



TURBOMACHINERY

DATUM® Centrifugal Compressors

Wherever and whenever you need us

A single source for all your energy conversion needs.



A World of Energy Conversion Solutions

Dresser-Rand works with you to achieve the lowest total cost of ownership for your compression facilities. We'll study your requirements and consider a variety of options before selecting the most cost-effective solution with the shortest cycle time. This flexible perspective helps us develop creative, field-proven solutions that include all aspects of a project, from initial concept to equipment retirement.

- **Operation and maintenance** of both D-R and other power-conversion equipment: We can take full responsibility, including appropriate performance guarantees. Dresser-Rand *Availability PLUS*® maintenance provides comprehensive machinery health care by bundling value-added Dresser-Rand products and services into a single, typically performance-based agreement. An on-site D-R representative serves as a single point of contact.
- **Upgrades and retrofits** to adapt other brands of rotating machinery to your operating conditions and requirements: Dresser-Rand Applied Technology capabilities allow you to enjoy the benefits of the latest DATUM® compressor technology in many makes and models of your installed turbomachinery.

Options include major assemblies, individual parts, upgrades, retrofits, and many other unique solutions designed to improve compressor operation and performance.

- **Engineering evaluations** show you how to optimize your equipment's performance.
- **Equipment reliability and life assessment evaluations** use the most advanced and consistent testing methods.

Our Global Presence Allows us to be More Responsive

When you accept delivery of a DATUM centrifugal compressor (or any other D-R product), your relationship with us is just beginning. Our employees are ready to keep your equipment running with responsive and reliable technical support 24 hours a day.

Services include **upgrading** out-of-service rotating machinery to fit your present operating conditions; expert **repair service** from factory-trained technicians through our worldwide network of service centers; **replacement parts** that include the latest design improvements; around-the-clock **field service**, including installation assistance or complete installation; **revamps and rerates** to bring your equipment up to new specs to match changes to your process or operating conditions; safe, secure **rotor storage**; and **training**, either at your location or ours.

Technological advantages

Innovative design and superior components give DATUM compressors that competitive edge.

We Built in Enhanced Performance and Convenience

From initial concept, through consultations with our clients, to design and production, our goal with the DATUM line is to produce a better centrifugal compressor with an eye toward the environment. This has led to a number of client benefits.

Improved Efficiencies

Depending on application requirements and configuration, DATUM compressors often operate at efficiencies that are two to five percent greater than competitive turbomachinery, thereby reducing fuel consumption or increasing throughput per installed horsepower. In addition, the improved aerodynamic design and larger shaft diameter enable DATUM compressors to handle greater flows and pressure ratios than standard designs for a given frame size. In some cases, a single DATUM compressor can deliver pressure ratios that previously required multiple bodies.

Reduced Emissions

The superior efficiency of the DATUM compressor reduces driver fuel consumption, which can result in a decrease in harmful CO₂ and NO_x emissions—more important than ever as environmental regulations tighten. D-R is committed to addressing critical environmental concerns while continuing to improve operational efficiencies. Incorporating D-R dry gas seals further reduces emissions by eliminating the need for processing sour seal oil.

Reduced Noise

The most significant development in our efforts to design quieter machines has been the introduction of D-R™ duct resonator arrays. This patented feature can be designed into new equipment and revamps, including other brands of equipment.

Extensive testing on D-R duct resonator arrays was performed at our test facility in Olean, New York. The results demonstrated that the overall noise level of a 60 PDI (axial inlet single-stage overhung pipeline booster) compressor could be reduced by 10 dB with no adverse effect on compressor performance. In some instances, field noise level reductions have been measured in excess of 20 dB for PDI compressors and 10 dB and higher in multi-stage DATUM compressors. D-R duct resonator arrays have been used in more than 300 DATUM compressors to date.

Easier, Faster Maintenance

Even a single lost day of production can translate into losses of hundreds of thousands of dollars, so we made easy maintenance a priority throughout the design process. One way we dramatically reduced maintenance time was by combining the rotor, diaphragms and other stationary flowpath components, bearings, seals, and instrumentation—almost everything but the casing—into a module. This module can be completely pre-assembled outside of the casing (in the controlled environmental conditions of a shop, for example), then installed as a complete assembly. Critical dimensions, fits and clearances can be checked much more easily. By storing a spare module on site, turnaround times can be reduced to a few hours.



A D4 DATUM® compressor being assembled at the D-R facility in Olean, NY.

The modular design of the DATUM unit also yields additional advantages.

- **The DATUM modular bundle** has horizontally split stationary carrier housings that enable the rotor-to-stator alignment to be verified with the rotor in its true axial position and with the thrust bearing fully assembled. This allows direct determination of correct rotor positioning in the axial direction, as well as measurement of the radial clearance between the rotor and all labyrinths at the impeller eye and shaft interstage locations.
- **Because the bearing housings**, journal bearings and thrust bearing assemblies are horizontally split, the coupling does not have to be removed to replace a bearing assembly on the driven end of the machine, and the thrust disc does not have to be removed to replace a bearing on the free end of the machine.
- **For larger frame sizes**, the radial vibration probes are externally adjustable and removable, as are the axial position probes on non-thru-drive units.

Standardization

To improve reliability and reduce cost, we standardized DATUM compressor components wherever possible, maximizing the use of proven designs. The DATUM line consists of 15 standard frame sizes that are scaled from the median size frame. The impellers, diaphragms, inlets, volutes, and shafts are all directly scaled; the bearings and seals are not directly scaled, in order to take advantage of outside vendors' standard sizes. Further standardization was achieved by using the same internal components in both the radially split and axially split versions.

DATUM centrifugal compressors are available for discharge pressures ranging up to more than 15,000 psig (1,000 bar), maximum flow rates from 5,400 cfm (9,200 m³/h) to 700,000 cfm (1,200,000 m³/h), and power ratings to more than 120,000 bhp (90 MW). Cases can be split axially (900 psig max.) or radially (15,000 psig max.).

Paying Careful Attention to The Details

For the design of the DATUM compressor, we made sure its components supported our goals of higher efficiency, lower cost and easier maintenance.

Impeller Design

To improve performance, we used the latest aerodynamic design and analysis technology to develop a new family of impellers and matched stationary flowpath components. The new impeller designs were tested in single- or multi-stage test rigs to simulate a complete compressor stage.

Accuracy and quality of the impeller manufacturing process were substantially improved. Some impellers are two-piece, milled from solid forgings, with welded or brazed construction. The majority of our new impeller designs are five-axis milled bladed discs, providing the sophisticated aero-mechanical design required for strength and high performance. All diaphragms and other stationary flowpath components are fully machined from steel or alloy for compliance with aerodynamic design requirements. For special applications, single-piece, integral-machined or single-piece powdered metal impellers are available.

EBraze Welding

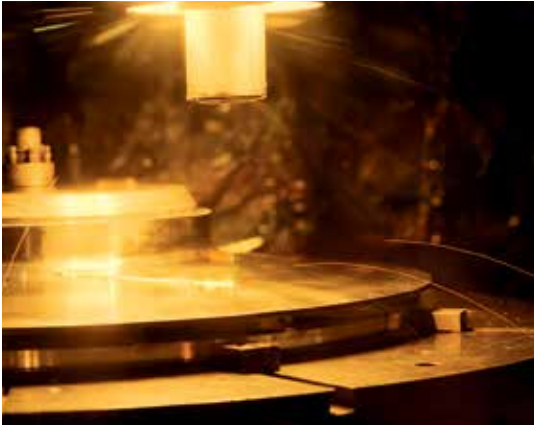
Created specifically for the DATUM product family, EBraze welding combines two proven methods—electron beam welding and vacuum furnace brazing—to create a weld joint with superior strength. To fuse the impeller cover and blades, an electron beam weld is directed through the cover and a braze alloy foil is applied to each blade. Fusion occurs across the complete cover-to-blade interface, creating an impeller with greater reliability, longer life and more accurate performance.



Single piece
five-axis milled
impeller.

Vacuum Furnace Brazing and One-Piece Integral Machining

Depending on the application, impellers can also be fabricated using vacuum furnace brazing and one-piece integral machining or one-piece HIP powder metal super alloy impellers.



Bearings

Tilt Pad Journal Bearings — Pad length, off-set factor, pad orientation, clearance, preload, and other geometric parameters are selected for optimum dynamic rotor performance. The pads possess axial and radial aligning capability to uniformly distribute the load over the pad surfaces. Directed oil lubrication reduces oil consumption and power loss, lowers operating temperatures and allows higher operating speeds.

Tilt Pad Thrust Bearings — These double-acting, self-equalizing bearings accommodate the same thrust loading in either direction. The bearing has six or more pads supported on a base ring in the thrust housing. Pads are babbitt-faced steel with high load-carrying capacity.

Seals

Shaft seals, located between the bearing chambers and the gas stream, minimize gas leakage outward and prevent lubricating oil leakage into the gas stream. D-R offers a variety of seal assemblies to handle various compressor applications:

- Labyrinth seals
- Contact seals
- Dry gas seals
- Oil film seals
- Tilt pad seals

With more than 1,000 dry gas seals produced to date, we are an experienced manufacturer of dry gas seals with a proven proprietary design that maximizes reliability under all operating conditions. Our gas seal service and test facilities in Tulsa, Oklahoma; Houston, Texas; and Le Havre, France, stand ready to provide full support.



Rotor Stability

The DATUM shaft diameter is 30 percent larger than our earlier turbocompressor models. This enables higher power density with improved rotor stability, both of which are increasingly vital as pressure ratios and gas densities increase.

Additional stability is provided by the D-R damper seal, a significant recent development that has resulted in an inherently stable centrifugal compressor. With the D-R damper seal, the rotor's dynamic stability (log-decrement) actually increases with increasing discharge pressure.



Large EBrace welding machine located at the Dresser-Rand facility in Olean, NY.

Building in quality

Major investments have made our design and production facilities second to none.

To Make Sure it Performs For You We Make Sure it Performs for Us

With test facilities in Olean, New York, USA, and Le Havre, France, Dresser-Rand has some of the most comprehensive test capabilities in the world. That allows us to check all aspects of equipment operation, including full-load testing in Olean. ASME PTC 10 Type 1 hydrocarbon tests can be conducted up to 80 MW with gas turbine drives and 50 MW with electric drives. Twenty test stands allow maximum flexibility in meeting client requirements. Comprehensive data acquisition and analysis systems ensure that everything meets strict API and other standards.

In early 2009, Dresser-Rand completed construction of its large compressor full load test facility in Le Havre, increasing its worldwide testing capacity with natural gas up to 150 MW (gas turbine drive) or 100 MW (electrical drive). This facility includes a high capacity quay with direct sea access, enabling compressor train delivery and shipment from and to any location around the world.

Development single- and multi-stage test vehicles are used to confirm the mechanical and performance characteristics of various components. This gives us the hard data to predict the performance of the completed compressors more accurately than by relying solely on theoretical calculations.

Committed to World-class Manufacturing

Proper execution of a good design is vital, so we've invested both human and financial resources at an unprecedented level to upgrade our facilities. As a result, our ISO-certified, state-of-the-art facilities are among the world's most advanced for turbocompressor design, production and testing.

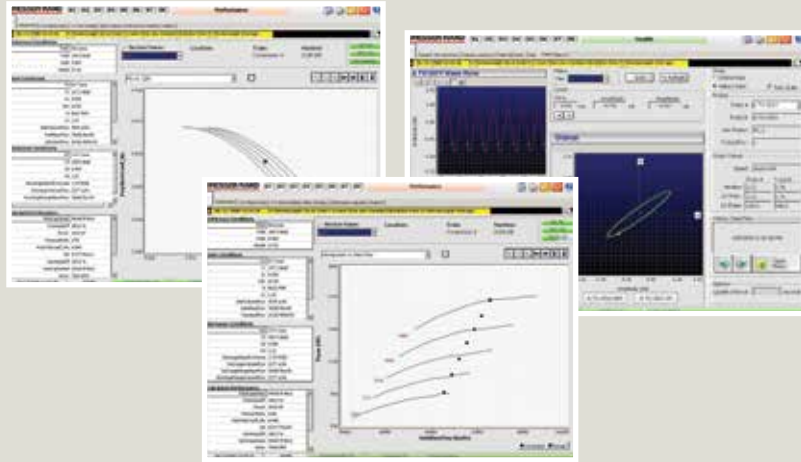
The NX CAD/CAM system further enhances our ability to design and manufacture custom engineered products. It allows our engineers to work simultaneously with each other on all aspects of design, analysis and manufacturing. This leads to better coordination of the various stages of a project and reduced cycle times.

Control Systems as Advanced as Our Compressors

Our PLC-based DI-TRONICS™ control system can be configured to control, monitor and protect DATUM compressors and a wide variety of other rotating machinery. Decades of machinery design and manufacturing experience are built into our electronic control products for gas turbine fuel systems, steam turbine governors, compressor surge, compressor capacity and performance, machine vibration and temperature monitoring, train sequencing, and overall machinery protection. We can help you maximize the performance of your DATUM compressor with our compressor performance monitor (CPM) software and vibration condition monitoring products. User-friendly operator interfaces feature real-time and historical trending, report generation, system alarms, shutdown, and event logging capabilities.



DATUM model D18R9S (destined for hydrogen service in a Spanish refinery) on test stand in Le Havre, France. The Le Havre test facility allows for full load testing of compressor trains, together with their gas turbine or electric motor drivers.

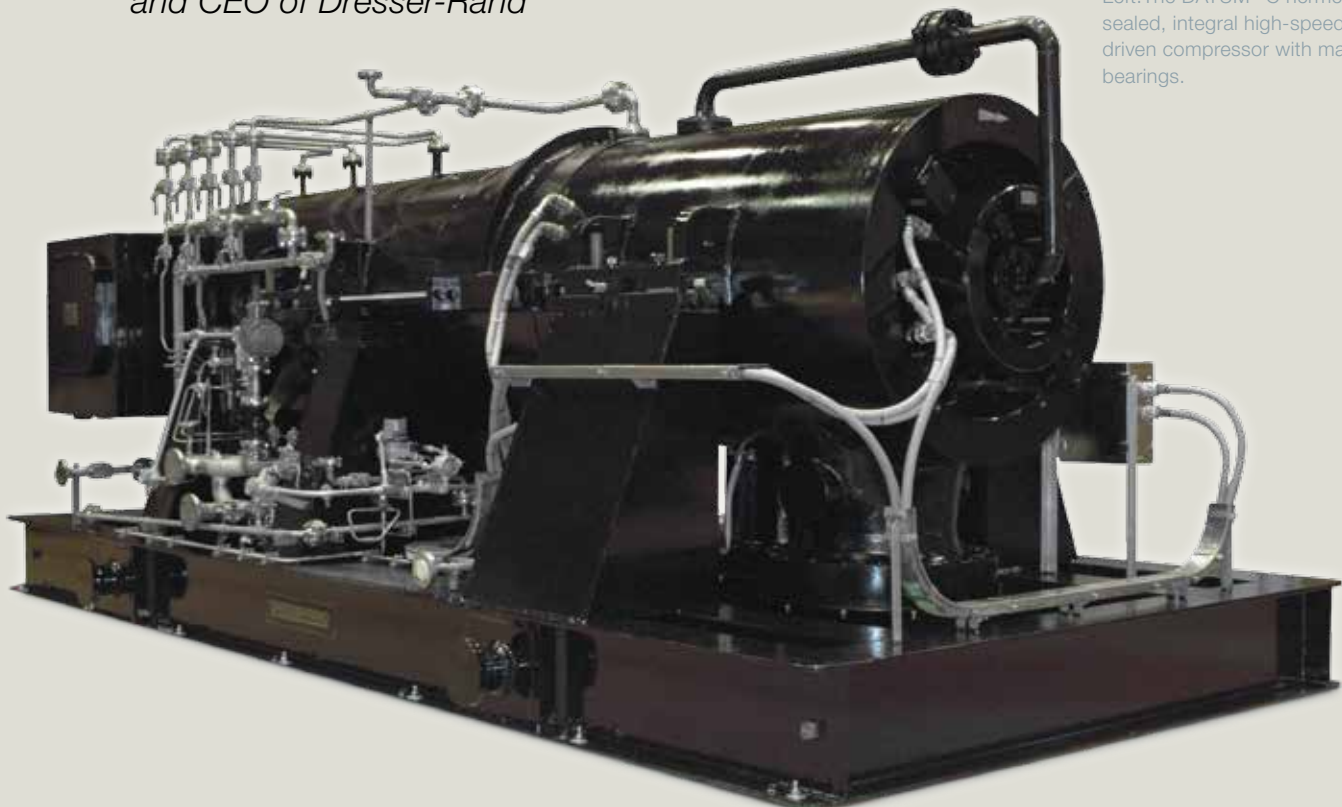


“.....Chevron’s decision to enter into a worldwide preferred supplier agreement with Dresser-Rand was based in part on the technology of DATUM compressors.”

—Christopher Rossi, president and CEO of Dresser-Rand

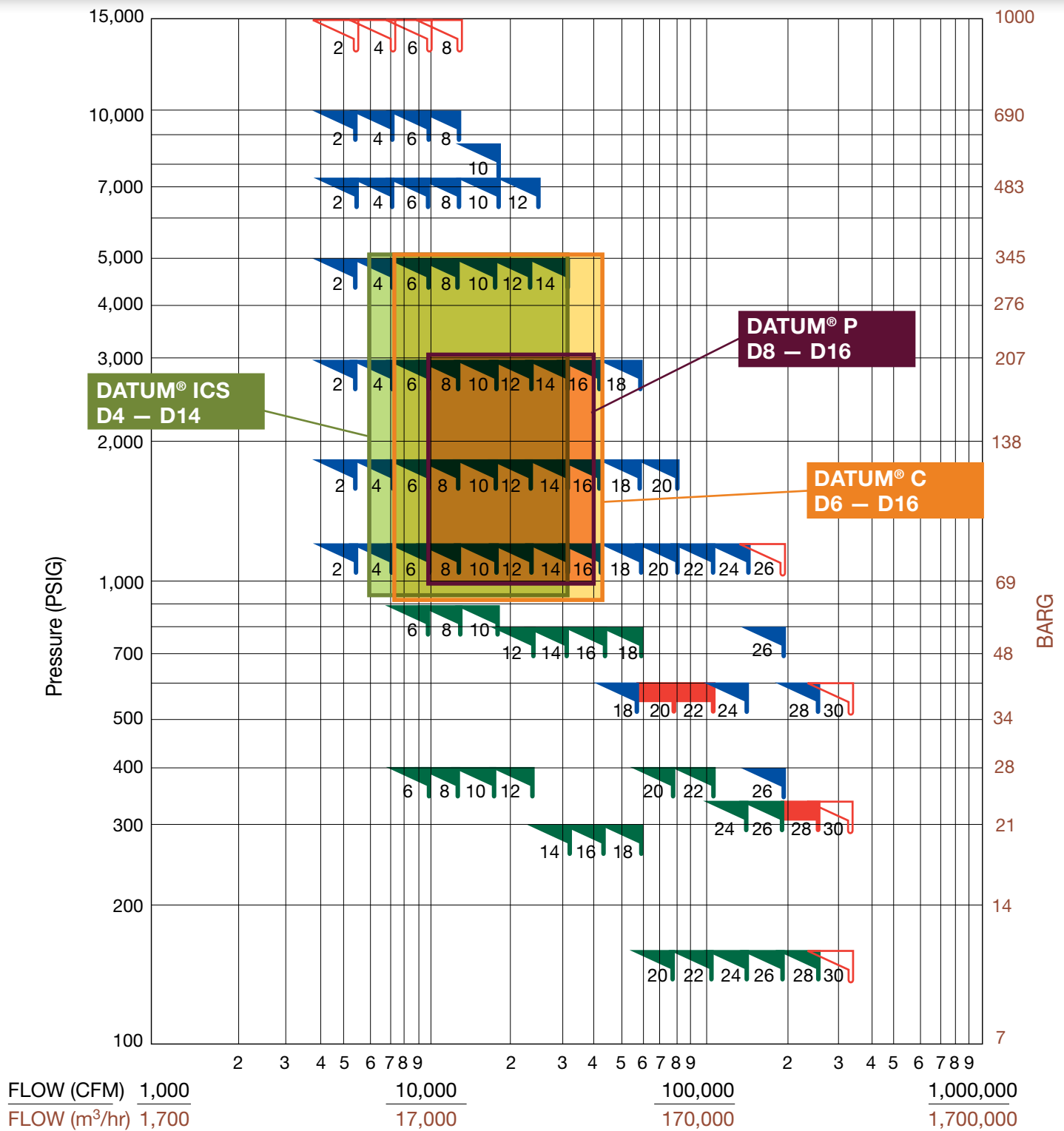


Shown above: Synchrony® NovaGlide® magnetic bearings.



Left: The DATUM® C hermetically sealed, integral high-speed motor-driven compressor with magnetic bearings.

DATUM Frame Size Flow/Pressure Coverage Map



DATUM® Nomenclature

D X Y N (Z) Example: D 1 0 R 9 B

Where: D: Always a "D" for DATUM

X: Frame size designation, one or two digits, 2 through 28 in steps of two

Y: Case split designation as follows:

- "R" for radial (barrel type)
- "A" for axial (horizontally split)
- "P" for pipeline (barrel type)
- "C" for compact compressor configuration
- "I" for Integrated Compression System

N: Total number of impellers, one or two digits

(Z): Casing configuration, is either:

- "B" for back-to-back
- "D" for double-flow
- "S" for straight-thru
- "CS" for centrifugal separator
- "M" for marinized

DATUM[®] compressor

Example: D 1 0 R 9 B

Where: D: Always a "D" for DATUM

10: Frame size

R: Case split designation as follows:

"R" for radial (barrel type);

"A" for axial (horizontally split)

9: Total number of impellers

B: Casing configuration:

"B" for back-to-back

"C" for compound

"D" for double-flow

"S" for straight-thru



The Dresser-Rand DATUM line of centrifugal compressors was designed for maximum performance in all pressure and flow applications. Their unmatched efficiency, reliability and ease of maintenance make them the most advanced turbocompressors available for the oil, gas and process industries.

DATUM[®] ICS integrated compression system

Example: D 4 I 2 S

Where: D: Always a "D" for DATUM

4: Frame size

I: Integrated Compression System

Always separator; process package, magnetic bearings, seal-less, and marinized optional; intercooler as required.

2: Total number of impellers

S: Casing configuration:

"B" for back-to-back

"C" for compound

"D" for double-flow

"S" for straight-thru

"I" for integrated

"M" for marinized



Dresser-Rand's DATUM ICS integrated compression system is a high-efficiency DATUM centrifugal compressor, driven by a high-speed, close-coupled motor, with an integrated centrifugal gas-liquid separation unit, packaged with process gas coolers in a single module. As a complete compression system it can be applied to all markets – upstream, midstream and downstream – with the smallest footprint, reduced weight and at the lowest total installed cost.

DATUM[®] C compact compressor

Example: D 14 C 3 S

Where: D: Always a "D" for DATUM

14: Frame size

C: Compact and/or close-coupled

Radial only (barrel type)

Magnetic bearings, seal-less

3: Total number of impellers

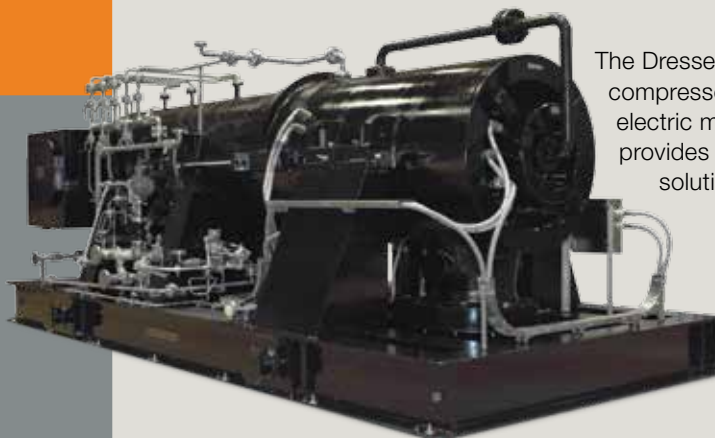
S: Casing configuration:

"B" for back-to-back

"C" for compound

"D" for double-flow

"S" for straight-thru



The Dresser-Rand DATUM C centrifugal compressor is an integrated, high-speed electric motor-driven compressor that provides a highly efficient, compact solution for all markets.

DATUM[®] P pipeline compressor

Example: D 12 P 3 S

Where: D: Always a "D" for DATUM

12: Frame size

P: Pipeline

Radial only (barrel type)

3: Total number of impellers

S: Casing configuration:

"B" for back-to-back

"C" for compound

"D" for double-flow

"S" for straight-thru



The Dresser-Rand DATUM P pipeline compressors unmatched efficiency, reliability, and ease of maintenance make these compressors the most advanced units available for natural gas transmission pipeline applications.

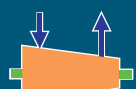


DATUM[®]

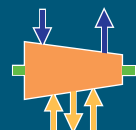
Family of products



Dimensions



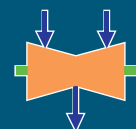
STRAIGHT-THRU
Axially and Radially Split Case



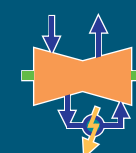
STRAIGHT-THRU with side streams in or out
Axially and Radially Split Case



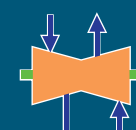
STRAIGHT-THRU COMPOUND with or without intercooling



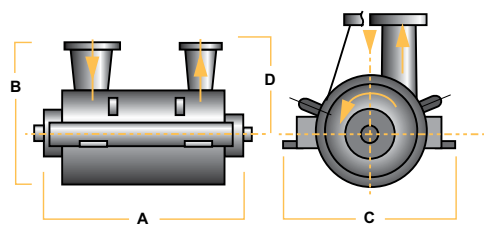
DOUBLE-FLOW
Axially and Radially Split Case



BACK-TO-BACK
Axially and Radially Split Case



BACK-TO-BACK without I.C.
Radially Split Case



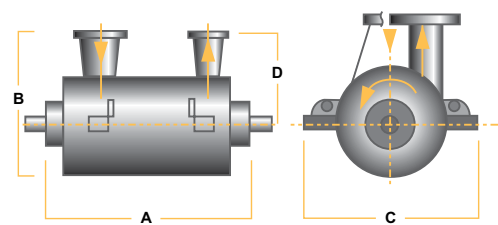
Axially split cases

Dimensions in inches (mm)

FRAME	A	B	C	D	WT IN LBS x 10 ³ (KGS x 10 ³)
6A	52-63 (1,320-1,600)	38.5 (980)	42 (1,070)	24 (610)	14.0-22.0 (6.3-10)
8A	58-73 (1,470-1,850)	45 (1,140)	48 (1,220)	28 (710)	19.0-29.5 (8.6-14)
10A	65-85 (1,650-2,160)	51.5 (1,310)	56 (1,420)	32 (810)	24.5-40.0 (11.1-18)
12A	76-98 (1,930-2,490)	59.5 (1,510)	65 (1,650)	37 (940)	28.0-53.5 (12.5-24)
14A	88-114 (2,230-2,890)	70 (1,780)	75 (1,910)	44 (1,180)	45.0-72.0 (20.5-33)
16A	96-132 (2,440-3,350)	80.5 (2,050)	84 (2,130)	51 (1,300)	56.5-95.0 (25.5-43)
18A	97-154 (2,460-3,910)	92 (2,340)	92 (2,340)	59 (1,500)	66.5-131.5 (30-60)
20A	109-178 (2,770-4,250)	106.5 (2,710)	107 (2,720)	68 (1,730)	86.5-176.0 (39-80)
22A	132-207 (3,350-5,260)	124 (3,150)	123 (3,120)	79 (2,010)	121.5-237.5 (55-108)
24A	147-240 (3,730-6,100)	144 (3,660)	140 (3,560)	92 (2,340)	151.5-310.5 (69-141)
26A	161-279 (4,090-7,090)	163.5 (4,150)	151 (3,840)	106 (2,690)	199.5-411.5 (90-187)
28A	172-323 (4,360-8,200)	189 (4,800)	170 (4,320)	123 (3,120)	239.0-562.5 (108-255)
30A	200-375 (5,080-9,525)	219 (5,563)	197 (5,004)	143 (3,632)	375-877 (170-399)

Conventional driver arrangements include:

- Gas turbine
- Steam turbine
- Electric motor (low-speed, high-speed, variable-speed)
- Others as required



Radially split cases

Dimensions in inches (mm)

FRAME	A	B	C	D	WT IN LBS x 10 ³ (KGS x 10 ³)
2R	38-47 (970-1,200)	33.5 (850)	35 (890)	21 (530)	6.5-10.0 (3-4.5)
4R	45-54 (1,140-1,370)	33.5 (850)	35 (890)	21 (530)	9.0-13.8 (4-6.3)
6R	52-63 (1,320-1,600)	38.5 (980)	39 (990)	24 (610)	12.0-18.5 (5.5-8.5)
8R	58-73 (1,470-1,850)	45 (1,140)	47 (1,190)	28 (710)	15.5-25.0 (7-11.5)
10R	65-85 (1,650-2,160)	51.5 (1,310)	53 (1,350)	32 (810)	20.0-34.0 (9-15.5)
12R	76-98 (1,930-2,490)	59.5 (1,510)	58 (1,470)	37 (940)	27.0-45.5 (12-21)
14R	88-114 (2,230-2,890)	70 (1,780)	67 (1,700)	44 (1,180)	36.5-61.5 (16.5-28)
16R	96-132 (2,440-3,300)	80.5 (2,050)	75 (1,910)	51 (1,300)	46.0-82.5 (21-37.5)
18R	97-154 (2,460-3,900)	92 (2,340)	82 (2,080)	59 (1,500)	54.0-112.0 (25-51)
20R	109-178 (2,770-4,250)	106.5 (2,710)	95 (2,410)	68 (1,730)	70.5-150.0 (32-68)
22R	132-207 (3,350-5,260)	124 (3,150)	110 (2,790)	79 (2,010)	99.5-202.5 (45-92)
24R	147-240 (3,730-6,100)	144 (3,660)	124 (3,150)	92 (2,340)	128.5-272.5 (58-124)
26R	161-279 (4,090-7,090)	163.5 (4,150)	135 (3,430)	106 (2,690)	163.0-367.5 (74-167)
28R	172-323 (4,360-8,200)	189 (4,800)	152 (3,860)	123 (3,120)	202.0-494.0 (92-224)
30R	200-375 (5,080-9,525)	219 (5,563)	176 (4,479)	143 (3,632)	315-771 (143-350)

Note: All weights and dimensions are estimated; weight variation is linked to the number of stages and design pressure of the compressor.

DATUM centrifugal compressors

The result of our unmatched experience.

Building on a Heritage of Field-proven Engineering and Superior Service

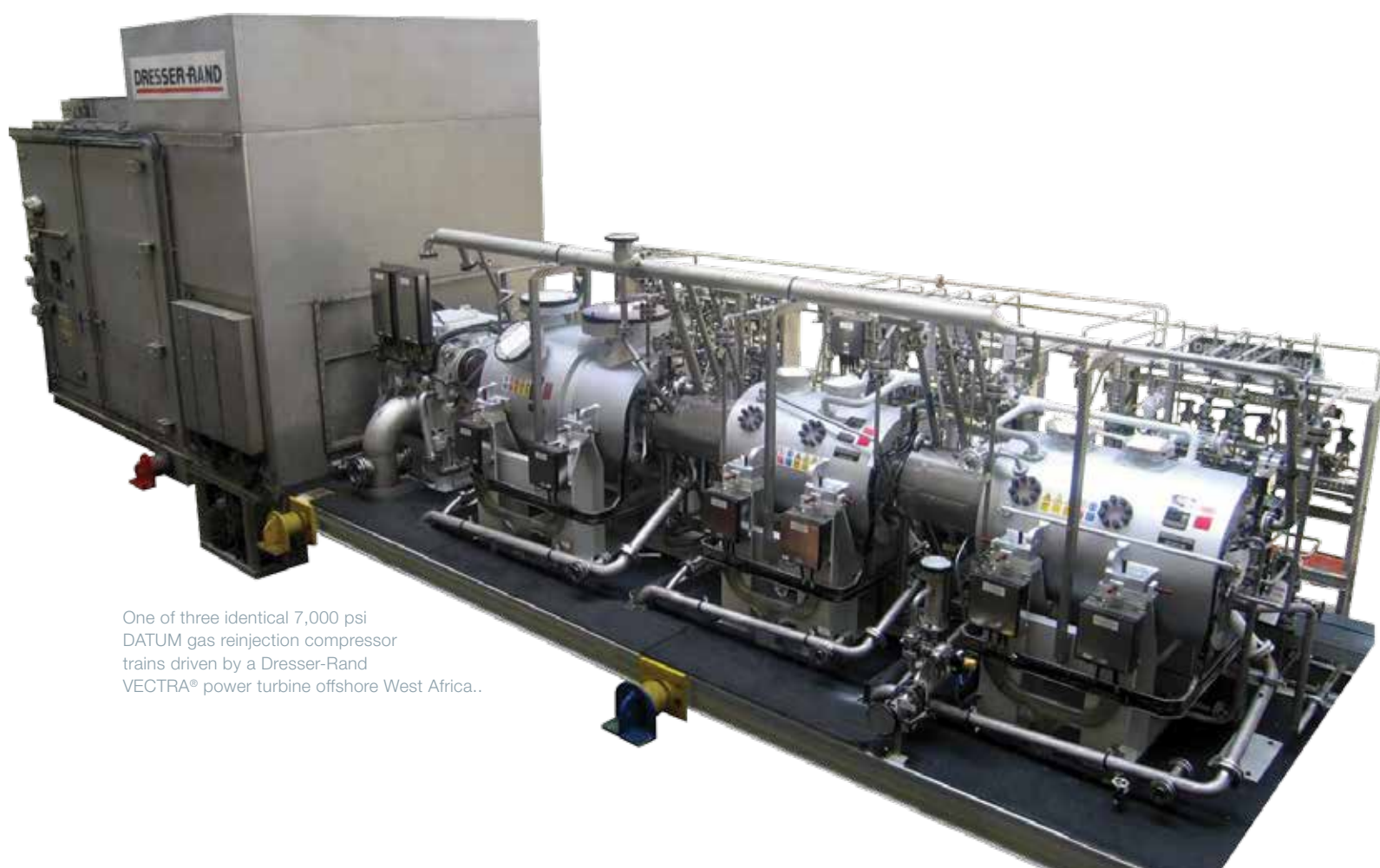
For more than 100 years, Dresser-Rand has been a world leader in energy conversion technology, designing, manufacturing and servicing a wide range of field-proven centrifugal and reciprocating compressors, gas and steam turbines, expanders, and control systems. Since the mid-1900s, we have built centrifugal compressors for applications as diverse and challenging as LNG, ethylene, refining, ammonia, gas production, and gas reinjection for enhanced oil recovery.

Our DATUM centrifugal compressors are the latest in this illustrious line. Introduced in 1995, they have gone on to demonstrate their superior efficiency, reduced emissions and numerous other benefits in hundreds of applications worldwide.

Committed to Delivering Value

D-R provides reliable, efficient energy conversion solutions that deliver the highest value to our clients. Our engineers constantly seek improvements in design, production and testing to make our equipment even more efficient and reliable. This R&D focus is reflected in every product and service we offer, from new equipment to upgrades, that extend the life of your installed equipment.

Our emphasis on maximizing the value you receive also extends to the way we work with you. Our corporate product configurator (CPC) coordinates all elements of the bidding, engineering, design, and manufacturing process.



One of three identical 7,000 psi DATUM gas reinjection compressor trains driven by a Dresser-Rand VECTRA® power turbine offshore West Africa..

“ We can reduce the time offshore to replace the rotor bundle by about a day and a half to two days compared to conventional designs. If you equate that to availability, that’s about a half percent a year improvement – just for that feature alone. ”

— Senior Consultant,
ConocoPhillips



DATUM compressors are bringing new efficiency and availability levels to FPSO vessels.

It improves communication and results by fostering closer collaboration with our clients and within D-R. Best of all, it has dramatically cut our cycle times for all project phases, so your equipment can be on-line and producing sooner.

Our leading-edge technology, some of the shortest cycle times in the industry, advanced business processes, and global presence help our clients reduce unit operation costs, which are 70 to 80 percent of the total cost of compression assets. That helps our clients to be more competitive.

DATUM Compressors are Proving Themselves Around the World

The DATUM line of centrifugal compressors was designed for maximum performance in all pressure and flow applications. Their unmatched efficiency, reliability and ease of maintenance make them the most advanced turbocompressors available for the oil, gas and process industries. Typical applications include:

- Oil and gas production—gas gathering, liquid recovery, gas lift, gas injection, pipeline boosters, gas storage, recompression, and reinjection
- Refining—wet gas, hydrogen, coker, and other hydrocarbon and utility gases
- Ethylene—charge gas, ethylene and propane/ propylene refrigeration
- Methanol—feed gas and syngas
- LNG—mixed refrigerant, propane, methane, nitrogen, and feed gas compression
- Ammonia—feed gas, syngas, refrigeration, and air compression
- Urea—CO₂ compression
- Air separation—nitrogen feed, recycle and air services



The DATUM model D6R6B compressor is a radially split, barrel-type compressor with a back-to-back design within the existing DATUM product line. This centrifugal compressor has a discharge pressure that exceeds 550 bar (7,975 psi) while compressing gases that are almost 65% heavier than typical natural gas blends.

DATUM family of products

Designed for maximum performance.

DATUM® C Compressor

Our DATUM® C (compact) compressor was developed using our industry-leading DATUM compressor technology and is the fundamental building block for the integrated compression system (ICS).

The DATUM C compressor is a hermetically sealed centrifugal compressor driven by an integrated, high-speed electric motor. Because the unit is hermetically sealed, the motor and compressor shafts are levitated using magnetic bearings. The motor/compressor system is designed for natural gas pipeline and upstream process gas applications, and the motor and magnetic bearings are designed to be cooled using the process gas handled by the centrifugal compressor. Its small footprint and modular compressor bundle make installation and maintenance easier than for conventional units, while minimizing the requirements for auxiliary systems and buildings.

Because of its integrated, totally enclosed configuration, the DATUM C compressor offers significant environmental benefits including the following:

- Emission-free design
- Quiet operation
- Reduced footprint
- No on-site leakage from shaft seals
- Magnetic bearings that eliminate the need for oil lubrication

DATUM® I Compressor

For hermetically sealed systems, the DATUM® I compression train uses the basic high-speed motor and DATUM compressor building blocks used for the DATUM C product, but includes an integrated, rotating, gas/liquid separator inside of the compression casing. The integrated separator was developed by D-R to substitute the large, heavy, gravity-based scrubbers that are typically installed upstream of each compression section. The integrated separator is designed to remove liquid that may enter the compression system and reduces the size of the remaining carryover liquid particles (if any) to a fine mist which is innocuous to the compressor internal components.

The use of the DATUM I product thus facilitates a reduction in the size of the overall compression train and associated gas/liquid separation equipment, while still providing sufficient protection to the compressor flowpath. The separator stage can be used for compressors supported on magnetic bearings or for units on oil bearings, regardless of the type of driver used for the train.

The hermetically sealed DATUM I compressor results in the ideal solution for the case of subsea applications, as it eliminates the need for conventional gravity based scrubbers, which would otherwise be required. For these types of applications, especially for deep-water service, the vessel design significantly affects the size and weight of the overall subsea processing module; the external pressure acting on these vessels compounds the challenges associated with the construction of these large vessels.



Subsea DATUM® I pilot unit (D12I9B) on D-R's wet gas test facility in Olean, NY.

DATUM® ICS

Integrated Compression System (ICS)

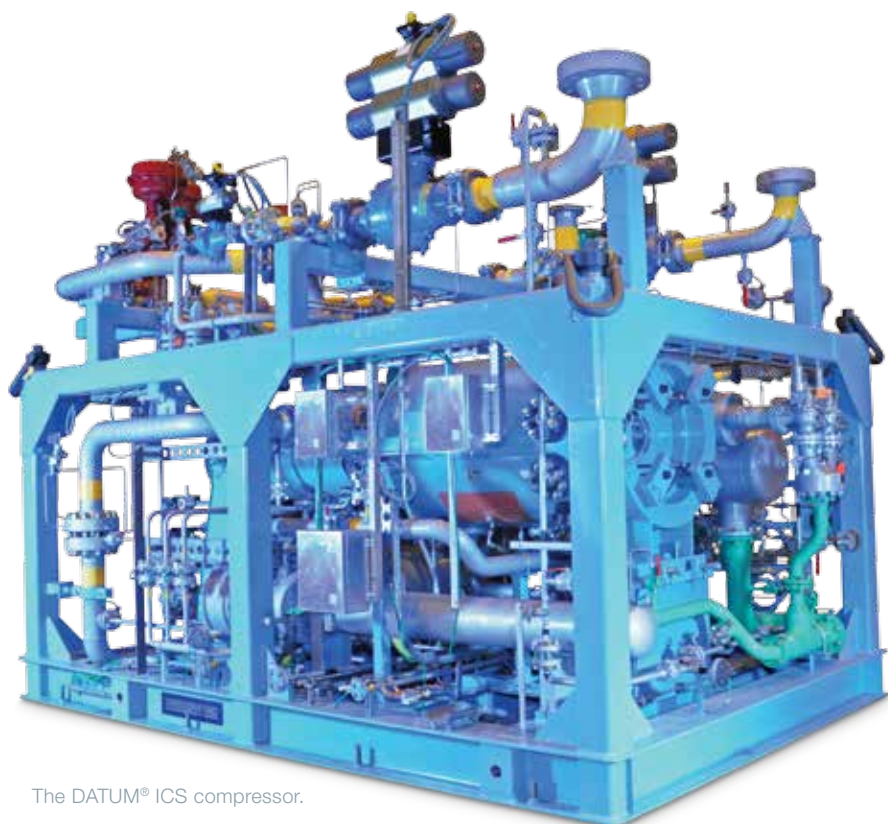
The DATUM® ICS is a compact compression system that can be applied to all markets—upstream, midstream and downstream—with a small footprint, reduced weight and at the lowest total lifecycle cost. It provides a compact and highly efficient means for removing liquid from a wet gas mixture while increasing the pressure of the gas stream.

The ICS uses D-R's centrifugal compressor technology and the proprietary, compact centrifugal-type gas/liquid separator that is integrated to the compressor shaft, and resides within the compressor casing. This technology can be offered with the compressor rotor supported on active magnetic bearings (AMBs) or on oil lubricated bearings, regardless of the type of driver used for the train. The use of our field-proven compressor modular bundle design allows the end-user to change out the compressor internals in less time, resulting in reduced downtime, and has a positive impact on the availability and reliability of the unit.

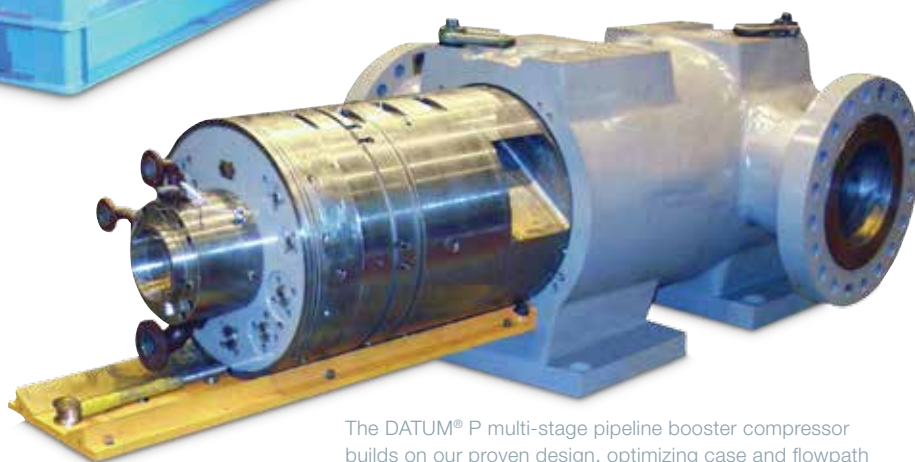
In addition to the high-efficiency DATUM centrifugal compressor technology, our proprietary centrifugal separation technology and the compressor driver, the ICS system also includes dedicated unit controls, process coolers, valves, instrumentation, and interconnecting piping—all packaged in a compact module design. For ICS modules, designed based on the use of a hermetically sealed, DATUM I train, our approach to compact compression could typically result in as much as a 50% reduction in the footprint and a 50% reduction in weight when compared to traditional compression modules.

DATUM® P Compressor

Dresser-Rand has offered pipeline booster equipment for the gas transmission industry for more than 50 years. The DATUM P compressor uses components—impellers, bearings, seals, stationary flow-path components, etc.—from the DATUM multi-stage compressor product line. As such, it benefits from the proven experience and flexibility of the DATUM design product line, including its many innovative features. One of those features is the modular bundle assembly that enables rapid change-out of rotating elements—together with bearings, seals and stationary components—in one cartridge-style assembly.



The DATUM® ICS compressor.



The DATUM® P multi-stage pipeline booster compressor builds on our proven design, optimizing case and flowpath designs for pipeline applications.



▲ In 1995 we introduced the world's first DATUM centrifugal compressor – a compressor that delivers the industry's lowest total cost of ownership through its maintenance-friendly modular design and efficiency-boosting impellers.

A client challenged us to create a natural gas and carbon dioxide compression and re-injection solution for its FPSO off the Brazilian coast. We developed a DATUM compressor that delivered a discharge pressure of over 580 bar while compressing a super critical CO₂ rich gas blend – simpler and with a smaller footprint than our competitor's configuration.

Our solution eliminated an entire pumping system, a compressor train and a separate injection manifold and reduced the client's CAPEX and OPEX.



▲ A major refinery wanted to increase its production of clean fuel from sour crude. We helped them meet these demands with a unique DATUM solution that included a net gas compressor train with two nine-stage compressors. The system generated a combined total of 275,000 feet of head—an achievement that would have required three of our competitors' compressors.



DATUM[®]

◀ A major gas producer needed a compressor with extraordinary horsepower to quickly and cost-effectively move 70 million cubic meters of natural gas per day from Qatar to Abu Dhabi. We created a DATUM compressor designed for prolonged run times that could exceed 60,000 horsepower in extreme heat and cold (highest horsepower in a single casing) powered by an aeroderivative engine.

For a complete list of products and services, visit www.dresser-rand.com or contact the following:

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