:2000, PED, and API 6D. Many prominent companies have established partnerships or global supply agreements with Velan.

A global manufacturing leader

Velan uses the latest automation technology, including CNC machines and many special-purpose transfer machines, enhanced by proprietary production techniques. Thanks to a wide range of equipment, we can efficiently handle highly customized orders as well as large production runs.

Velan employs over 1,800 professionals, the majority of whom are located in North America. International production centers are complemented by a global sales and distribution network, offering personal customer service and quick access to stock worldwide. Because customer requirements for immediate deliveries have escalated in the last few years, Velan has opened a number of quick-ship warehouses in North America to supplement the inventories of our stocking distributors.

Total quality commitment

Velan is totally committed to offering products and service that exceed customer expectations. All Velan valves are designed and manufactured with an emphasis on low emissions, safety, simple maintenance, ease of operation, and above all, long, and reliable service life. In fact, when a leading North American repair shop recently did an analysis on the reliability and repairability of commodity valves, Velan finished first. Whether we are manufacturing commodity valves or specialty valves, we deliver excellent long-term value to our customers.

VELAN AT A GLANCE

History
- Founded in 1950

Sales
- Over $400 million

People
- Over 1,800 employees

Production facilities
- 5 plants in North America
- 5 plants in Europe
- 3 plants in Asia

Focus
- Entirely focused on industrial valves

Product line
- Gate, globe, check, ball, butterfly, and engineered severe service valves
- Steam traps

Quality
All major approvals, including
- ISO 9001:2000 (since 1991)
- ASME N stamp for nuclear quality (since 1970)
- API 6D
- Total Process Improvement Program (including Lean Manufacturing, Six Sigma)

Engineering capabilities
Extensive engineering and R&D capabilities
- Cycle test facilities
- Stress analysis capabilities

Production capabilities
Leader in automated production
- CNC machines
- Multi-station transfer machines

Approval and acceptance
Approved by all major companies in the markets served

Value
Industry-leading performance and low total cost of ownership

Serving the refining and petrochemical industries

Velan has serviced the refining and petrochemical industries since the early 1950s, building an installation base that covers most major refineries and petrochemical plants throughout North America and the world.

Velan is a leader in the design and manufacturing of valves for the refining and petrochemical industries, and offers:

- API 600, 602, and 603 gate, globe, and check valves.
- Quarter-turn valves for tough process applications, including coker ball valves, Securaseal® metal-seated ball valves, and Torqseal™ triple-offset butterfly valves.
- Pressure seal, y-pattern, and forged steel gate, globe, and check valves, and steam traps.

Velan manufactures valves in sizes up to 60" (1500 mm), designed specifically for reliable, low fugitive emissions performance in difficult services in petroleum refining applications. Velan valves represent over 50 years of evolutionary improvements that have helped us perfect our designs.

Velan gate, globe, and check valves are available with forged steel bodies including pressure seal valves in sizes up to 24" (600 mm) and API 600 cast steel bodies up to 60" (1500 mm), with or without motor operators.

Central to Velan's success in the refining industry is our quarter-turn product line, which includes rugged Securaseal® and Torqseal™ metal-seated valves and offers greater strength and longer service life.

24" (600 mm) cast steel gate valve in hydrocarbon service.

Like all Velan valves, these products are designed for simple in-line maintenance, including our top-entry ball valve with in-line replaceable seats.

Furthermore, Velan offers a variety of engineered valves for severe services in petrochemical plants, including a leading range of coker ball valves. Velan's vast offering of valves is well positioned for high performance in virtually every upstream and downstream application.

API 600, 602, and 603 gate valves
¼-60" (8-1500 mm), ASME classes 150-4500
Product catalogs: VEL-PS, VEL-SFV, VEL-CSV

Globe valves
¼-24" (8-600 mm), ASME classes 150-4500
Product catalogs: VEL-PS, VEL-SFV, VEL-CSV

Check valves
¼-36" (8-900 mm), ASME classes 150-2500
Product catalogs: VEL-PS, VEL-SFV, VEL-CSV, VEL-WCV

Dual-plate check valves
2-60" (50-1500 mm), ASME classes 150–2500
Product catalogs: VEL-PQCV

HF acid valves
2-36" (50-900 mm), ASME classes 150-300
Product catalogs: VEL-HFA

Triple-offset butterfly valves
3-48" (80-1200 mm), ASME classes 150-600
Product catalogs: VEL-BF

Metal-seated ball valves
½-24" (15-600 mm), ASME classes 150-4500
Product catalogs: VEL-MS, VEL-PBV

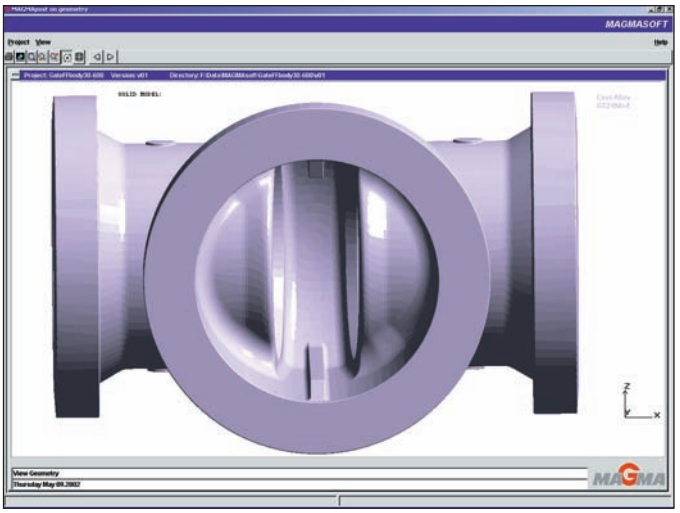
Resilient-seated ball valves
¼-24" (8-600 mm), ASME classes 150-600
Product catalogs: VEL-BV, VEL-GPBV, VEL-VTP

API 6D and 6A ball valves
1-64" (25-1600 mm)
Product catalogs: VEL-BV6D

Coker ball valves
¼-36" (8-900 mm), ASME classes 150-2500
Product catalogs: VEL-CBV

Steam traps
0-2600 psi (179 bar), 1,100°F (593°C)
Product catalogs: VEL-ST

Innovative solutions that are consistently safe and reliable



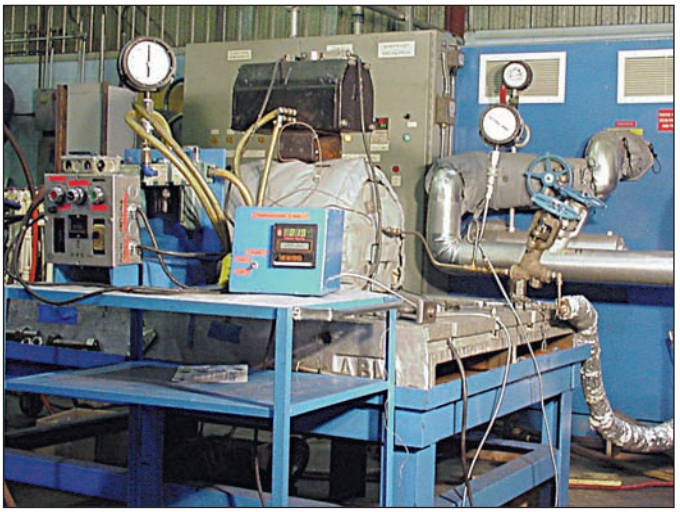
Velan takes casting quality seriously. Magmasoft® casting simulation is part of a comprehensive approach to consistently producing top quality products.

Top-quality engineered valves

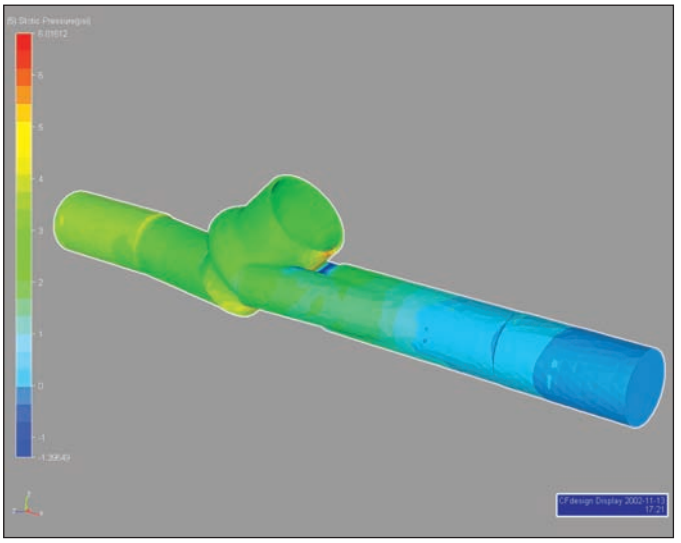
For more than 50 years, Velan has addressed critical applications in the oil and gas, refining, pulp and paper, nuclear, chemical, and mining industries. One of the groups that has contributed most to our continued success is our Engineering Design Group — the team responsible for ensuring our valves are built to last and have an extremely long and reliable service life.

Regardless of whether the demand is for a relatively simple API 600 gate valve or a highly engineered coker switch valve, complete with a control system, this team of professional engineers work with advanced software applications including Finite Element Analysis (FEA), computational fluid dynamics, and three-dimensional solid modeling to design top-quality valves that meet our clients' application needs.

Our extensive R&D facilities are another key component in our proven formula for achieving manufacturing excellence.



The performance of hot cycling tests in Velan's R&D facilities.



Velan used computational fluid dynamics to improve the flow characteristics of this 4" (100 mm) globe valve.

They are fully outfitted with steam boilers and superheaters, flow loops, and cryogenic test stands — essential tools in ensuring we consistently meet the changing needs of the most challenging environments.

We are currently engaged in advanced research in metal spray technology, using the services of independent laboratories for abrasion, sliding wear, bond strength testing, scanning electron microscopy, and X-ray diffraction.

ON-DEMAND ENGINEERING CAPABILITIES

- Valve design
- Stress analysis and finite element analysis
- Application engineering
- Flow analysis
- Thrust and torque calculation
- Actuator sizing
- Risk and root cause failure analysis
- System upgrades
- Weak link analysis
- Custom testing and test data analysis (NDT, X-ray review, UT testing, etc.)
- Validation of retrofit changes

Velan can supply turn-key automated packages with integral control actuation for two-wire and closed loop systems (Profibus, Modbus, Fieldbus, etc.).

One-stop shopping with Velan

Through our global network of distributors, we offer OEM actuators that meet the most demanding on/off and control applications. Since quality counts as much when it comes to choosing business partners as it does when selecting products, we interview our distributors before appointing them as authorized actuator mounting shops, and continue to carefully audit them over time.

In addition, we go through an extremely thorough process to qualify the actuators themselves. This ensures we can offer everything from multi-turn electric actuators on raising stem valves to scotch-yoke or double opposed piston actuators on rotary valves and turn-key control systems.

An actuator is installed on a metal-seated ball valve before hydrotesting.

Hunting down fugitive emissions

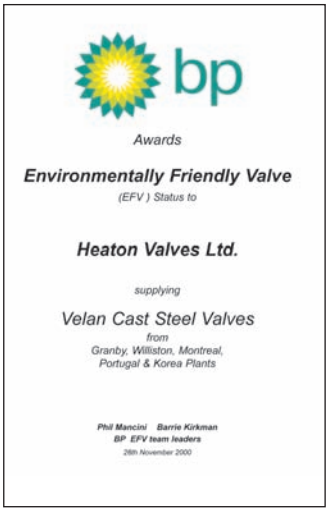
With environmental concerns growing and legislation following suit, industries worldwide are facing enormous challenges in minimizing their negative impact on the environment.

Environmental devastation aside, petrochemical resources are also becoming increasingly valuable, and plants can no longer afford to operate without adhering to strict fugitive emissions standards.

Since the mid-1970's, Velan has worked on developing sealing technologies that minimize leakage. Today, our valves offer the most stringent emissions guarantees. For those applications that require even lower emissions, we have a rane of zero-emission offerings.

AUTOMATION OFFERINGS

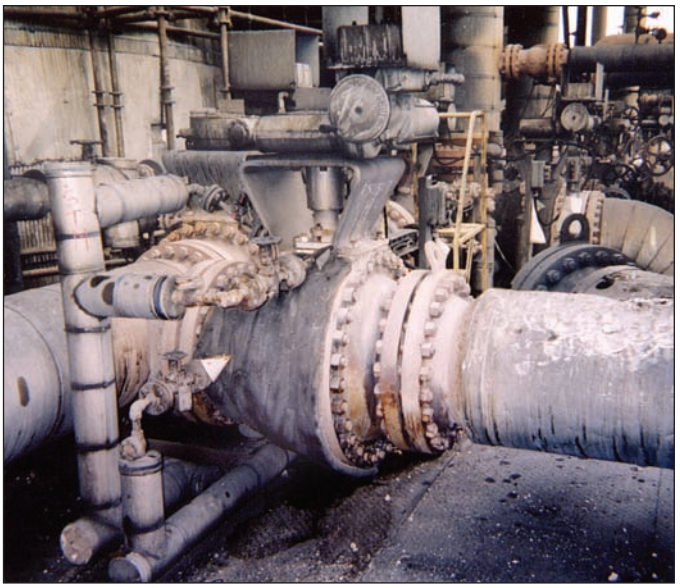
- Electric, hydraulic, and pneumatic actuation
- Preinstallation of switches, positioners, thrust and torque sensors, signal conditioners
- Integral control actuation, two-wire, and closed-loop systems
- OEM actuators through Velan stocking distribution or actuators of the customer's choice
- Overrides, limit stops, and most accessories standard



BP, one of the world's largest oil companies, awards "Environmentally Friendly Valve" status to Velan cast steel valves.

Velan performs emissions testing to guarantee our valves meet strict low emission criteria.

Proven expertise in the refining and petrochemical industries



24" (600 mm) full-bore severe service metal-seated valve has been in uninterrupted service for over six years.

Metal-seated ball valves

Velan manufactures a wide range of severe service metal-seated ball valves specifically designed for the refining and petrochemical industries. Velan's line of coker ball valves, which includes a multi-ported switch valve has been successfully installed in over 90 delayed coker units worldwide. Applications range from inlet transfer lines to heater isolation.

Velan also manufactures a full line of metal-seated valves in sizes ½–24" (15–600 mm) in ASME pressure classes 150–4500, and offers tight bidirectional shut-off in the Securaseal® product line. Applications range from catalyst handling to slurries and fly ash.

HF acid valves

Alkylation is the refining process for chemically combining isobutene with olefin hydrocarbons through the control of temperature and pressure in the presence of an acid catalyst, usually sulfuric acid or hydroflouric acid.

The product, alkylate, has high octane value and is blended with motor oil or aviation oil to improve the "anti-knock" value of the fuel.

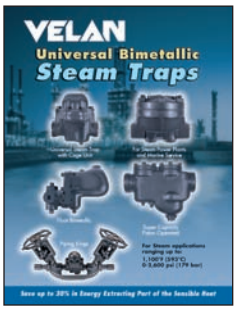
Hydrofluoric acid, one of the catalysts used in this process, is highly corrosive and dangerous if leaked into the atmosphere. Consequently, this is a critical valve application and there are few manufacturers with the appropriate expertise.

There are two major licensors for HF alkylation service, ConocoPhillips and UOP. Velan manufactures forged steel and cast steel valves for both licenses and we have installations all over the world.

Two HF acid 12" (300 mm) class 300 gate valves installed at ExxonMobil.

Steam traps

Velan's comprehensive range of steam traps is based on a unique design that was developed and patented by A.K. Velan, CEO of Velan Inc., in the early 1950s. This unique product has been proven to help major refineries realize significant savings on their steam costs.



Velan's current steam trap catalog (right) next to the original catalog (far right).

Pressure seal valves

Velan manufactures a full range of pressure seal gate, globe, and check valves for high pressure/high temperature applications. Velan is unique in offering forged bodies and bonnets in sizes up to 24" (600 mm) to improve the quality of the pressure boundary, ensuring that the highest quality material is being used in Velan products.

This ensures greater strength, structural integrity, and reliability. Velan also uses a new live-loaded pressure seal design, which maintains a bonnet seal regardless of pressure/temperature fluctuations.

A 10" (250 mm) pressure seal valve at a refinery in Brazil.

A large Torqseal™ triple-offset butterfly valve used for crude oil service in Dalian Seaport (China).

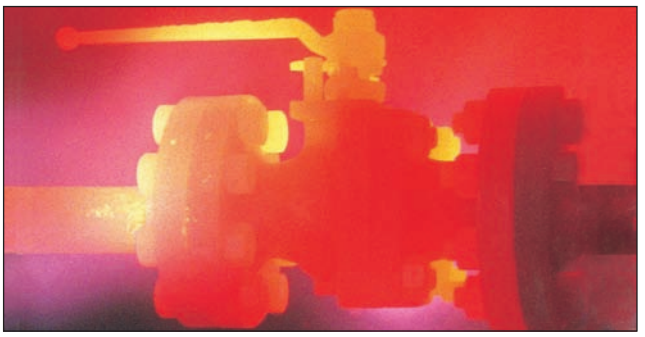
Torqseal™ butterfly valve

The Torqseal™ triple-offset metal-seated butterfly valve provides bi-directional bubble tight shutoff. Each valve is tested to the API 598-resilient seated criteria. The unique shutoff capabilities combined with the maintenance-free packing makes this valve an excellent choice for isolation service.

The Torqseal™ is also well suited for overhead vapor lines, steam distribution, and high temperature applications where tight shutoff is needed. Recently Velan signed a contract with a major terminal company that has chosen Velan's Torqseal™ valves as the standard valve for all their tank farms.

Velan meets new standards in fire testing ISO 10497 and API 607 Rev. 5

Although metal-seated valves are inherently "fire-safe," Velan is committed to qualifying products to the latest industry standards. All of Velan's quarter-turn valves, including Torqseal™ and Securaseal® metal-seated valves and Memoryseal™ valves, meet API 607 rev. 5 standards.



Global service with strong local presence

When you need valves now...

Velan is a true global manufacturing leader. What's more, our global presence goes far beyond our manufacturing facilities: our wide range of valves are sold through an extensive network of distribution companies.

Our distributors are further supported by our North American and European distribution centers, so a Velan distributor is always nearby and ready to help should the need arise. Over the years, Velan's large inventories and premier distribution network have helped us become a leader in supplying MRO contracts to leading petroleum companies around the world.

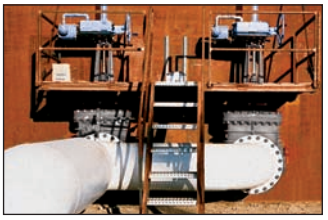
Velan's regional sales managers and our distributors are always on the lookout for new applications that require valve expertise and process knowledge.

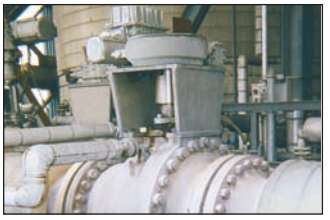
Furthermore, many of our distributors offer value-added services, such as automation, which can lower lead times and help with faster turnarounds.

Velan's stocking product program

Velan's product stocking program includes a large selection of multi-turn and quarter-turn valves in carbon, chrome, stainless, and alloy steels for the petrochemical and refining industries.

- **API 600, 602, and 603 gate, globe, and check valves**
- **Dual-plate check valves**
- **Triple-offset butterfly valves**
- **Resilient-seated ball valves**
- **Coker ball valves**
- **HF acid valves**
- **Metal-seated ball valves**
- **API 6D and 6A ball valves**
- **Steam traps**





Worldwide engineering and field services

At Velan, we take aftermarket service seriously and are committed to full support of our products in the field — every step of the way from post start-up technical assistance through to delivery of aftermarket products and services.

Our technicians are industry professionals, with years of valve and customer service experience to draw upon. They prepare clear, comprehensive reports that detail the scope of the problem as well as any service calls or other activities associated with it. This ensures that every service issue reported is documented and can be maintained in a knowledge base, which is periodically reviewed to determine if trends are evident. Keeping the users of Velan products satisfied is part of the key to our success over the years, and our service group takes pride in continuing and supporting that tradition of excellence.

Velan's Field Engineering Services Department has launched a knowledge base to help maintenance personnel troubleshoot valve problems. Based on the company's detailed service issue database, valvediagnostics.com *allows users to diagnose their problems and find a recommended solution.*

Downstream production

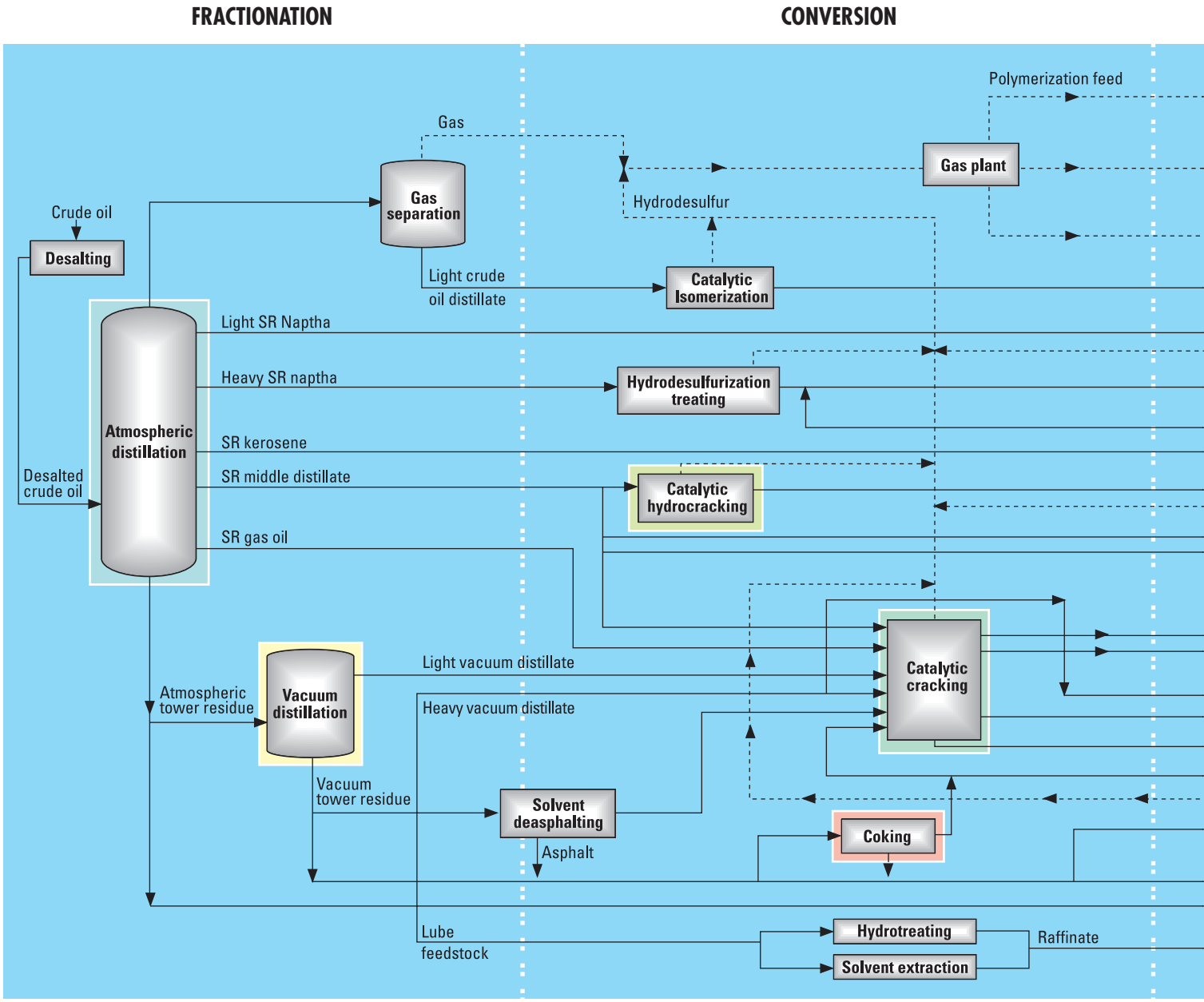
The process overviews

The refining process takes crude oil and separates it into useable products. These products range from lubricants to LPG, gasoline, kerosene, residual and distillate fuels, coke, asphalt, solvents, and petrochemical feedstock.

The refining process starts with fractionating, where the crude is sent through two distillation units. The first unit is atmospheric distillation, which separates and recovers the lighter fractions from the fresh crude oil.

The reduced crude feed is then sent to the second distillation unit, vacuum distillation, where light, medium, and heavy lube oil is separated.

The separated crudes, now called feedstocks, are sent to different catalytic isomerization areas of the plant where they are treated and further separated and "refined."

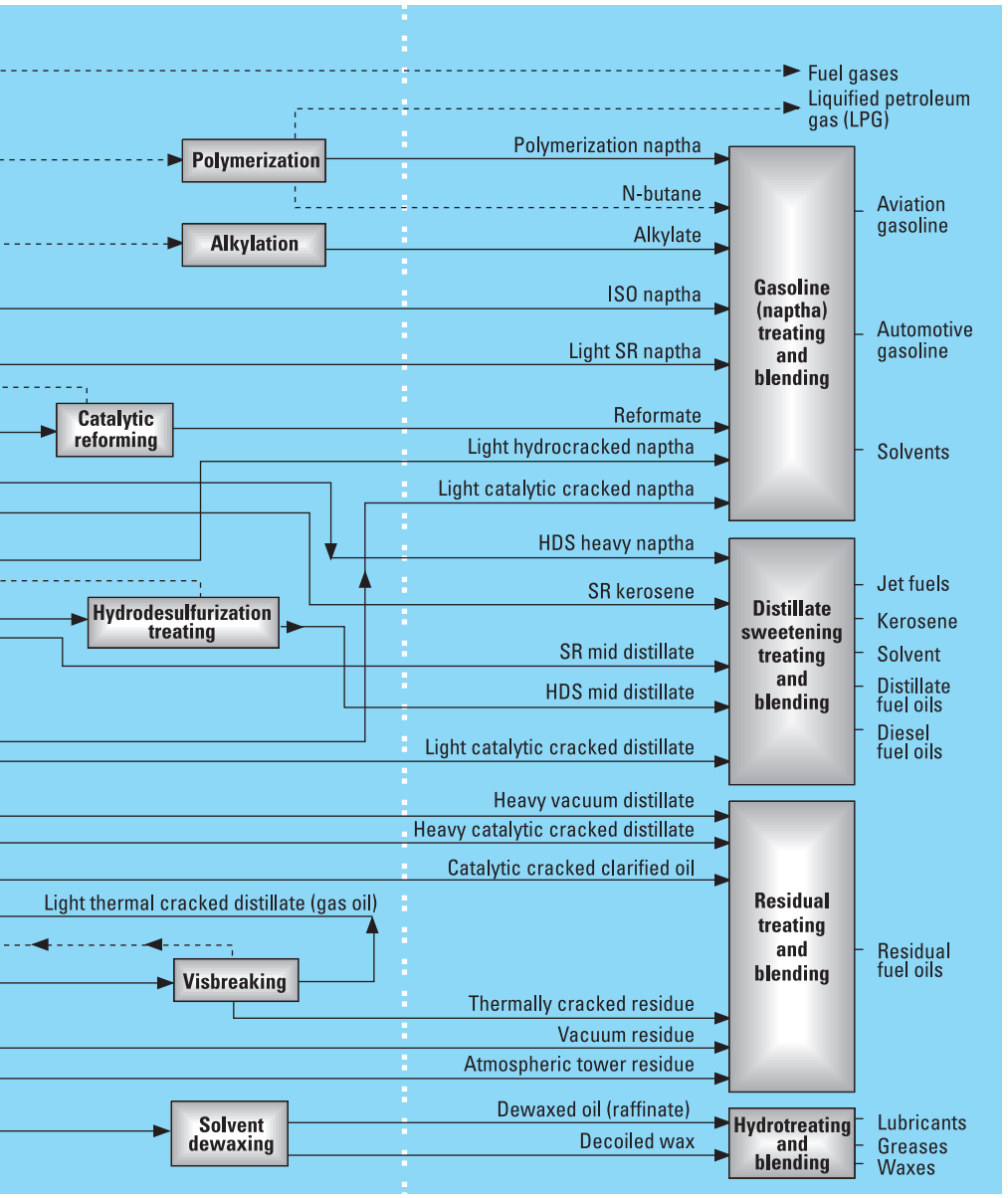


During the Fluidized Catalytic Cracking (FCC) process the octane value is increased, and the feedstocks including gas oil, coker gas oils, and FCC cycle oils are converted into high quality, low-sulfur fuels. Other processes for upgrading the quality of fuels include hydrocracking, hydrodesulphurization treating, and coking.

One other area of the plant is gas separation, which separates the gas into light crude distillates and gas.

The gas plants use cryogenics to recover LPG from refinery and petrochemical off gases. Moderate recovery of ethane and high-purity hydrogen can also be achieved.

The final stages are treating and blending the feedstocks to bring them into different types of finished products or useable fuels.



Distillation	Hydrotreating	Residue conversion	Hydrocracking	Catalytic cracking	Alkylation	Sulphur recovery	
X	X	X	X	X	X	X	API 600, gate, globe, and check valves
X	X	X	X	X	X	X	API 603, gate, globe, and check valves
X	X	X	X	X	X	X	API 602, forged steel gate, globe, and check valves
	X		X	X			Pressure seal gate, globe, and check valves
	X	X	X	X		X	Dual-plate check valves
X	X	X	X	X	X	X	Triple-offset butterfly valves
X	X	X	X	X	X	X	Metal-seated ball valves
			X	X	X	X	Resilient-seated ball valves
X	X	X	X	X		X	Steam traps

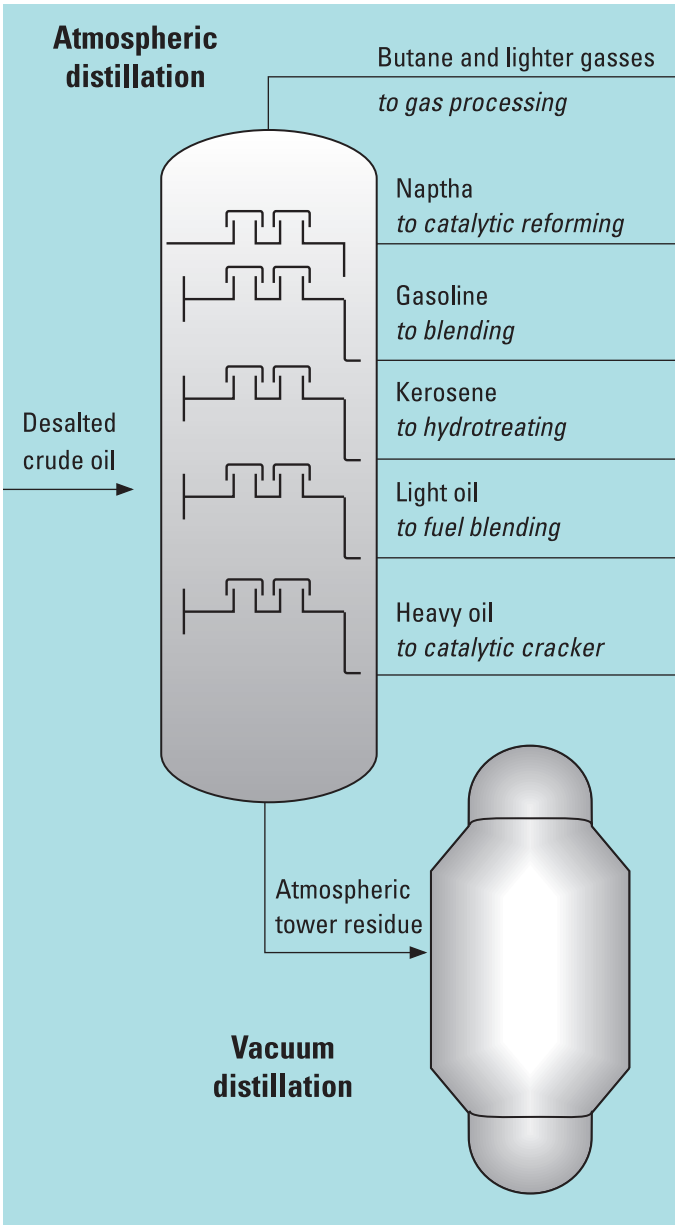
Low temp. < 500	High temp. > 500	Steam low pressure	Steam high pressure	Slurries high abrasion	Heavy process	Light process	
X	X	X	X		X	X	API 600, gate, globe, and check valves
X	X	X			X	X	API 603, gate, globe, and check valves
X	X	X	X		X	X	API 602, forged steel gate, globe, and check valves
	X		X		X		Pressure seal gate, globe, and check valves
X		X				X	Dual-plate check valves
X	X	X				X	Triple-offset butterfly valves
X	X	X	X	X	X		Metal-seated ball valves
X		X				X	Resilient-seated ball valves
	X	X	X				Steam traps

Refining production

Atmospheric distillation and vacuum distillation

The heart of every refinery is the crude distillation unit. In a crude unit, the oil is heated and the different hydrocarbon compounds are separated by a process called distillation. "Distillation" means that, at different temperatures, the various hydrocarbon compounds will "boil" off and be separated from the feedstock. It is important to note that the distillation process is the most common process found in a refinery. Distillation towers are found in almost every type of unit and are used to separate the various hydrocarbon fractions.

A major North American refinery.



The atmospheric crude distillation tower is very tall and the temperature in the tower varies from hot at the bottom to warm at the top. Looking at the plant diagram, you will notice that there are several "side draws" coming off the tower at various heights.

At these specific locations in the tower, the temperature is such that the desired product is separated from the crude oil. At various heights (each with different temperatures) the different products side draw during separation. Heavy products (such as asphalt) come off the bottom where the tower is the hottest, and lighter products (gas) come off the top where it is only warm.

Crude units typically have an atmospheric and a vacuum distillation tower. Using the vacuum distillation tower allows the refiner to "boil the oil" without raising the temperature up to the point where coke will start to form. As a result, the refiner gets an additional output from the oil, before sending it downstream to be processed further.

GENERAL APPLICATIONS IN REFINING

- **Pump isolation**
  Positive shutoff requirements require quality Velan gate valves or Torqseal™ triple-offset butterfly valves.
- **Unit isolation**
  Requires positive shutoff for safety and maintenance. Quality Velan gate valves, Torqseal™ triple-offset butterfly valves, or Securaseal® metal-seated ball valves allow for safe maintenance access.
- **Vessel isolation**
  To ensure process integrity and positive shutoff for maintenance, high-quality valves are needed. Velan can supply manual or automated valves to meet customer shutoff requirements.

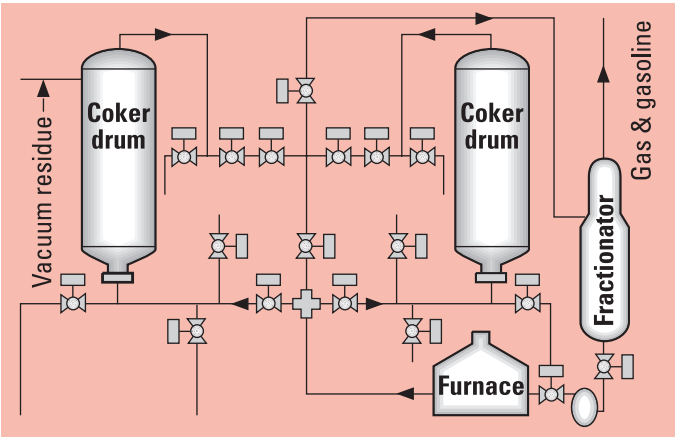
Catalytic cracking

The cracking process plays a very important role in the refining of oil into fuel products. Cracking is the breaking apart of long chains of carbon molecules. The feedstocks to crackers are "heavy" gas oil and "coker" gas oil. Both of these products contain long carbon chain molecules. When these long carbon chains are heated to temperatures exceeding 680°F (360°C), they begin to break apart into lighter, more valuable products that can be used as fuels.

The purpose of cracking oil is to produce lighter products without producing coke, a natural by-product at high temperatures. To limit and control the formation of coke, which is a less valuable product that also lowers the efficiency of the process, a catalyst is used. The catalyst supplies energy to drive the reaction and therefore lowers the required cracking termperature and reduces the formation of coke. The two most common methods used in the cracking process are fluidized catalytic cracking (FCC) and hydrocracking.

The advantage of the FCC process is that the unit continues to operate, which is possible because the fluidized catalyst bed can be continuously circulated and regenerated. However, because the catalyst used is a fine abrasive powder that "circulates" through the process, abrasion can be a problem for valves and other operating equipment.

Hydrocrackers are advantageous for two reasons. First, dirty and sour feedstocks can be "hydrotreated" prior to the cracking operation, which optimizes the process and produces a cleaner finished product. Second, by cracking the "heavy" feedstock in a hydrogen rich environment, higher valued light end products are produced. As in hydrotreaters, large amounts of hydrogen must be compressed and recycled into the process. Therefore, large compressor packages are an integral part of hydrocracking units and they are prime valve applications.

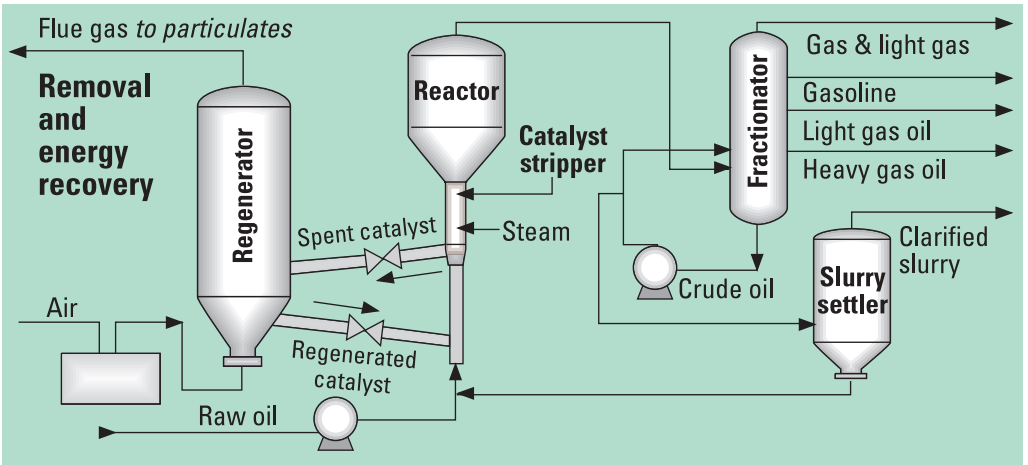


Delayed coking

Hot residual oil is fed to the base of the fractionator where it mixes with the condensed recycle. The combined feed is heated in the furnace until a suitable temperature is achieved. Steam or boiler feedwater is injected into the heater tubes to prevent coking in the furnace. The condensed recycle joins the fresh charge, as mentioned earlier. The overhead stream is sent to a vapor recovery unit where the individual product streams are separated. The wet gas and unstabilized naphtha are sent to the light ends recovery plant for separation of fuel gas, LPG, and naphtha products.

The coke that forms in one of the parallel drums is removed using high pressure water. The plant also includes a blowdown system, coke handling, and a water-recovery system.

12" (300 mm) switch valve in a delayed coker unit.



DELAYED COKER APPLICATIONS: RANGE OF VALVES

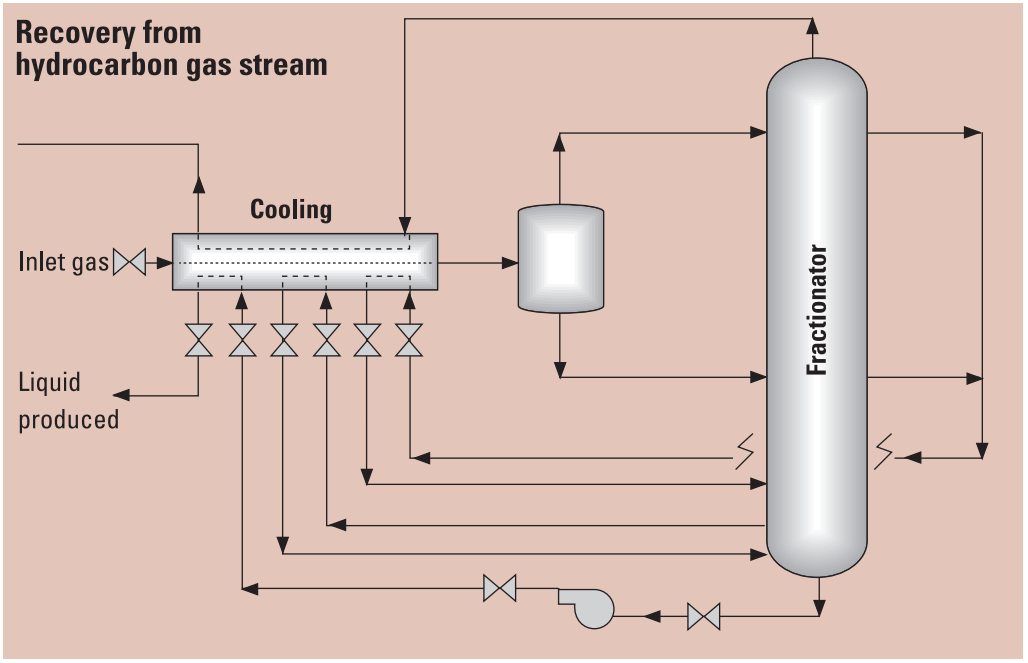
- 6–14" switch valves, ASME classes 300–900
- 6–36" isolation valves, ASME classes 150–900
- 2–8" high pressure hydrodrill valves, ASME classes 1500–2500
- ¼–2" steam valves, ASME classes 300–150

Petrochemical production

Olefin recovery

The recovery of ethylene, propylene, and heavier components from refinery offgas streams can be accomplished with cryogenics, molecular sieve, or both. The refinery offgases from the catalytic crackers, cokers, or other sources are first hydrated by molecular sieve then sent to an expander that compresses the gas stream. This gas stream is then cooled through a heat exchanger. The recovered ethylene or propylene are then feedstocks for the petrochemical industry.

Olefins can also be dehydrogenated from paraffins using a steam-active reformer.



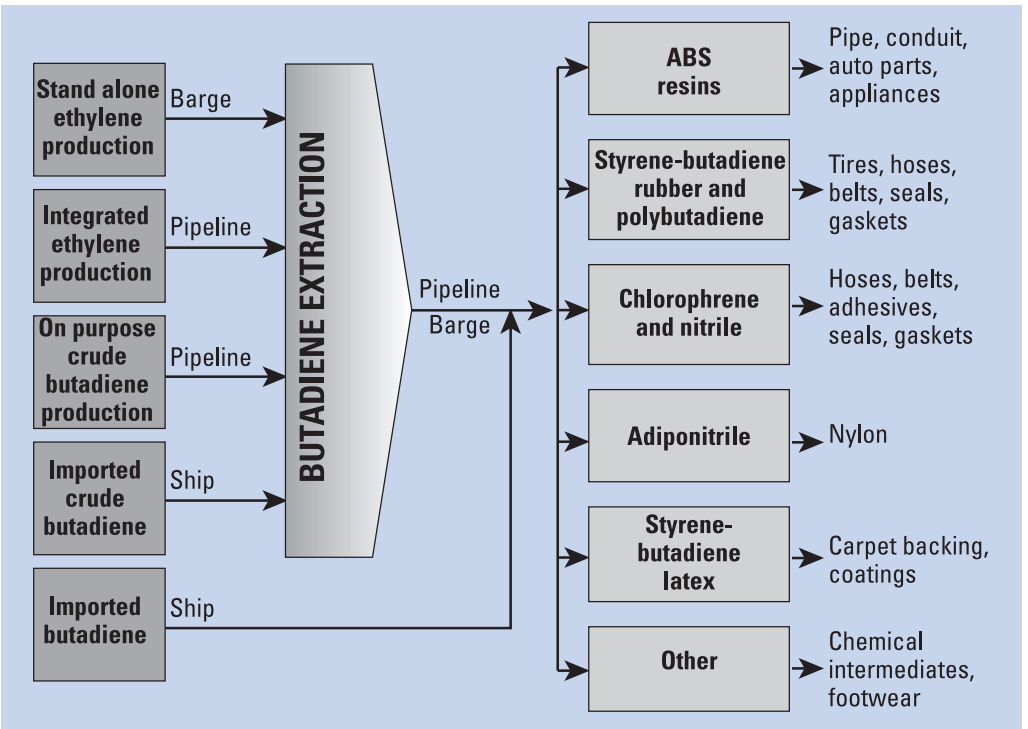
Butadiene

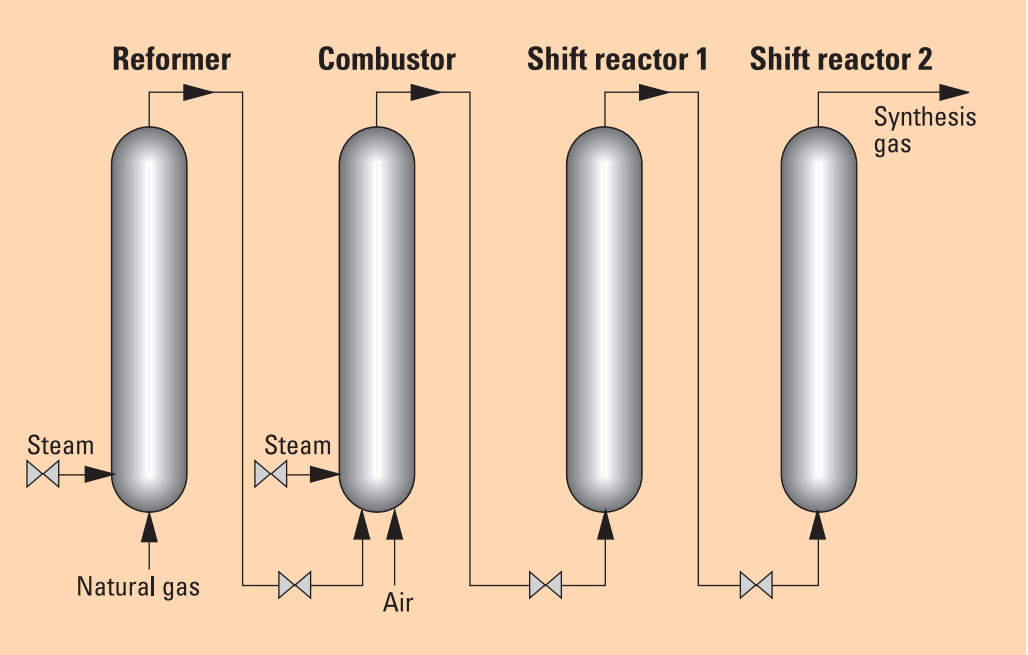
Butadiene is a by-product of ethylene production. One of the largest commodity chemicals produced in North America is 1.3 butadiene. Butadiene may exist in either gas or liquid states. The most common method of butadiene production is through chemical extraction. This process uses an extraction solvent such as acetonitrile or dimethylformamide to produce a pure butadiene monomer from a mixed butenes stream.

Velan ball valves are an excellent choice for butadiene service because of their superior stem seal design and the wide range of seat materials that are available for different butadiene services. Related applications with similar problems would be isoprene and styrene.

Olefin by-products

Many products derived from crude oil refining, such as ethylene, propylene, butylene, and isobutylene, are primarily intended for use as petrochemical feedstock in the production of plastics, synthetic fibers, synthetic rubbers, and other products.





Ammonia

Ammonia is another by-product of the refining industry and is very important in the petrochemical industry.

Two raw materials are used to produce ammonia. Air supplies the nitrogen, and natural gas supplies the hydrogen for ammonia synthesis. Natural gas is reformed in a conversion reactor when it is combined with steam. Air is introduced to the second reactor at a controlled rate to ensure the proper H_2 to N_2 ratio. Oxygen from the air is consumed in an exothermic combustion reaction while the inert nitrogen passes through the system.

In shift reactors 1 and 2 the water-gas shift equilibrium reaction takes place as the temperature of the steam is lowered, combining the nitrogen and hydrogen elements into NH_3 - ammonia gas. The ammonia gas will then be cooled and pressurized for storage or transportation as a liquid in special ammonia storage tanks. The diagram above is a simplified illustration of this process.

A double block and bleed setup using a 12" (300 mm) class 300 347 stainless steel Torqseal™ valve on hydrogen service at 500 psi/900°F (34.5 bar/482°C).

GENERAL APPLICATIONS IN PETROCHEMICAL PRODUCTION

- **ESD valves**

  Velan quarter-turn valves have consistent torque for ease of actuator sizing, which reduces the concern for locked up valves. Velan has worked with accessory manufacturers to partially stroke our valves automatically, this again helps assure the operation of the assembly when it is required to stroke.

- **Chemicals**

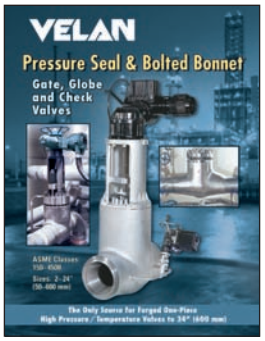
  Velan Memoryseal™ valves with their patented seating technology gives customers positive and repeatable bubble tight shutoff through the valve. This seating technology is excellent for actuation because it's so easy to open and close the valves.

- **Higher temperatures**

  Velan Securaseal® and Torqseal™ valve lines are available up to 1450°F (788°C), with ASME pressure classes up to 4500. These two product lines complement each other: Torqseal™ meets the API 598 soft seat standard and Securaseal® has high flow capacities.

VELAN

low emissions • easy maintenance • long, reliable service



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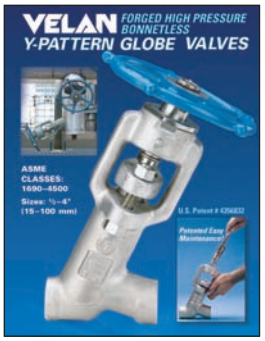

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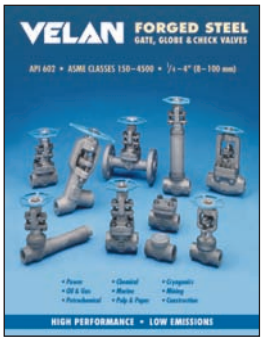

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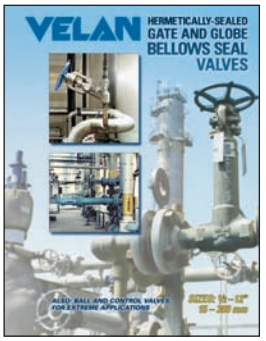
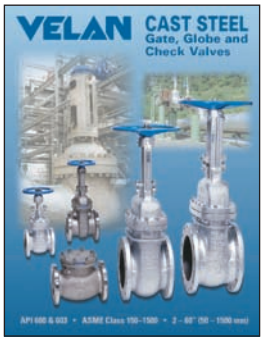


VEL-BS

VEL-CRYO



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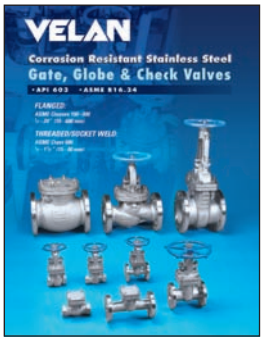

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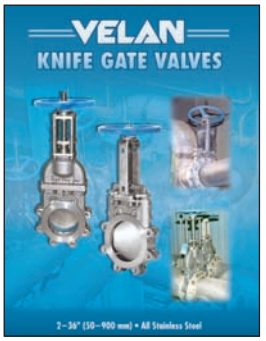
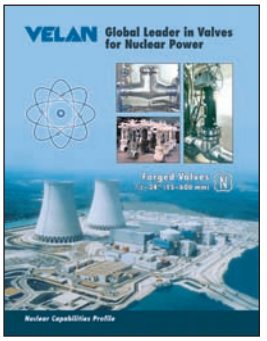


VEL-KGV

VEL-PQCV



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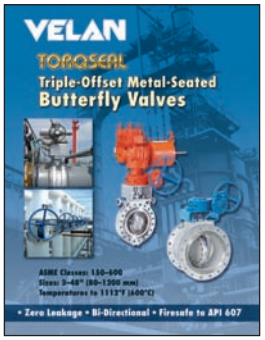

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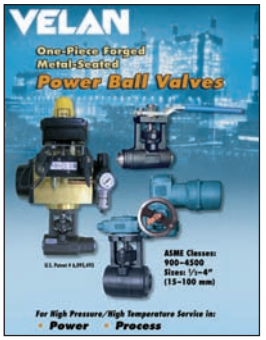

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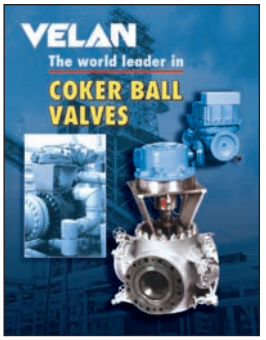

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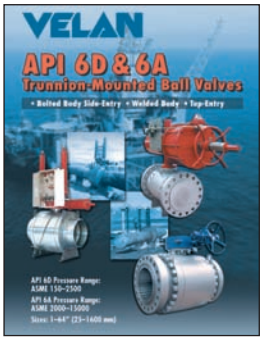
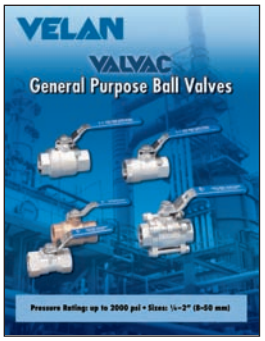


VEL-BV6D

VEL-BV



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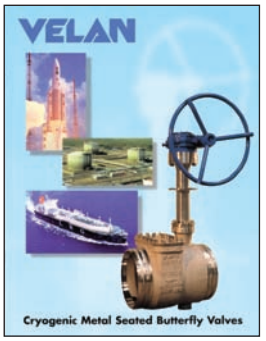

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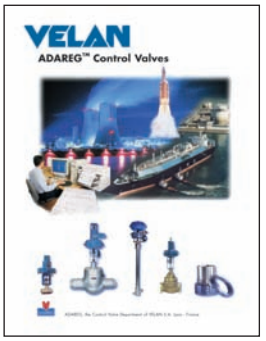

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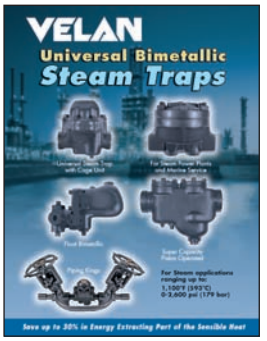

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VEL-RP-2007
Printed in Canada