ADA

Energy Services

FULLY INTEGRATED AERATED ENERGY SERVICE COMPANY

Since it was founded in 2003, Air Drilling Associates, now simply ADA has quickly grown to establish itself as the world's largest privately owned air drilling services company, and a leading provider of air/mist/foam/aerated fluids drilling, underbalanced drilling (UBD) and managed pressure drilling (MPD) services to the geothermal and hydrocarbon industries. In 2010 we diversified into MPD/UBD services and then in 2016 acquired the two highest quality independent MPD/UBD service and API Q–1 certified manufacturing companies: Reform Energy Services and Strata Energy Services of Canada. With this strategic acquisition, ADA gained more than 20 years' worth of combined UBD, MPD and related engineering and operational experience.

More recently, ADA began to expand and diversify its customer base to include companies providing pipeline and process services, supplying equipment packages to a number of onshore and offshore projects.

Our aim is to be leading supplier and partner by supporting our customers' project requirements with the best equipment solutions aimed at optimizing productivity, cost efficiency, value and quality.

Our core value is our strong commitment to quality, safety, health and the environment, through strict adherence to regulatory requirements and the implementation of industry best practices.

From its corporate headquarters in Houston and offices in South East Asia and the Middle East, ADA is managed by a highly accomplished, entrepreneurial management team with all–encompassing experience gained from projects around the world. By fostering a positive and inclusive culture, the company has developed an innovative, responsible, dependable and efficient workforce.

Our API Q1 & Q2 certified manufacturing and service company is committed to the success of our clients' wells.

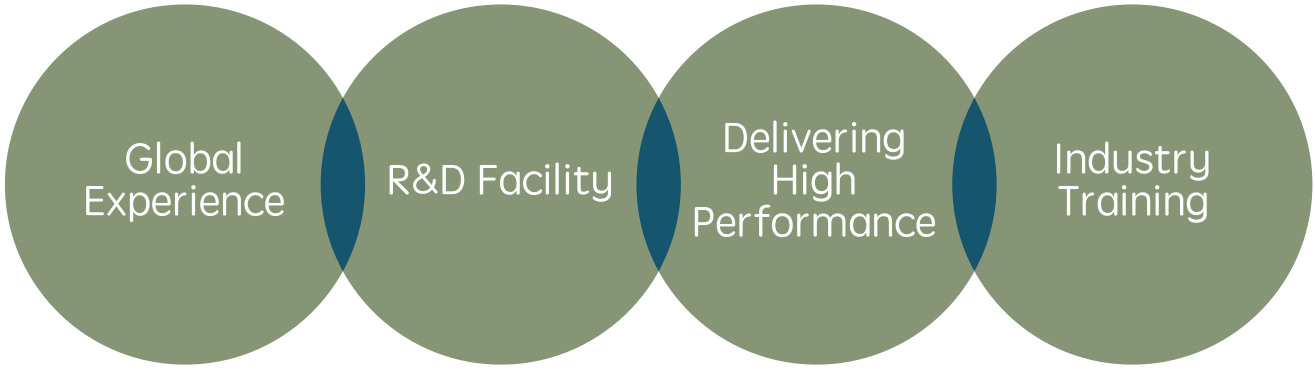
ADA

AIR DRILLING ASSOCIATES, INC.

Reform energy services

STRATA Energy Services

THE ADA DNA



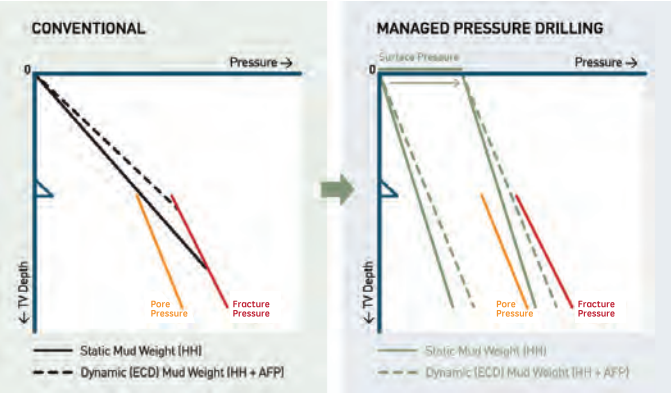
Our API Q1 & Q2 certified manufacturing and service company is committed to the success of our clients' wells.

ADA's managed pressure drilling (MPD) Coriolis meter (L) and choke manifold (R). Utilizing the automated control system brings huge improvements in safety and cost reductions through automation and personnel reduction.

WHAT IS MPD & UBD?

Managed Pressure Drilling (MPD) is the process whereby the wellbore pressure exerted by the drilling fluid is controlled using surface back pressure arising from the pipe being sealed at the surface by a rotating head and a choke manifold. This enables uninterrupted drilling through narrow pore–fracture pressure windows. Pressure control is maintained using a combination of fluid density, circulating friction, and surface pressure adjustments. MPD is an evolving technology that can solve a wide range of problems, including differential sticking, unstable formations, wellbore ballooning, lost circulation, and loss–kick situations.

BHP = SP + HH + AFP



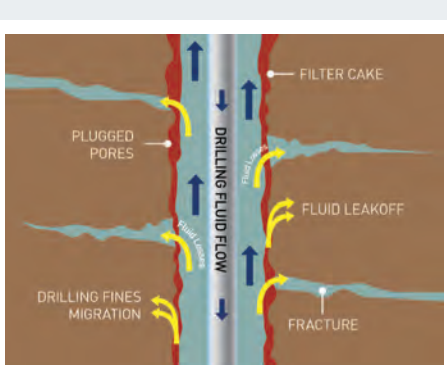
BHP = Bottom Hole Pressure
SP = Surface Pressure
HH = Hydrostatic Head, pressure due to mud weight
AFP = Annular Friction Pressure, due to circulation
ECD = HH + AFP

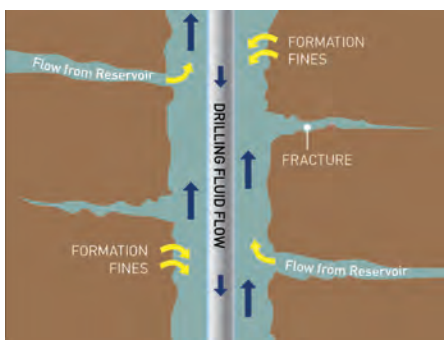
Underbalanced Drilling (UBD) is defined as the situation where the hydrostatic head of the drilling fluid is intentionally designed to be lower than the pore pressure of the formation. The hydrostatic head of the fluid may be naturally less than the formation pressure or it can be induced. The induced state may be created by adding natural gas, nitrogen or air to the liquid phase of the drilling fluid. Whether the underbalanced status is induced or natural, the result may be an influx of formation fluids which must be circulated from the well and controlled at surface.

DRILLING, WORKOVER & DOWNSTREAM APPLICATIONS

Air drilling techniques are used to drill formations prone to lost circulation, stuck pipe, slow rates of penetration, and other associated problems. The method of using air as a circulation fluid has been used for a long time, mainly to drill hard and dry formations. Larger diameter wells, particularly those with severe fluid loss zones, can be drilled using foam as a drilling fluid. Recently the advent of underbalanced drilling techniques has seen a surge in the application of aerated or nitrified fluid systems to reduce the hydrostatic column in the wellbore.

Sometimes a membrane nitrogen unit is used to reduce the oxygen content and create an explosion–proof nitrified air stream. For mist and foam a drilling mist pump is used to inject small amounts of water or chemical downstream of the booster outlet. This is then injected down the drill string, circulated up through the wellbore annulus and returns are then safely diverted from the rig floor using a rotating control head.





FROM DESIGN TO EXECUTION

Aerated and underbalanced drilling techniques involve multi-phase flow conditions. ADA uses advanced modeling software to design its more complex underbalanced drilling projects to determine the appropriate gas and fluid injection rates and the resultant injection and downhole circulating pressures. The models show excellent correlation between planned parameter and actual results in the field.

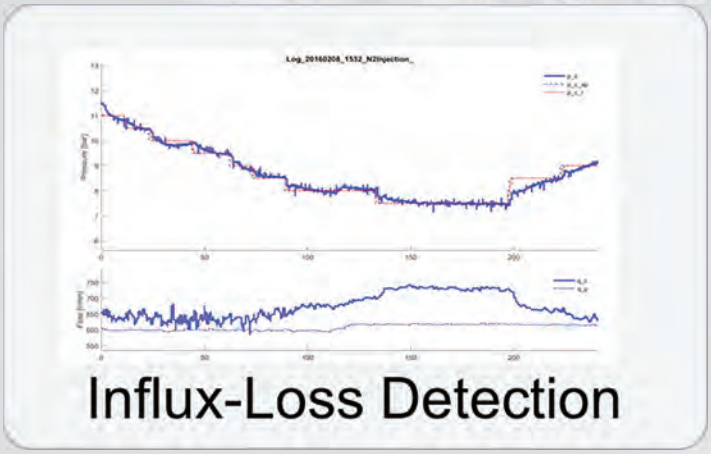
The management and personnel of ADA are committed to being the supplier of choice by providing the highest level of performance through the implementation of safe, professional and innovative products and services. The company's Quality, Health, Safety and Environmental (QHSE) Management System conforms to the latest ISO 9001 (Quality), ISO 14001 (Environmental) and OHSAS 18001 (Safety) guidelines and has been implemented at every facet of its scope of operations.

MPD & UBD TRAINING

ADA can provide classroom and on-site training for clients and its contractors prior to executing a managed pressure/underbalanced drilling project. This enables in-depth analysis of the consequences of various possible strategies to rectify a kick or a loss situation. Contact us for more information today.

AUTOMATED MPD/UBD TECHNOLOGY

An Influx-loss detection (ILD) is a module (or early kick detection, EKD) that can be run independently on conventional (non-MPD) drilling jobs. The ILD system is a model-based algorithm that provides robust measurements of the dynamic mass balance of the closed-loop circulation system. This provides higher certainty of detection, as well as unique capabilities to detect during transients.



In Particular:

- Detection in flow transients, such as ramp-down in connections
- Detection in case of surge and swab effects, i.e. enables detection of kicks while tripping out, and losses while tripping in
- Detection during pressure set-point changes in MPD operations

The system includes automatic calibration of important model parameters and sensors such as measurement offsets, fluid compressibility (bulk modulus) estimation, rig pump (efficiency) characterization and calibrating ultrasonic clamp-on meters. This removes the need for expert calibration of the system, making it easier to operate.

ADA can also design and install MPD control and/ or early kick detection systems for use on existing and new-build drilling rigs. Please contact an ADA representative for more information.

UNDERBALANCED DRILLING (UBD) EQUIPMENT

On an underbalanced drilling project the engineer is first faced with deciding what fluid system should be used “upstream” of the rotating control device (RCD). ADA can advise on the proper fluid composition as well as additives such as surfactants, corrosion inhibitors and so forth.

Invariably the drilling fluid may need to be lightened by injecting air, natural gas or on-site generated nitrogen. ADA has one of the largest and youngest fleets of air compression and membrane nitrogen separation equipment. We can deliver virtually any volume of high (95-99%) purity nitrogen at pressures up to 340 bar/5000 psi.

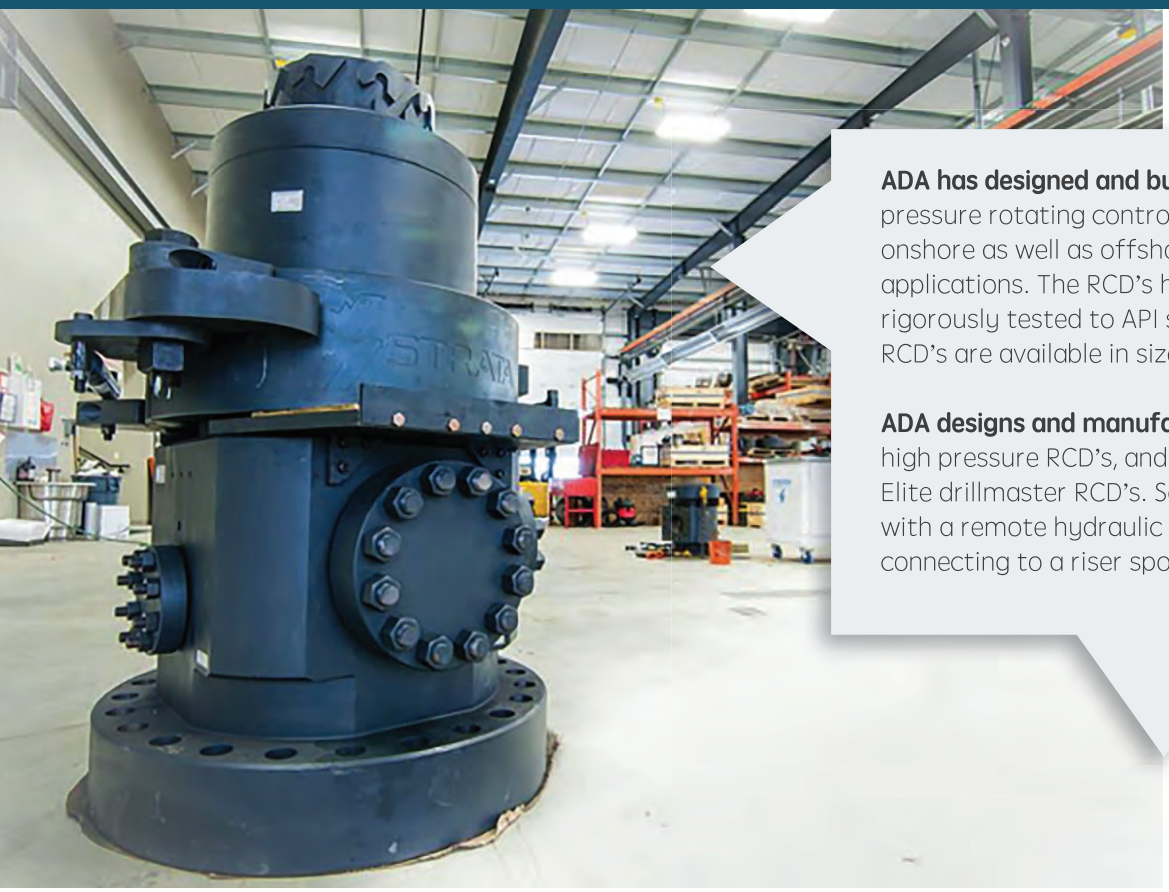
The “downstream” section of the UBD system deals with UBD “Drill Packs” that control and separate the return flow of gas, liquid hydrocarbons, drilling mud and cuttings. The oil and/or gas can be sent to an export pipeline or process facility, storage tanks, or a special burner. The drilling mud can be recirculated and drilled cuttings are sent to the shakers or confined storage.

UBD SPREAD

The four-phase UBD separators are designed to conduct long-term well testing operations.

Remote locations may require an oil burner designed for maximum clean burn capability with minimal fall-out by using compressed air as a propellant.

ROTATING CONTROL DEVICE EQUIPMENT



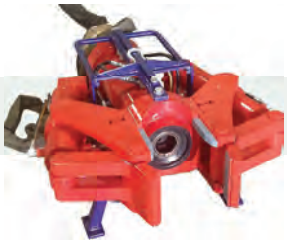
ADA has designed and built a large fleet of high pressure rotating control devices (RCD's) for use on onshore as well as offshore jack-up and floating rig applications. The RCD's have been designed and rigorously tested to API specification 16-RCD. The RCD's are available in sizes from 11" to over 33".

ADA designs and manufactures the Strata range of high pressure RCD's, and also owns a wide range of Elite drillmaster RCD's. Some of these come equipped with a remote hydraulic clamp and a top flange for connecting to a riser spool on offshore rigs.

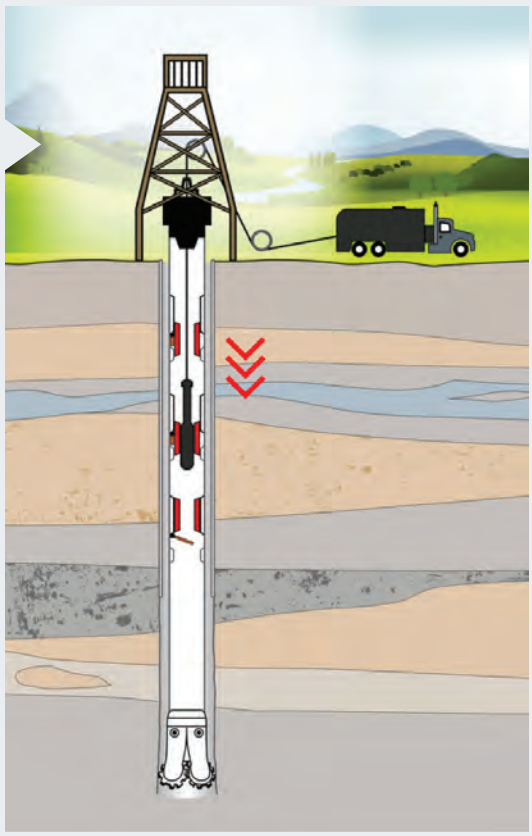
The Marine Diverter Series (MDS) is under development for subsea and below the tension ring applications on floating rigs.

ENABLING TECHNOLOGIES

ADA's continuous circulation device (CCD) enables uninterrupted flow of drilling fluid to the well while breaking out or making up drill pipe connections during drilling operations. This eliminates the bottomhole pressure and flow fluctuations that occur each time the mud pumps (and/or gas injection) are stopped and restarted during conventional connections, which can lead to connection kick/loss situations, formation ballooning, cuttings settling and stuck pipe. With a maximum flow rate of 1,200 GPM and fully automated control it offers operators and drilling contractors the ability to drill normally very challenging hole sections with more control, minimal risk and NPT. ADA has an exclusive marketing agreement with Drillmec for its Heart of Drilling (HoD) CCD system.



The Switchfloat™ system comprises of flapper float valves that can be opened by covering the opened flapper with a sliding sleeve. This way the Switchfloat flapper float valves eliminate any possibility of restricting the retrieval of wireline tools such as logging while tripping tools, freepoint tools and pipe severing tools.



The Strata push–pull machine (PPM) can control pipe movement into and out of the well in pipe–heavy situations such as rig floor snubbing in live well applications. It can be installed in most drilling and workover rigs and adapted to fit most rotary table bushing sizes or be supported from the BOP stack. On pipe–light situations the PPM can also be used to significantly improve ROP during the slide intervals of shallow TVD extended reach horizontal wells, increasing hole depth by as much as 1,000 feet over conventional methods.

CHEMICALS

ADA develops and produces its specialty chemical formulations used for air, foam, aerated and underbalanced drilling operations. All the chemicals have been extensively tested by third party laboratories for toxicity and biodegradability.

The product range includes:

- Foaming agents for soft, hard & high saline water applications
- Defoamers
- Oxygen corrosion inhibitors
- Polymers
- Clay inhibitors

COMPRESSED AIR AND NITROGEN SERVICES

UPSTREAM

ADA can generate nitrogen on site for a number of upstream applications. Its inert, low density and high pressure characteristics make nitrogen an ideal choice for drilling, workover and CTU operations. Being immiscible with oil and water, nitrogen can also be used to enhance well/reservoir production.

- Underbalanced Drilling
- Well Stimulation
- Well Completion
- Fluid Displacement
- Well Clean Out
- Gas Lift
- Reservoir Pressure Maintenance
- Nitrogen Injection / Flooding
- Geothermal

MIDSTREAM & DOWNSTREAM

ADA's compressed air and membrane nitrogen packages have a wide range of applications for pipelines and process systems during construction, testing, pre-commissioning, commissioning, operations, maintenance, transportation, storage, shutdown/turnaround and decommissioning activities.

Nitrogen is a colorless, odorless, naturally occurring gas. Its inert, non-flammable, non-corrosive, non-toxic properties make it ideal for many functions related to displacing an undesired atmosphere (whether air or hydrocarbon) as well as keeping air away from products. The main requirements are the avoidance of any risk of explosion, a safe startup and shutdown, the prevention of safety and health hazards during maintenance and the protection against atmospheric oxygen or moisture to avoid corrosion and deterioration of the final product. Nitrogen is also well-suited for drying pipelines and process systems, due to its very low dew point and its ability to readily absorb moisture.

ADA's compressed air and membrane nitrogen packages are used for a myriad of applications across the O&G, petrochemical and geothermal sectors.

PIPELINE & PROCESS SYSTEMS

- Pneumatic Testing
- Nitrogen / Helium Leak Detection
- Pigging
- Dewatering & Drying
- Nitrogen Inerting & Purging
- Nitrogen Packing
- Nitrogen Blanketing
- Nitrogen Sparging / Stripping

OUR EQUIPMENT

ADA's projects are executed by skilled project teams who operate more than 200 compressors, 60 boosters, 9 super boosters and 10 membrane nitrogen units.

Our equipment, sourced from globally renowned OEMs with worldwide service networks and first-rate track records, is efficient, reliable, ideally maintained and safe to operate, providing our customers with high performance levels and minimal downtime.

COMPRESSED AIR PACKAGES

ADA can offer customers total project solutions from its early involvement during the engineering phase through to provision of complete equipment packages including skilled project supervisors, technicians and operators with all the appropriate procedures and health, safety, environmental management and quality systems in place.

ADA complies with most environmental protection regulations and can provide "rig safe" equipment when required.

We bring experience and know-how in building and operating air packages for projects in the most remote and environmentally challenging areas of the world – the freezing Canadian winters, the scorching deserts of northern Iraq or the humid jungle highlands of Papua New Guinea.

HP air compression spread on site in Kurdistan Region of Iraq

PRIMARY COMPRESSORS

ADA owns and operates a large fleet of high pressure, silenced rotary screw air compressors with a range of specifications to produce up to 1500 scfm at 350–500 psi. All units can be transported inside, or as ISO containers; some are DNV certified for offshore use.

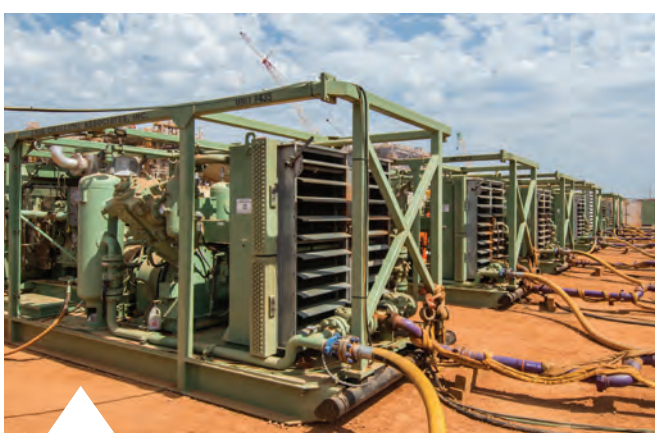
Oilfield skid mounting with certified lifting racks enables easy and quick handling, transportation and set up

Sullair Compressors on a drill site in Oman

Our Doosan units are fitted with DNV 2.7-1 certified frames suitable for offshore use.

BOOSTER COMPRESSORS

Our fleet includes many medium and high pressure booster compressors which can deliver flow rates up to 4000 scfm at maximum discharge pressure of 5000 psi.



Joy WB-12 boosters on pipeline pre-commissioning project

Joy WB-12 Boosters rated to 2700 scfm at 2500 psi

EQUIPMENT CONTINUED

AIR DRYERS

Desiccant air dryers can be deployed to bring the pressure dew point of the compressed air down to between −40˚F to −80˚F as required.

Desiccant Dryer rated to 3000 scfm at 350 psi

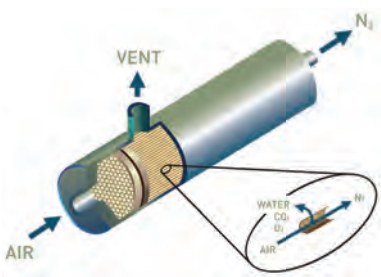
OIL REMOVAL FILTERS

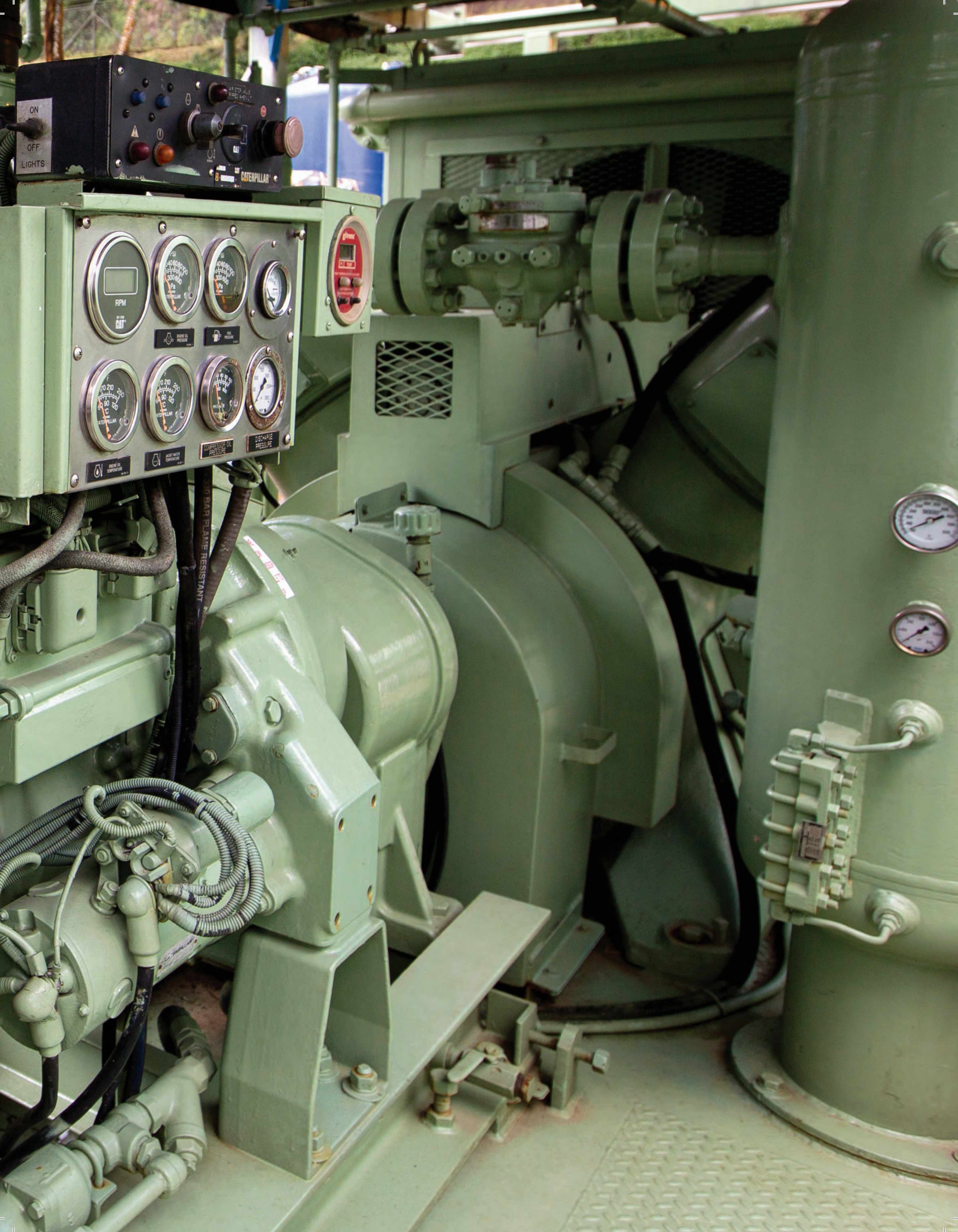
Coalescing oil removal filters are used when the compressed air must have minimal oil content, or in some cases virtually “oil free”.

Coalescing oil removal filter rated to handle between 2500 scfm at 350 psi up to 4000 scfm at 2500 psi.

MEMBRANE NITROGEN GENERATORS

ADA’s Membrane Nitrogen Generators can deliver a guaranteed, uninterrupted, on−demand supply of nitrogen gas for a wide range of uses, generated on site at controlled, variable flows, pressures and purity levels. Our containerized membrane generators are highly mobile, low−maintenance, reliable, environmentally friendly, simple and safe to operate. They are designed to perform in any environmental condition and are especially beneficial over cryogenic systems for remote and logistically challenging locations where the delivery of liquid nitrogen is often too difficult and costly. The losses and hazards associated with the storage, transport and handling of cryogenic liquids do not apply to membrane nitrogen systems.




ON
OFF
LIGHTS
CATERPILLAR
RPM
CAT
ENGINE OIL PRESSURE
FUEL PRESSURE
ENGINE OIL TEMPERATURE
JACKET WATER TEMPERATURE
COMPRESSOR OIL PRESSURE
DISCHARGE PRESSURE
BAR FLAME RESISTANT

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