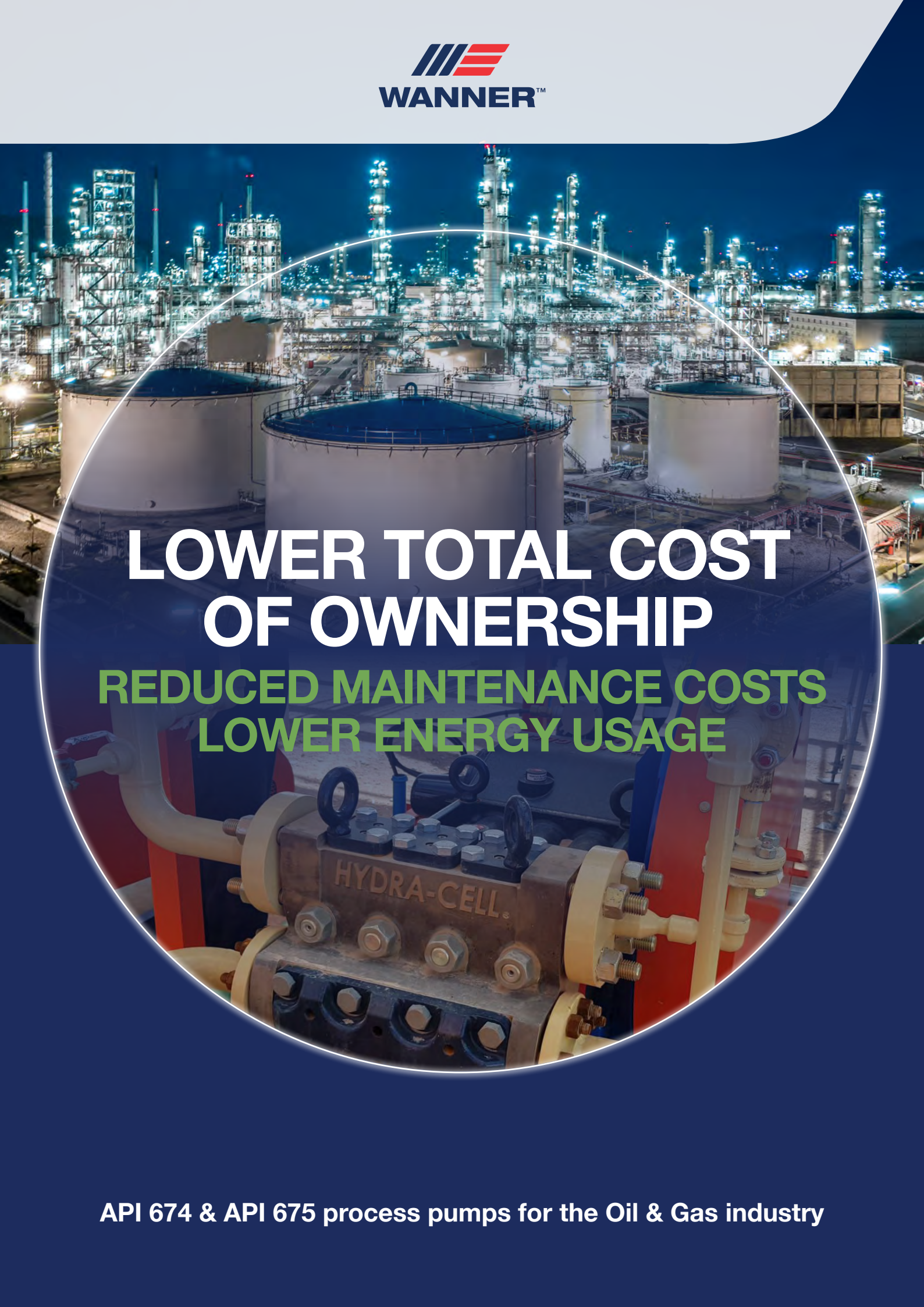




LOWER TOTAL COST OF OWNERSHIP

**REDUCED MAINTENANCE COSTS
LOWER ENERGY USAGE**

API 674 & API 675 process pumps for the Oil & Gas industry

Our priority is to help energy organisations run a safe, efficient and cost-effective pumping processes.

WANNER™ provides solutions that protect operators and the environment whilst lowering energy consumption, servicing and maintenance costs – lowering the total cost of ownership for a more sustainable future.



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ABOUT WANNER in Oil and Gas

For almost 50 years, WANNER has been designing, manufacturing and supplying Hydra-Cell® seal-less and packing-free API 674 and API 675 process, transfer, injection and metering pumps.

During this time, WANNER engineers have built-up an extensive knowledge of Upstream, Midstream & Downstream applications by getting involved with customers' processes and understanding their needs and goals; this knowledge and experience is used to help new customers meet their specific challenges.

Safety is Our Priority

The cost of operator safety is priceless. With 100% containment, no leakage or spillages of hazardous liquids; eliminating VOCs emissions and ground contamination, you can guarantee to protect your operators and the environment with the seal-less design of our Hydra-Cell® seal-less and packing-free API 674 & API 675 pumps.

Pumps for ATEX / Hazardous Areas

WANNER has a seal-less pump range that is independently assessed and certified by major approval bodies to ATEX (Directive 2014/34/EU and the UK equivalent regulation No. 1107). We can supply certified pumps to the latest legislation ensuring safety of operation for your operators and your plant. We have European and UK registration, and mark for CE UKCA and to ATEX UKEXs.



SUSTAINABILITY
WORKING TOGETHER

Sustainability - Working together to help make a difference for the future

The WANNER group of companies has customers, partners and suppliers all around the world, and it's our mission to make a difference and help our energy customers to run far more environmentally-sound and safe pumping processes as part of their overall operations.



REAL VALUE

Maximise Your Investment

As a privately held company, WANNER globally invests a significant percentage of revenue on developing the technology inside the Hydra-Cell® pump range for continuous improvement of the designs to improve the performance, security and peace of mind for our customers.

Creative ideas lead to innovative patentable technology, meeting tomorrow's challenges and creating added value to help keep your production processes going for a more sustainable future - safely, reliably and efficiently, and lowering the total cost of ownership.

Reduce Maintenance Costs. Reduce Energy Consumption. Maximise Productivity

In applications such as:

- Pumping corrosive produced water for salt water injection and disposal
- Transfer and injection of the range of hydrocarbons in crude and NGL applications
- Safe containment of H₂S laden process liquids
- Spraying hot TEG for gas drying
- Accurate dosing and injection at high pressure process treatment chemicals

The high efficiency, seal-less pump design reduces maintenance and service costs; the 90% efficient pumping action reduces energy consumption and helps maximise productivity.



API 674 Process Pumps



API 674 & API 675 Injection, Transfer and Dosing Pumps

100% Contained - Zero Leakage

Hydra-Cell® seal-less and packing-free API 674 & API 675 pumps give you total peace of mind that hazardous liquids will be 100% contained, eliminating VOCs emissions and ground contamination – guaranteeing to protect your operators and the environment.

Patented ADPC (Advanced Diaphragm Position Control)

Technology unique to WANNER and the Hydra-Cell® product range which protects the diaphragms from abnormal and transient process conditions. This technology enables the Hydra-Cell® pump to operate with a wide range of suction pressures, including dry lift capability.

Low-Shear Pumping Action

In meeting the special requirements of polymer injection for well stimulation, Hydra-Cell® pumps have a very low-shear pumping action that ensures the polymers to reach their target areas with their vital properties intact. And in applications pumping oil/water mixes, this technology helps to reduce production of emulsions, making separation process more efficient.

Extremely Low Pulse, Dosing Accuracy and Easy Control

The Hydra-Cell® dosing range of pumps has extremely low pulse flow, in most cases eliminating need for pulsation dampeners. Also eliminating leaks on the discharge pipe work due to pipe strain; a true positive displacement pump capable of handling high inlet and discharge pressures while also maintaining an accurate steady-state flow.



API 675 Metering Pumps

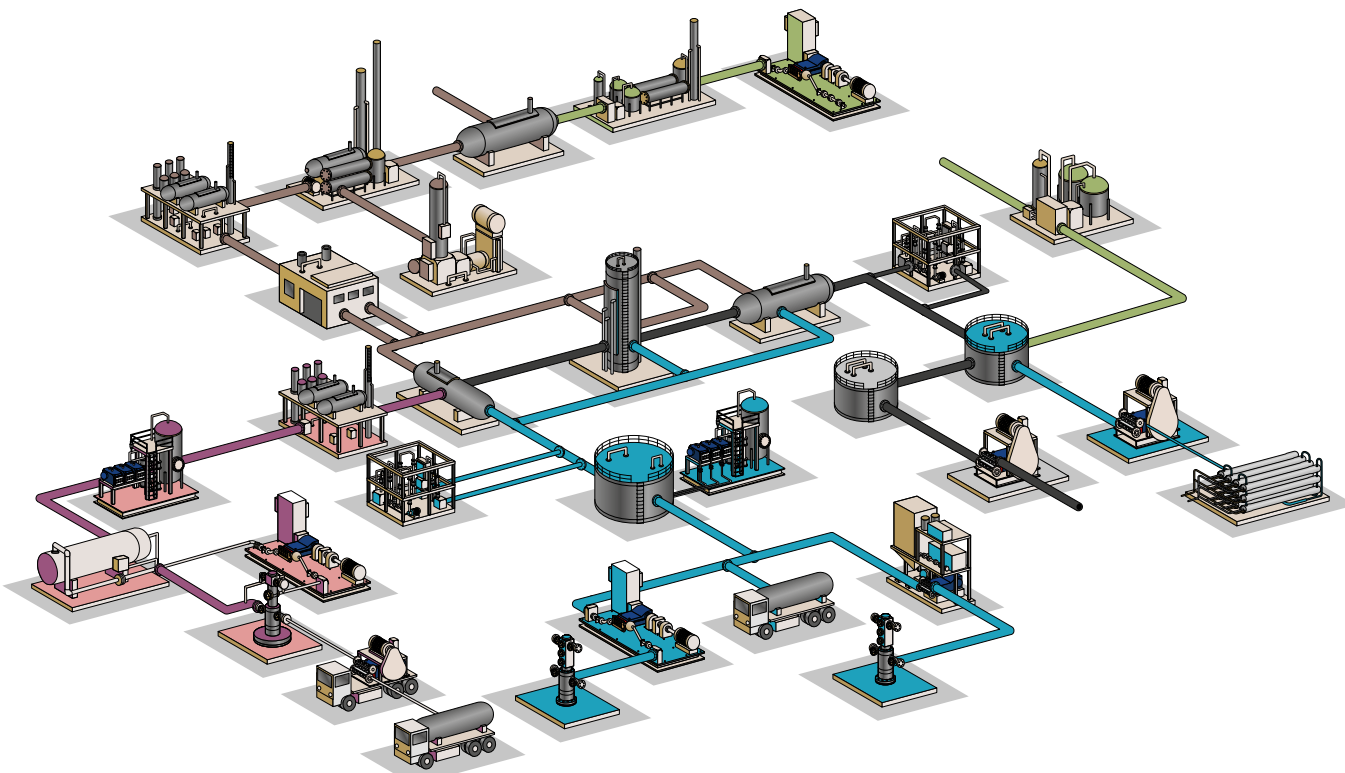
HYDRA-CELL® PUMPS

in Upstream, Midstream & Downstream Applications

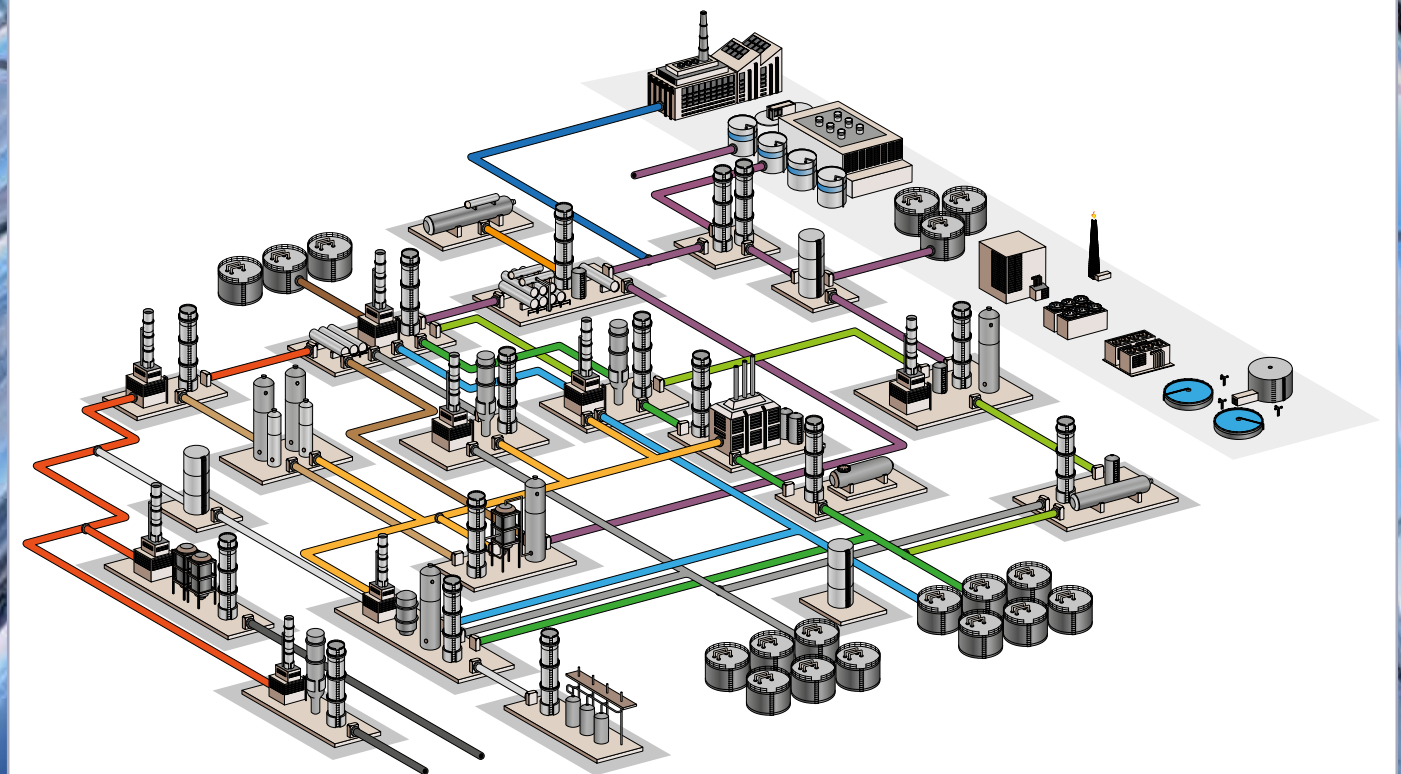
Major global oil and gas companies are significant users of Hydra-Cell® pumps in upstream, midstream and downstream applications.

The seal-less design allows the pumps to handle liquids of all types from thin non-lubricating to abrasive slurries, chemicals and contaminated mixes. The Hydra-Cell® pump range is extremely flexible in pumping many different liquids; with the ease of just changing the materials of construction in contact with the process liquid, this makes repurposing of the pump simple and saves costs - contributing to sustainability.

UPSTREAM & MIDSTREAM



DOWNSTREAM



STATE-OF-THE-ART Manufacturing Facility

Founded in 1973, WANNER Engineering designs, manufactures and assembles the complete range of Hydra-Cell® pumps in their 140,000 sq. ft. state-of-the-art facility located in Minneapolis Minnesota, USA; producing over 20,000 pumps each year, supplying and supporting Oil & Gas customers around the world.

Multi-location Manufacturing and Skid Build

As well as the main high-volume manufacturing plant in the USA, our purpose-built facility in the UK enables us to build customised pumps, pump skids and testing to customers' specific specifications.

Ongoing Investment

WANNER has an ongoing multi-million dollar investment commitment into the latest manufacturing machinery and processes to ensure the quality of their process pump solutions are reliable, safe and energy efficient, along with ongoing development in bespoke testing and certifications to meet demands of the energy industry - for today and into the future.

Renowned Reliability

Metal cutting and machining quality is a key part to achieving the renowned reliability and quality of the Hydra-Cell® pump. It is the belief of owner and CEO Bill Wanner that these processes are kept in-house with heavy investment in machining centres and personnel.

Sophisticated and automated quality control measurement equipment is used by the machinists for first article inspection and ongoing statistical process control (SPC). The engineering test laboratory provides the capability for the range of test required, including: hot and cold liquids, high pressure testing and accurate metering. Final assembly of the pumps is carried out by dedicated teams - every pump is tested before it leaves the factory.



**Witness
testing**

for project specific
requirements

\$Multi-million

manufacturing
improvement
investment

**Every pump
is tested**

under maximum
pressure and flow
conditions before it
leaves the factory

Multi-station
machining centres with
24 hour
lights-out
manufacturing

GLOBAL PARTNERS

Supporting You, Locally

WANNER International's team of engineers and business managers have over 100 years of combined industrial technical experience with backgrounds in hydraulics, mechanical and electrical systems.

Combined with a network of local partners in many countries, with long histories supporting customers' Oil and Gas processing requirements, gives customers access to a large knowledge base. The WANNER team, along with our partners, have a real passion to help customers meet their process challenges. Combining the Hydra-Cell® pump's unique advantages with application knowledge and a passion to improve processes is how we best support our customers.

100 years
of combined industrial
technical experience



APPROVALS, CERTIFICATIONS and MEMBERSHIP



WANNER is an approved supplier of major energy companies, EPCs and PMCs

- Abu Dhabi Company for Onshore Oil Operations (ADNOC)
- Abu Dhabi Gas Liquefaction Limited (ADGAS)
- Abu Dhabi Oil Refinery Company (TAKREER)
- Cairn India
- Engineers India Limited (EIL)
- Megha Engineering & Infrastructures Limited
- Kuwait Oil Company (KOC)
- Oil and Natural Gas Corporation Limited - Onshore (ONGC)
- Petroleum Development Oman (PDO)
- And has 1,000's of pumps running in other major Oil & Gas companies

EAC

Certification

Hydra-Cell® pumps conform to all the technical regulations and have passed all conformity assessment procedures of the Eurasian Customs Union.

TR CU

Certification

Supervised by Rosstandart (Federal Agency for Technical Regulation & Metrology), the new TR CU certificate now replaces GOST-R; covering the states of the Customs Union to protect safety, health and environment of consumers and users of goods.

Hydra-Cell® pumps are compliant with the Customs Union safety requirements for customs clearance procedures for the sale and use in the local market; with safe use of equipment in hazardous or potentially explosive atmospheres in those countries.

TUV

Certification

WANNER Engineering's Quality Management System are reviewed annually to continually improve the effectiveness and provide the necessary resources in contributing to customer requirements and satisfaction to meet TUV Rheinland ISO 9001 standard.

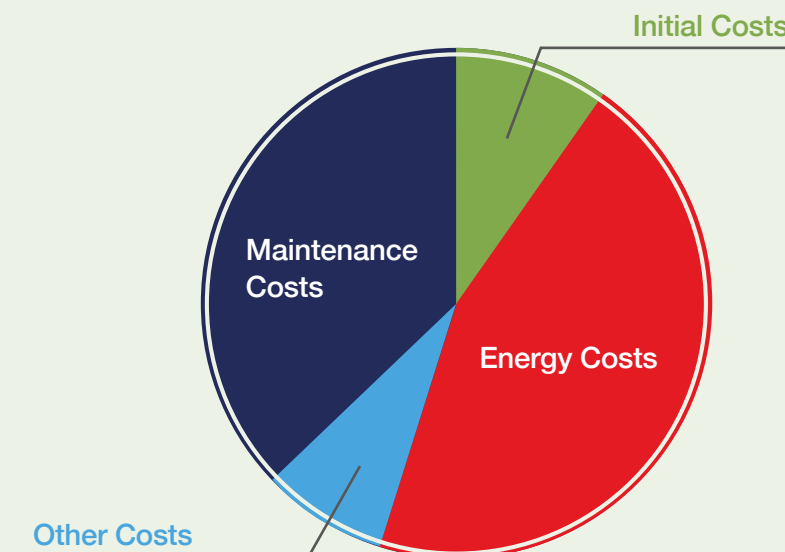
LOWER Life Cycle Costs

How much is your process pump costing - financially and environmentally?

Never before have pump users been faced with such financial and environmental challenges in specifying process pumps.

Driven by investors focussing on companies' commitment to sustainability, it is now more important than ever that pump engineers evaluate a pumping system on more than just the initial acquisition cost. Most major pump manufacturers and key industry bodies are producing analysis of the total life cycle costs of pumps to show both the financial and environmental costs.

Typical Life Cycle Costs for a Medium-Sized Industrial Pump



“

“Pumping systems account for nearly 20% of the world's electrical energy demand and range from 25-50% of the energy usage in certain industrial plant operations.”

“The energy and materials used by a system depend on the design of the pump, the design of the installation, and the way the system is operated. These factors are interdependent.

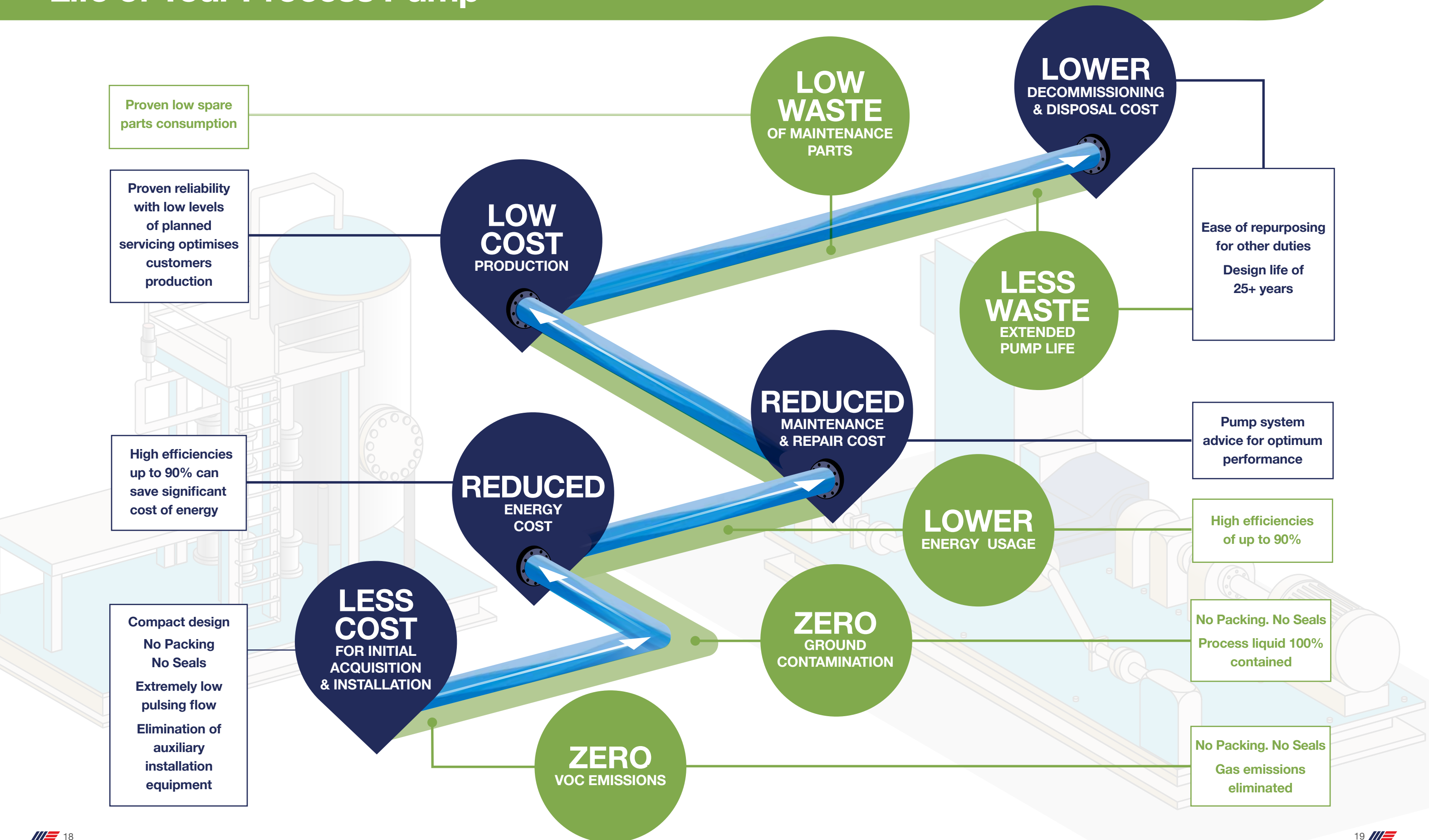
What's more, they must be carefully matched to each other, and remain so throughout their working lives to ensure the lowest energy and maintenance costs, equipment life, and other benefits. The initial purchase price is a small part of the life cycle cost for high usage pumps.”

From a paper PUMP LIFE CYCLE COSTS: A GUIDE TO LCC ANALYSIS FOR PUMPING SYSTEMS
by Hydraulic Institute – Euro Pump - Office of Industrial Technologies Energy Efficiency and Renewable
Energy U.S. Department of Energy

The combination of WANNER's Hydra-Cell® pump technology coupled with WANNER's technical support assisting customers has helped achieve the lowest total cost of ownership and meet their environmental and sustainability goals.

HYDRA-CELL® PUMPS

Lowering Costs through the Life of Your Process Pump



HYDRA-CELL® PUMPS

Life Cycle Cost Analysis

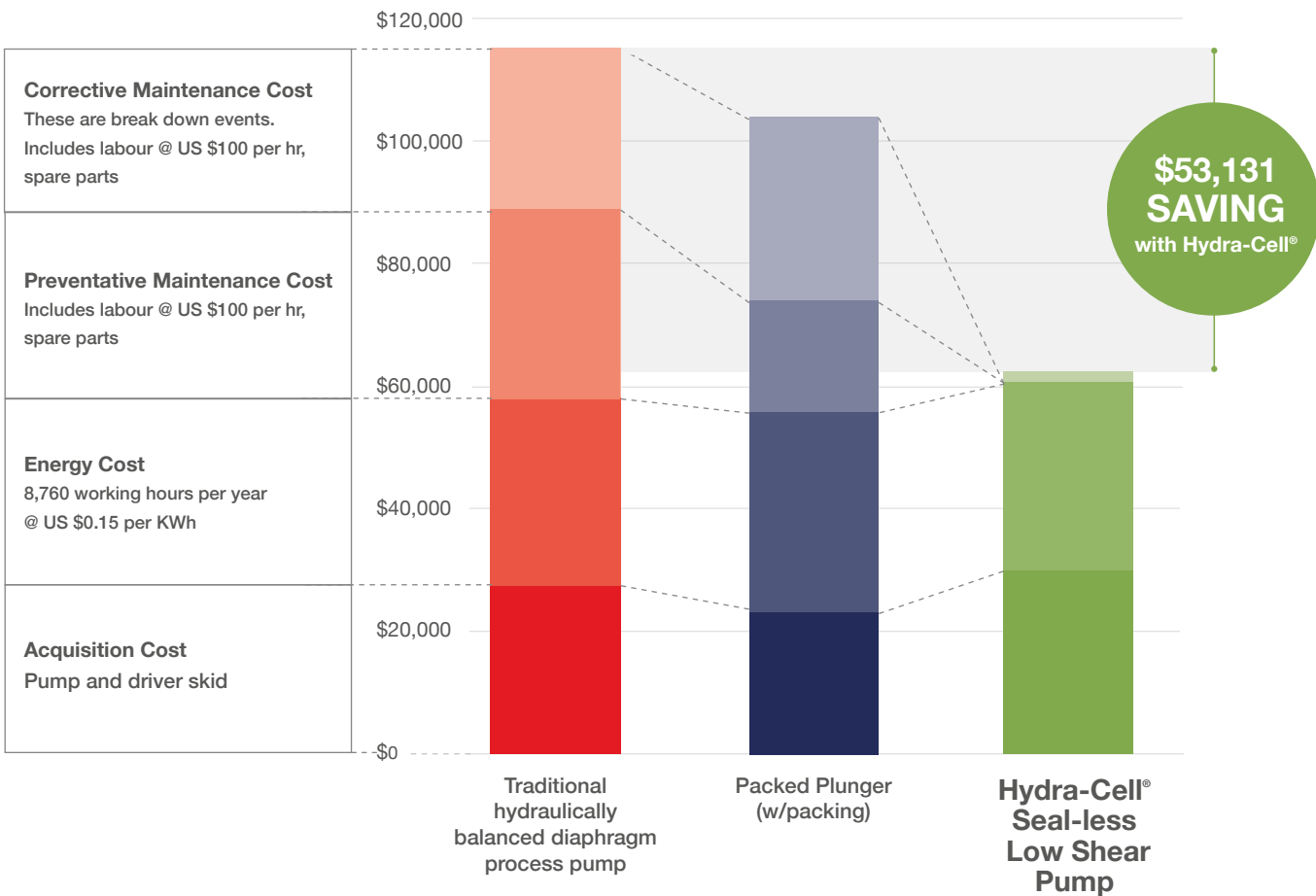
“

“If the owner of a plant wants cost-effective pumps, he will buy pumps with the lowest Life Cycle Cost. Hydra-Cell® is simple in construction, less elaborate in design and physically smaller for equivalent flow / pressure performance. These differences can substantially affect both purchase and operating costs.”

Dr. Ing Friedrich Wilhelm Hennecke.
Chemical Engineering World,
June 2006.

ALKALI SURFACTANT POLYMER INJECTION FOR EOR

Total Cost Acquisition & 3 Years Running



Other Costs Associated with Process

Polymer wastage / environmental clean up

Due to the seal-less design of the Hydra-Cell® pump polymer leakage was eliminated.

Lost production due to breakdown

This can be significant, and very important when the focus is on reducing operating costs.

Lost production due to lower than expected polymer volume injected

The Hydra-Cell® pumps wide adjustable flow range and controllability enables accurate delivery of design flow rate, ensuring no excess polymer being injected than required.

Hydra-Cell®’s unique valve design and low-shear pumping action, minimises polymer shear, optimising polymer usage. With no dynamic seals, its seal-less design ensures the polymer is 100% contained, with no leakage there is no waste and keeps it free from oxygen to stop degradation.

Forced plunger lubrication

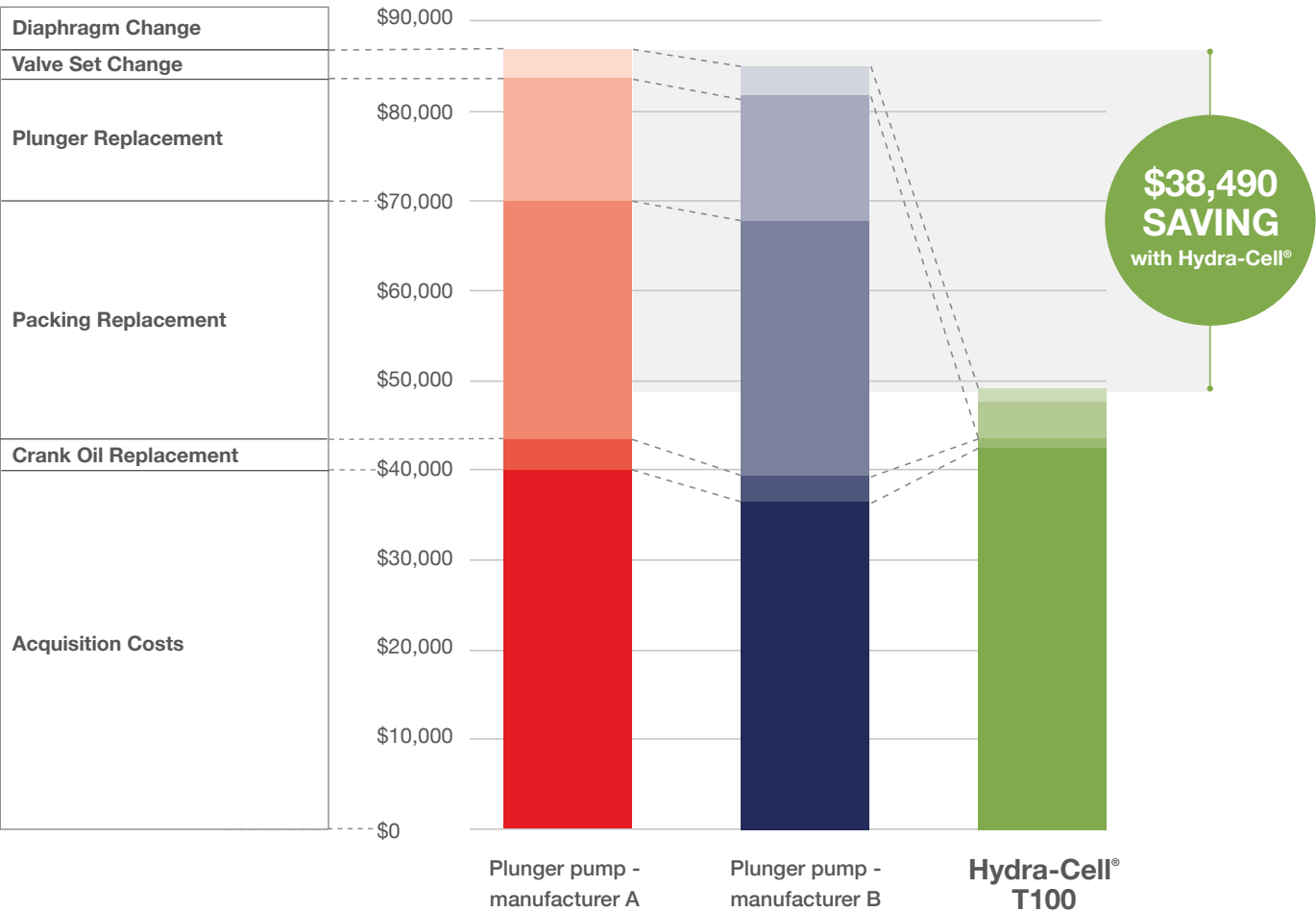
These costs are eliminated with the seal-less and packing-free Hydra-Cell® design.

HYDRA-CELL® PUMPS

Life Cycle Cost Analysis

SALT WATER DISPOSAL

Total Cost Acquisition & 3 Years Running



Other Costs Associated with Process

Forced plunger lubrication

These costs are eliminated with the seal-less and packing-free Hydra-Cell® design.

Environmental clean up costs

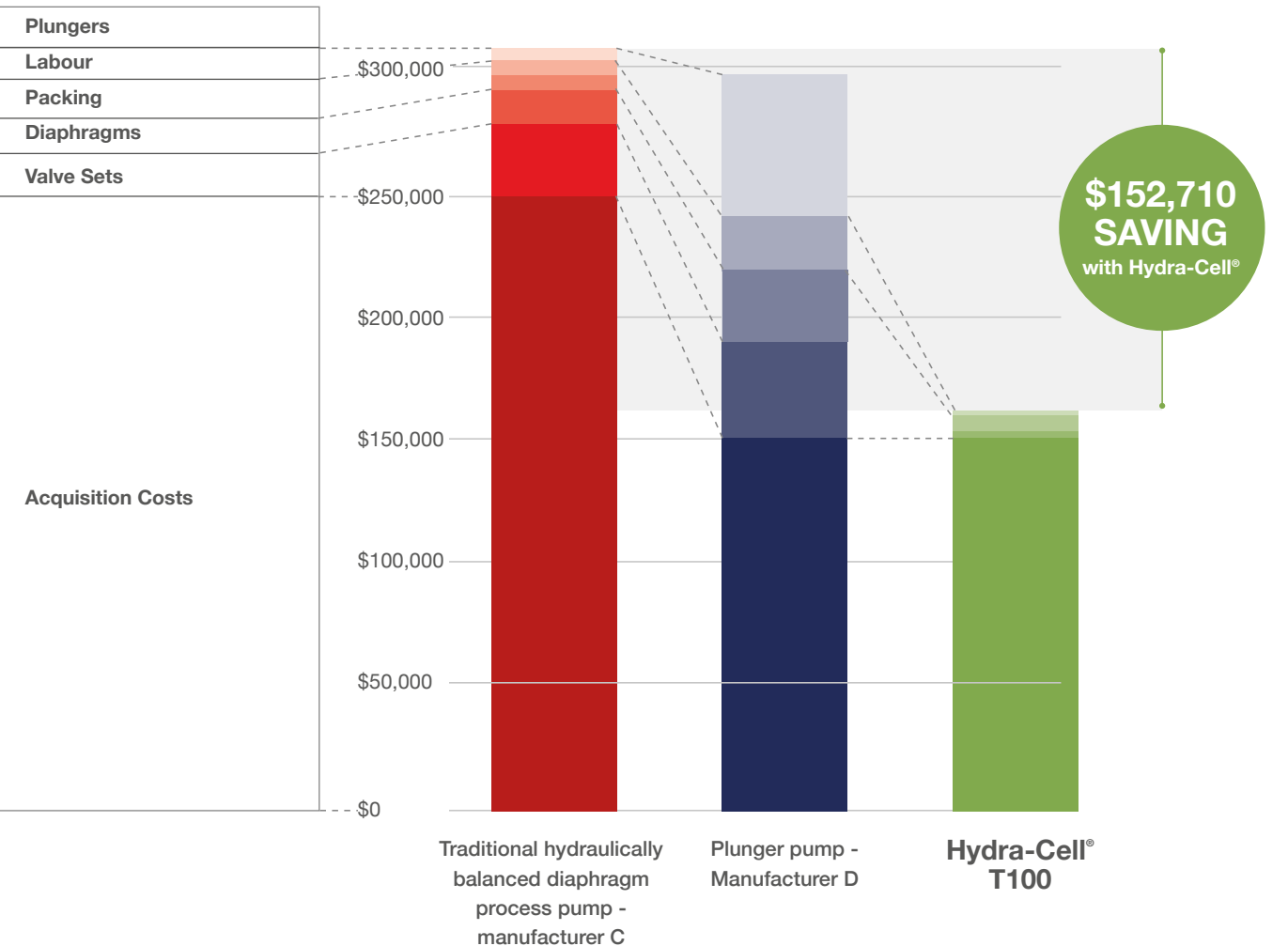
Due to leaking salt water and split oil from lubrication system.

Replacement of damaged manifolds

Due to frequent packing and plunger changes the plunger pump manifolds frequently needed replacement due to damage.

METHANOL INJECTION

Total Cost Acquisition & 3 Years Running



Other Costs Associated with Process

Forced plunger lubrication

These costs are eliminated with the seal-less and packing-free Hydra-Cell® design.

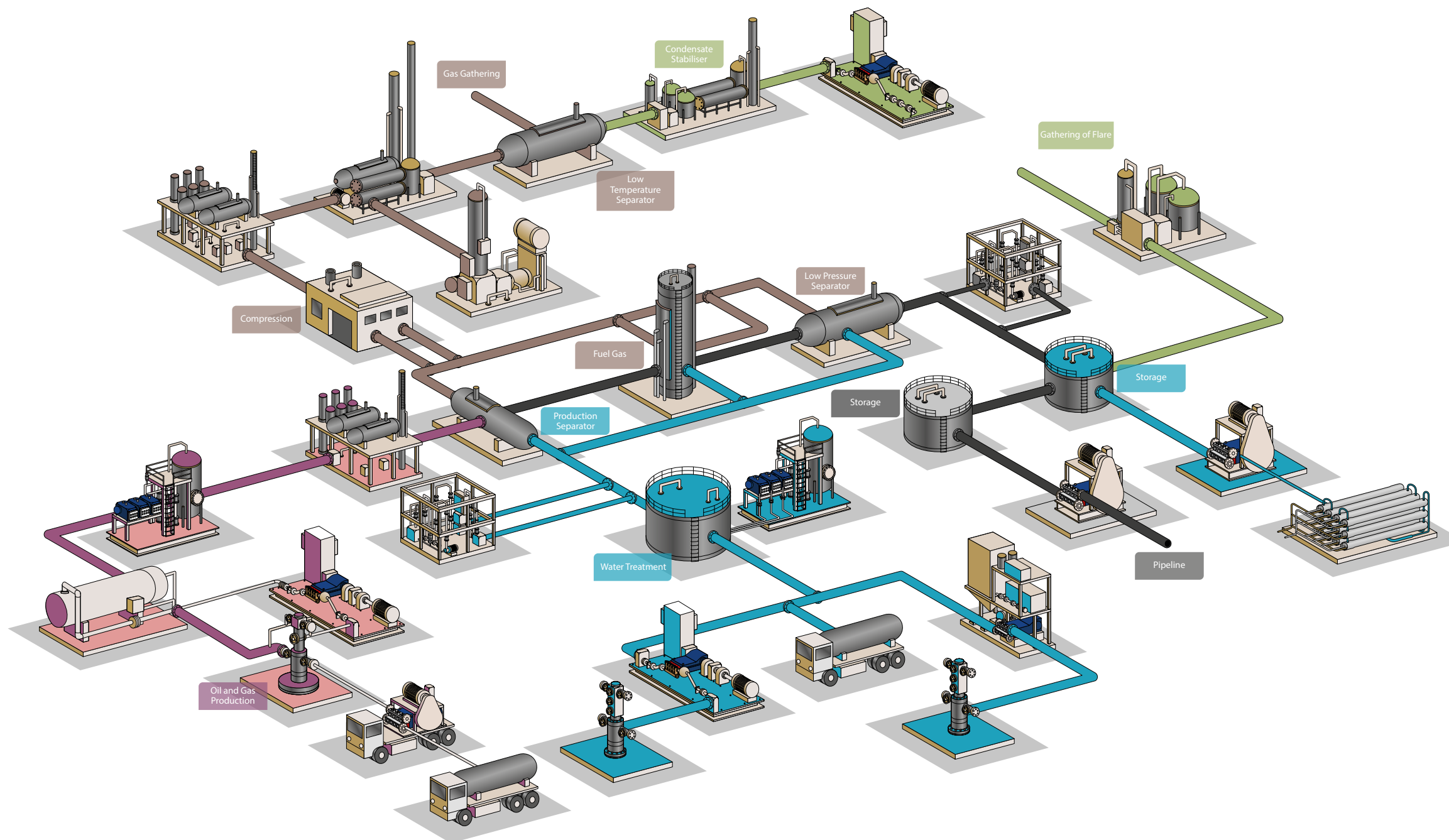
Environmental clean up costs

Due to leaking salt water and split oil from lubrication system.

Energy costs

Friction losses of the plunger pump and larger pulsed flow of the traditional plunger diaphragm result in higher energy usage.

UPSTREAM & MIDSTREAM Applications



Protecting operators and the environment 100% LEAK-FREE

No ground contamination, no spillage of hazardous chemistry such as benzene, toluene, ethylbenzene and xylenes, and crude oil; zero emissions of aromatic hydrocarbons.

Hydra-Cell®'s range of EX-certified pumps offer complete peace of mind for ATEX/hazardous areas.

REDUCED COSTS eliminate seal and packing maintenance

High reliability in pumping liquids laden with metal particles from corroded pipelines, at high pressure; handling non-lubricating and low viscosity liquids including NGLs, and handling shear sensitive polymers with no degradation of the process liquid.

REDUCED ENERGY CONSUMPTION

Hydra-Cell® API 674 & API 675 pumps' true positive displacement pumping action and minimal internal losses achieve high efficiencies, as measured from pump shaft to hydraulic output power - lowering energy usage.

Well Fluid Processing

Oil Processing

Gas Processing

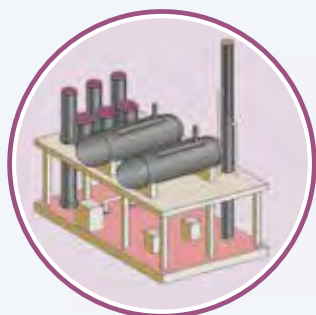
Condensate Processing

Water Management

HYDRA-CELL® PUMPS

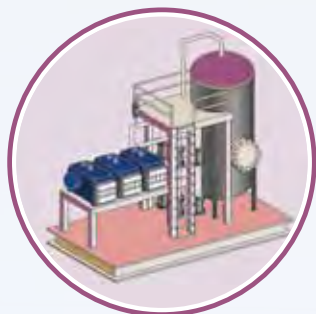
in Upstream & Midstream Applications

WELL FLUID PROCESSING



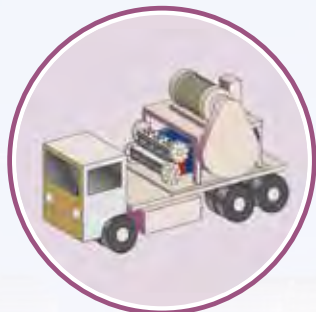
AMINE TREATMENT

- Extremely low pulse, accurate dosing, lower suction acceleration head losses compared with traditional API 675 pumps
- 100% containment of dangerous amines, no leakage when compared with API 676 & plunger API 674 pumps



METHANOL INJECTION

- Extremely low pulse, accurate dosing compared with traditional API 675 pumps
- Elimination of leaking Methanol when compared with API 676 and plunger API 674 pumps



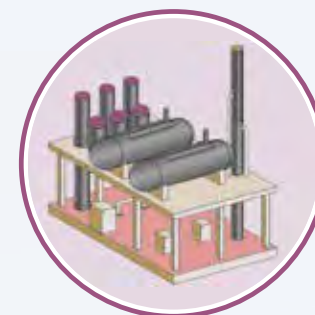
WELL ACID TREATMENT

- 100% containment of dangerous acids at high pressure when compared with plunger API 674 pumps
- Compact footprint compared with traditional API 675 pumps



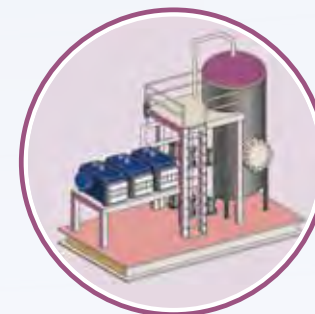
JET PUMP ARTIFICIAL LIFT

- Elimination of packing, seal and plunger maintenance compared with plunger API 674 pumps
- Lower energy usage when compared with API 610 pumps



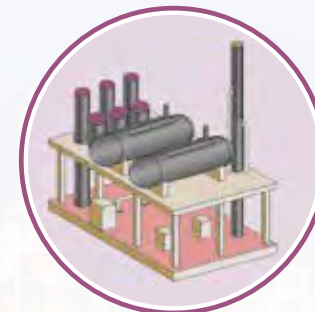
STEAM GENERATION EOR

- Wide accurate control of hot water condensate injection flow rate from 0 to max. when compared with API 610 and plunger API 674 pumps
- Elimination of packing, plunger and seal maintenance when compared with plunger API 674 pumps



CHEMICAL DOSING

- Extremely low pulse, accurate dosing & special valve design ensures reliable pumping of chemicals which crystallise compared with traditional API 675 pumps



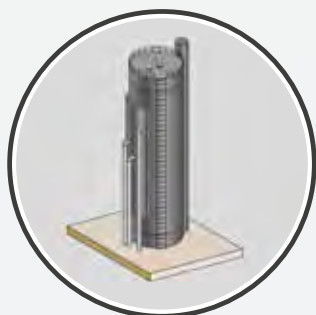
CLEANING

- High pressure pumping of grey and recycled water, eliminating seal and packing maintenance and minimal servicing when compared with plunger API 674 pumps
- Reduced energy consumption when compared with API 610 pumps

HYDRA-CELL® PUMPS

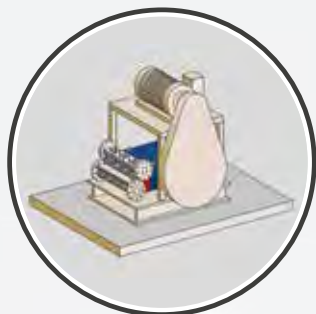
in Upstream & Midstream Applications

OIL PROCESSING



HEATER TREATER FUEL FEED

- Seal-less, packing-free design eliminating fuel leakage with run dry capability when compared with API 676 pumps



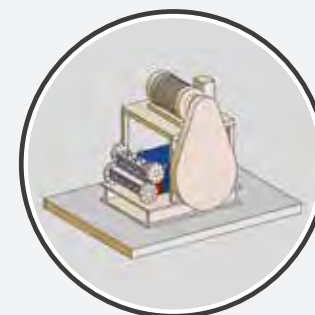
CRUDE TRANSFER

- 100% containment of crude eliminating crude leakage, environmentally friendly, keeping area around pump skid safe when compared with plunger API 674 pumps
- Efficiencies over 90% ensure lowest energy usage when compared with API 610 and API 676 pumps



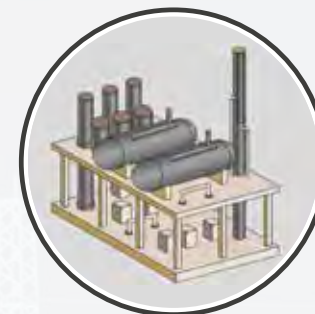
SAMPLING – OIL PROCESSING

- Reliable handling of low viscosity hydrocarbons eliminating maintenance due to suspended solids from pipelines when compared with API 676 and API 685 pumps



OIL/WATER MIX TRANSFER PUMPS

- Low shear pumping action minimises emulsions and aids separation with reduced energy consumption when compared with API 610 pumps
- Elimination of packing, seal and plunger maintenance compared with plunger API 674 pumps



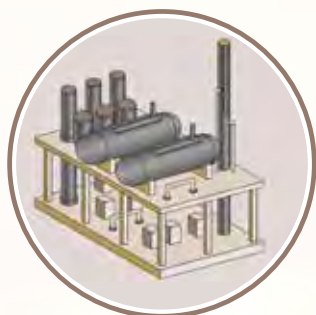
STEAM GENERATION

- Wide accurate control of hot water condensate injection flow rate from 0 to max. when compared with API 610 and API 674 pumps
- Elimination of packing, plunger and seal maintenance when compared with plunger API 674 pumps

HYDRA-CELL® PUMPS

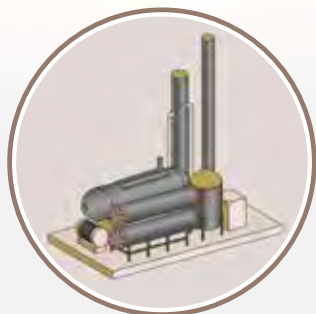
in Upstream & Midstream Applications

GAS PROCESSING



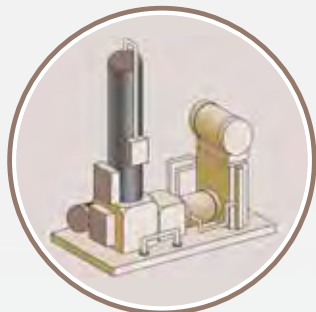
AMINE TREATMENT

- Extremely low pulse, accurate dosing compared with traditional API 675 pumps
- 100% containment of dangerous amines, no leakage when compared with API 676 and plunger API 674 pumps



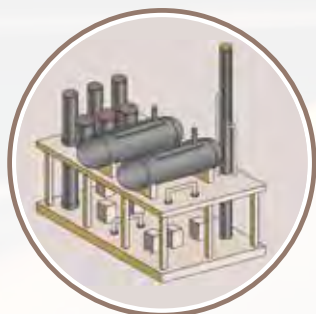
DEHYDRATION

- Reliable pumping of hot recycled TEG up to 125°C, eliminating seal and packing maintenance due to suspended solids and H₂S pick up compared with plunger API 674 pumps
- Compact footprint and pulse-less flow compared with traditional API 675 pumps



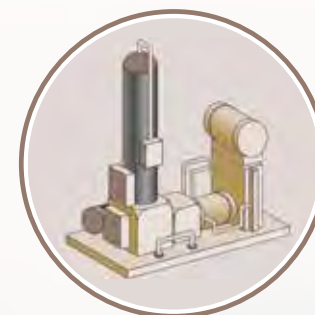
BTEX UNIT

- 100% containment of low viscosity hydrocarbons compared with API 676 and plunger API 674 pumps



ABSORBER WASH WATER PUMPS

- Elimination of packing and seal maintenance when pumping recycled water with suspended solids pick up and potential souring compared with API 676 & plunger API 674 pumps
- Energy savings when compared with API 610 pumps



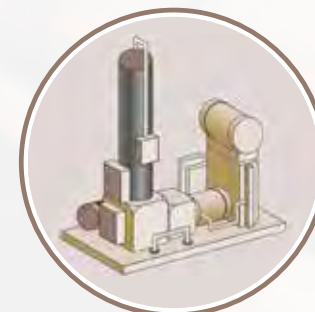
CHEMICAL DOSING

- Extremely low pulse, accurate dosing and special valve design ensures reliable pumping of chemicals which crystallise compared with traditional API 675 pumps



STEAM GENERATION

- Wide accurate control of hot water condensate injection flow rate from 0 to max. saving energy when compared with API 610 and plunger API 674 pumps
- Elimination of packing, plunger and seal maintenance when compared with plunger API 674 pumps.



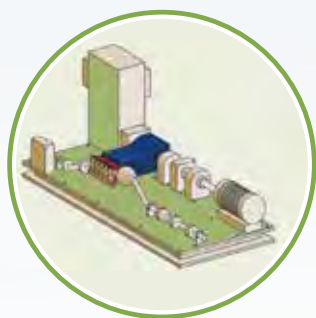
CLEANING

- High pressure pumping of grey and recycled water, eliminating seal and packing maintenance and minimal servicing when compared with plunger API 674 pumps
- Reduced energy consumption when compared with API 610 pumps

HYDRA-CELL® PUMPS

in Upstream & Midstream Applications

CONDENSATE PROCESSING



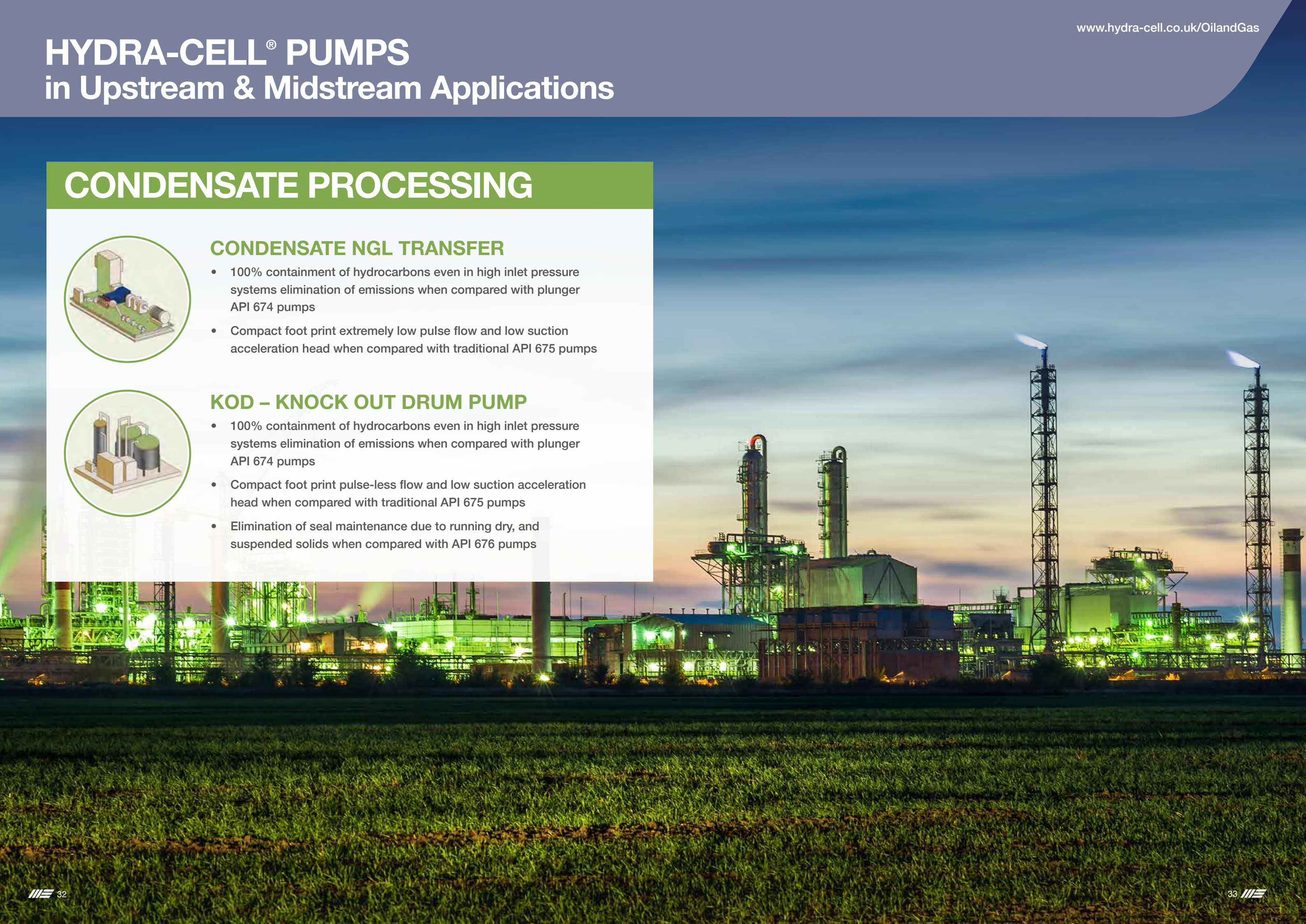
CONDENSATE NGL TRANSFER

- 100% containment of hydrocarbons even in high inlet pressure systems elimination of emissions when compared with plunger API 674 pumps
- Compact foot print extremely low pulse flow and low suction acceleration head when compared with traditional API 675 pumps



KOD – KNOCK OUT DRUM PUMP

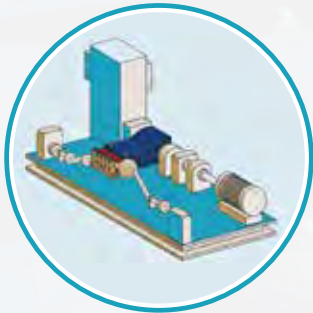
- 100% containment of hydrocarbons even in high inlet pressure systems elimination of emissions when compared with plunger API 674 pumps
- Compact foot print pulse-less flow and low suction acceleration head when compared with traditional API 675 pumps
- Elimination of seal maintenance due to running dry, and suspended solids when compared with API 676 pumps



HYDRA-CELL® PUMPS

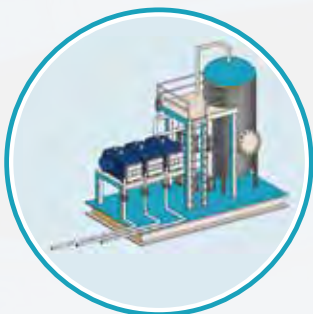
in Upstream & Midstream Applications

WATER MANAGEMENT



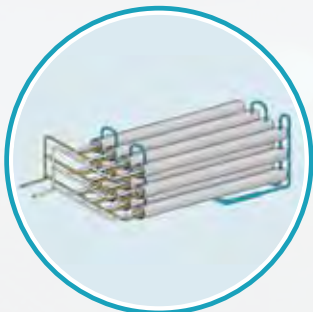
SALT WATER INJECTION & DISPOSAL

- Elimination of packing and seal maintenance when pumping high saline produced water with suspended solids compared with plunger API 674 and API 676 pumps
- Energy savings when compared with API 610 pumps



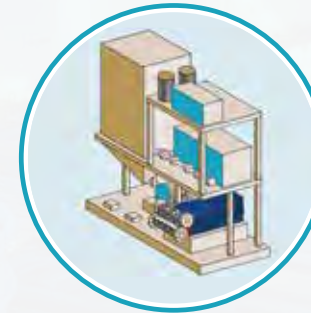
CHEMICAL DOSING

- Extremely low pulse, accurate dosing and special valve design ensures reliable pumping of chemicals which crystallise compared with traditional API 675 pumps



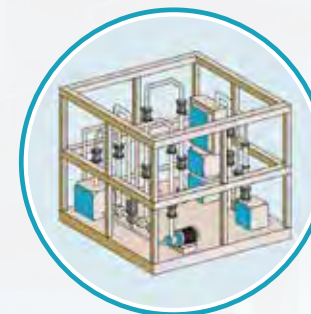
REVERSE OSMOSIS

- High efficiency, lowering energy usage compared with API 610 pumps
- No seals or packing eliminating maintenance due to micron size suspended solids compared with plunger API 674 and Axial piston pumps



POLYMER INJECTION

- Low shear pumping action and 100% containment ensures control of polymer viscosity and optimum reservoir recovery, and zero leakage compared with plunger API 674 pumps
- Very low pulse flow and low acceleration head leads to more reliable installation compared with traditional API 675 pumps



SAMPLING – WATER

- Suction lift and infinite dry running capability ensures reliability compared with API 676 pumps

HYDRA-CELL® PUMPS

in Upstream & Midstream Applications

Proven Reliability



ENHANCED OIL RECOVERY (EOR) - POLYMER (ASP) INJECTION

Savings 3 year's on: 21,000 tonnes of polymer and \$250,000 in maintenance costs. A provider of plunger pumps estimated maintenance would cost \$85,000 per year.



GAS DRYING

Safely and reliably pumping recycled tri-ethylene glycol (TEG). With the previously installed plunger pump, a significant amount of the hot TEG was leaking, causing operator safety, environmental issues and waste TEG.



CONDENSATE & CRUDE OIL TRANSFER

100% liquid contained eliminating environmental damage. With the robust reliability and no seals to replace, substantial savings were also made on maintenance costs within just one year compared to the previously installed plunger pump.



SALT WATER DISPOSAL

Reliably handling salt water and saving energy costs by eliminating seal maintenance and with efficiencies > 90% from shaft to hydraulic power. The customer considered various triplex plunger pump technologies before selecting Hydra-Cell® seal-less, packing-free pumps to dispose of around 10,000 bpd.



WATER INJECTION FOR ENHANCED OIL RECOVERY (EOR)

(salt water; waste water or produced water injection; pressure maintenance)

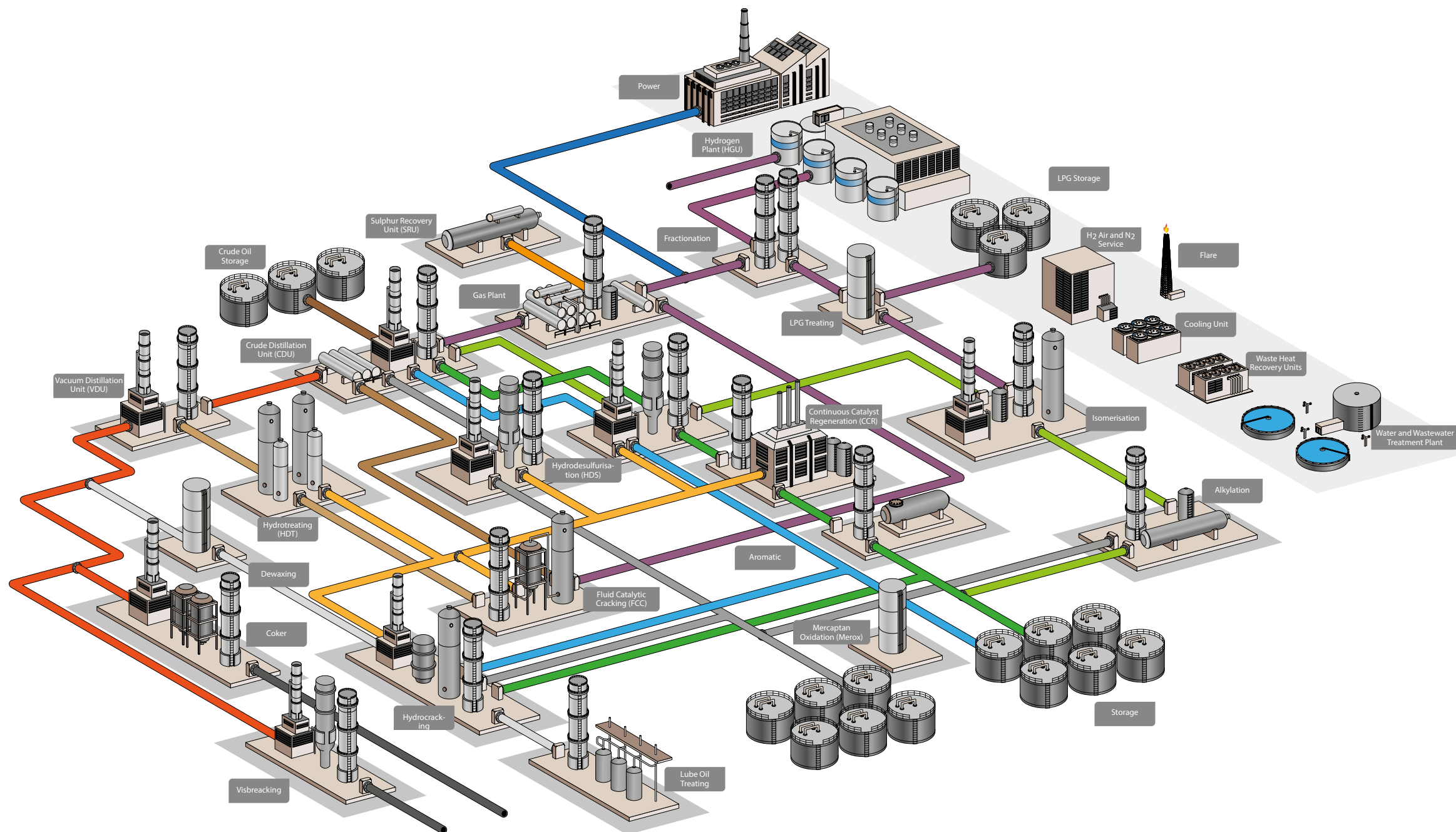
Reduced maintenance costs by reliably handling salt water with high sand content at 80 bar (1160 psi). The customer experienced high maintenance costs with the previously installed plunger pump due to the dynamic seals and packing.



CRUDE OIL TRANSFER

Seal-less design ensures no leakage resulting in a clean site, no unplanned down-time; operating and maintenance costs are greatly reduced as seal replacement is completely eliminated.

DOWNSTREAM Applications



Protecting operators and the environment **100% LEAK-FREE**

No ground contamination, no spillage of hazardous chemistry when injecting hot monoethanolamine, benzene, toluene and xylene; keeping naphtha and methanol 100% and safely contained with zero emissions.

Hydra-Cell®'s range of EX-certified pumps offer complete peace of mind for ATEX/hazardous areas.

REDUCED COSTS eliminate seal and packing maintenance

High reliability and smooth dosing of slurries; reliably handling liquids with particles such as sand and transferring mixtures of hydrocarbons and recycled oil and flammable solvent waste products.

REDUCED ENERGY CONSUMPTION

Hydra-Cell® API 674 & API 675 pumps' true positive displacement pumping action and minimal internal losses achieve high efficiencies, as measured from pump shaft to hydraulic output power - lowering energy usage.

HYDRA-CELL® PUMPS

Downstream Applications



HYDROCARBON LOW VOLUME TRANSFER

- 100% containment of hydrocarbons even in high inlet pressure systems elimination of emissions when compared with API 676 and plunger API 674 pumps
- Compact foot print extremely low pulse flow and low suction acceleration head when compared with traditional API 675 pumps
- Elimination of seal maintenance due to running dry, and suspended solids when compared with API 676 pumps



ADDITIVE INJECTION PUMPS

- Compact foot print extremely low pulse flow and low suction acceleration head when compared with traditional API 675 pumps
- Elimination of seal maintenance due to running dry, and low viscosity abrasive liquids when compared with API 676 and plunger API 674 pumps



HYDROCARBON DRAIN/SLOP/ SUMP TRANSFER PUMPS

- 100% containment of hydrocarbons even in high inlet pressure systems elimination of emissions when compared with API 676 and plunger API 674 pumps
- Compact foot print extremely low pulse flow and low suction acceleration head when compared with traditional API 675 pumps
- Elimination of seal maintenance due to running dry, and suspended solids when compared with API 676 and API 674 pumps



HYDROCARBON SAMPLING PUMPS

- Elimination of seal maintenance due to running dry, and low viscosity abrasive liquids when compared with API 676 pumps
- Elimination of maintenance due to suspended metal particles and reduced energy consumption when compared with API 685 pumps

HYDRA-CELL® PUMPS

Downstream Applications



PROCESS WATER SAMPLING PUMPS

- Suction lift and infinite dry running capability ensures reliability compared with API 676 pumps



AMINE PUMPS

- Extremely low pulse, accurate dosing compared with traditional API 675 pumps
- 100% containment of dangerous amines, no leakage when compared with API 676 and plunger API 674 pumps



WASHDOWN PUMPS

- Elimination of packing and seal maintenance when pumping recycled or reclaimed water with traces of hydrocarbons, soured or suspended solids compared with API 674 and API 676 pumps
- Energy savings when compared with API 610 pumps



NAPHTHA PUMPS

- Elimination of packing and seal maintenance when pumping very low viscosity non lubricating hydrocarbons compared with API 676 and plunger API 674 pumps
- Energy savings when compared with API 610 pumps



CHEMICAL INJECTION AND DOSING PUMPS

- Extremely low pulse, accurate dosing and special valve design ensures reliable pumping of chemicals which crystallise compared with traditional API 675 pumps

HYDRA-CELL® PUMPS

Downstream Applications



BTX AROMATIC PROCESSING PUMPS

- 100% containment of aromatic hydrocarbons, xylene, butane and toluene when compared with API 676 and plunger API 674 pumps
- Extremely low pulse, discharge flow and lower suction acceleration head losses when compared to traditional API 675 pumps



BURNER FUEL FEED PUMPS

- Reliably handling a wide range of hydrocarbons from very low to high viscosity with suspended solids up to 800 microns eliminating seal and packing maintenance when compared with API 676 and plunger API 674 pumps
- Extremely low pulse discharge flow and lower suction acceleration head losses when compared to traditional API 675 pumps



METHANOL PUMPS

- 100% containment of methanol and elimination of seal and packing maintenance when compared with API 676 and plunger API 674 pumps
- Extremely low pulse, discharge flow and lower suction acceleration head losses when compared to traditional API 675 pumps



STEAM GENERATION

- Wide accurate control of hot water condensate injection flow rate from 0 to max. saving energy when compared with API 610 and API 674 pumps
- Elimination of packing, plunger and seal maintenance when compared with plunger API 674 pumps



HYDRA-CELL® PUMPS

in Downstream Applications

Proven Reliability



AMINE PUMPS

Reliably injecting hot monoethanolamine (+45°C).

A major gas processor needed a reliable solution to spray a hot monoethanolamine solution as part of their gas sweetening process. Existing plunger pumps were leaking the process liquid due to the dynamic mechanical seals.



PROPENE TRANSFER LOADING PUMPS

Safe and reliable transfer of propene.

The company wanted to reduce VOC emissions and needed a reliable pump technology that could achieve this.



NGL INJECTION AND DOSING PUMPS

Accurate dosing of propane and propylene mixture.

To ensure Hydra-Cell® was capable of this critical dosing application, the customer visited WANNER International's facility to witness a full linearity test to measure the accuracy of the flow rate when the pump speed setting was changed.



WASHDOWN PUMPS

Reliably pumping corrosive and non-lubricating demineralised water.

A major gas producer in the UAE needed to replace their API 674 plunger pumps because of excessive packing maintenance costs due to the corrosive and non-lubricating nature of the process liquid.



CHEMICAL INJECTION AND DOSING PUMPS

Smooth dosing of celite into slurry pump line.

A global and major oil refinery in Belgium needed a reliable dosing pump which could handle a liquid with suspended solids and have a smooth reliable injection flow into the main pipeline to ensure an even homogenous mixing effect.



NAPHTHA PUMPS

Zero leakage and reduced maintenance costs.

A major US refinery needed to replace a plunger pump due to high maintenance and environmental leakage.

HYDRA-CELL®

Creating Value

Comparing to other Pump Technologies - API 674

- POSITIVE DISPLACEMENT PUMPS
- RECIPROCATING PLUNGER PUMPS

ELIMINATE SEALS AND PACKING COSTS

80% of pump maintenance and service costs are due to dynamic seals and this increases if the pumped liquid is non-lubricating, corrosive or contains particles. The Hydra-Cell® pump's seal-less (no dynamic seals) and packing-free design significantly reduces service and maintenance costs.

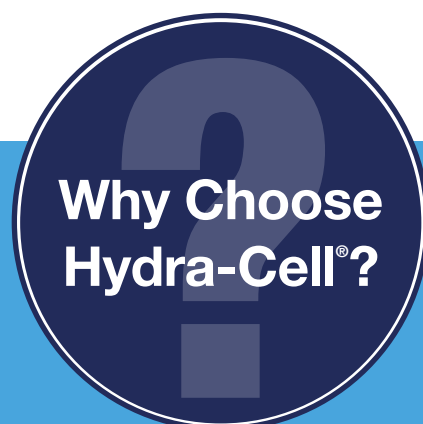
100% LEAK-FREE PROTECTING YOUR OPERATORS AND THE ENVIRONMENT

The pumped liquid is 100% contained within the Hydra-Cell® sealed pumping chamber, eliminating:

- Emission of volatile organic compounds (VOCs)
- Ground contamination around the pump
- Emission of dangerous chemicals
- Forced lubrication of plunger and packing

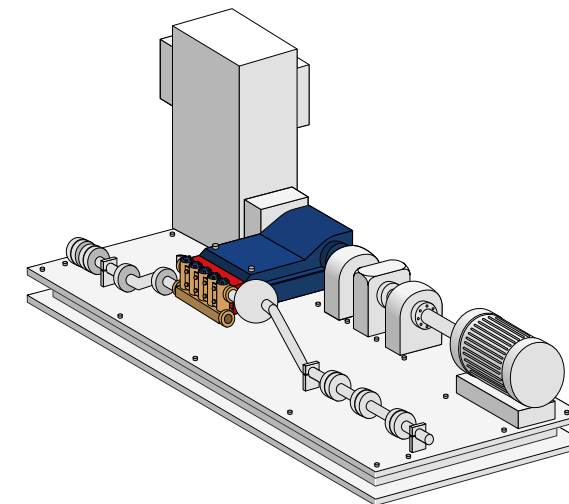
For extra security of your process, if a diaphragm rupture is detected, the Hydra-Cell® T and Q series pumps shut down aromatically; the diaphragms are pulled into their back position sealing off the process liquid.

- NO LEAKAGE. The cost of safety is priceless
- Lowest maintenance costs
- Lowest total cost of ownership



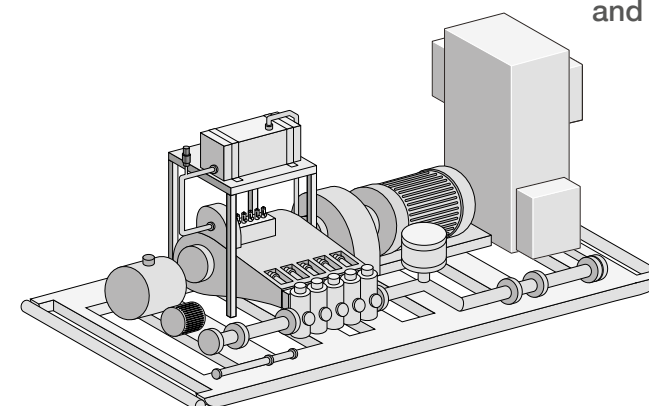
ANNUAL MAINTENANCE AND SERVICING SAVINGS OF \$17,200 WITH THE HYDRA-CELL® SEAL-LESS PUMP SKID

Hydra-Cell® Seal-less, Packing-free Pump



\$4,000
Annual service and maintenance costs

Plunger Pump



\$21,200
Annual service and maintenance costs



HYDRA-CELL®

Creating Value

Comparing to other Pump Technologies - API 675

- POSITIVE DISPLACEMENT PUMPS
- PISTON DIAPHRAGM PUMPS

EXTREMELY LOW PULSE, ACCURATE AND COMPACT

With multiple diaphragms in a single pump head this delivers an extremely low-pulse discharge flow in a compact design eliminating the need for pulsation dampeners in many applications.

Acceleration head losses on the suction side of the Hydra-Cell® pump are greatly reduced due to the multiple diaphragm pumping elements that have short stroke lengths.



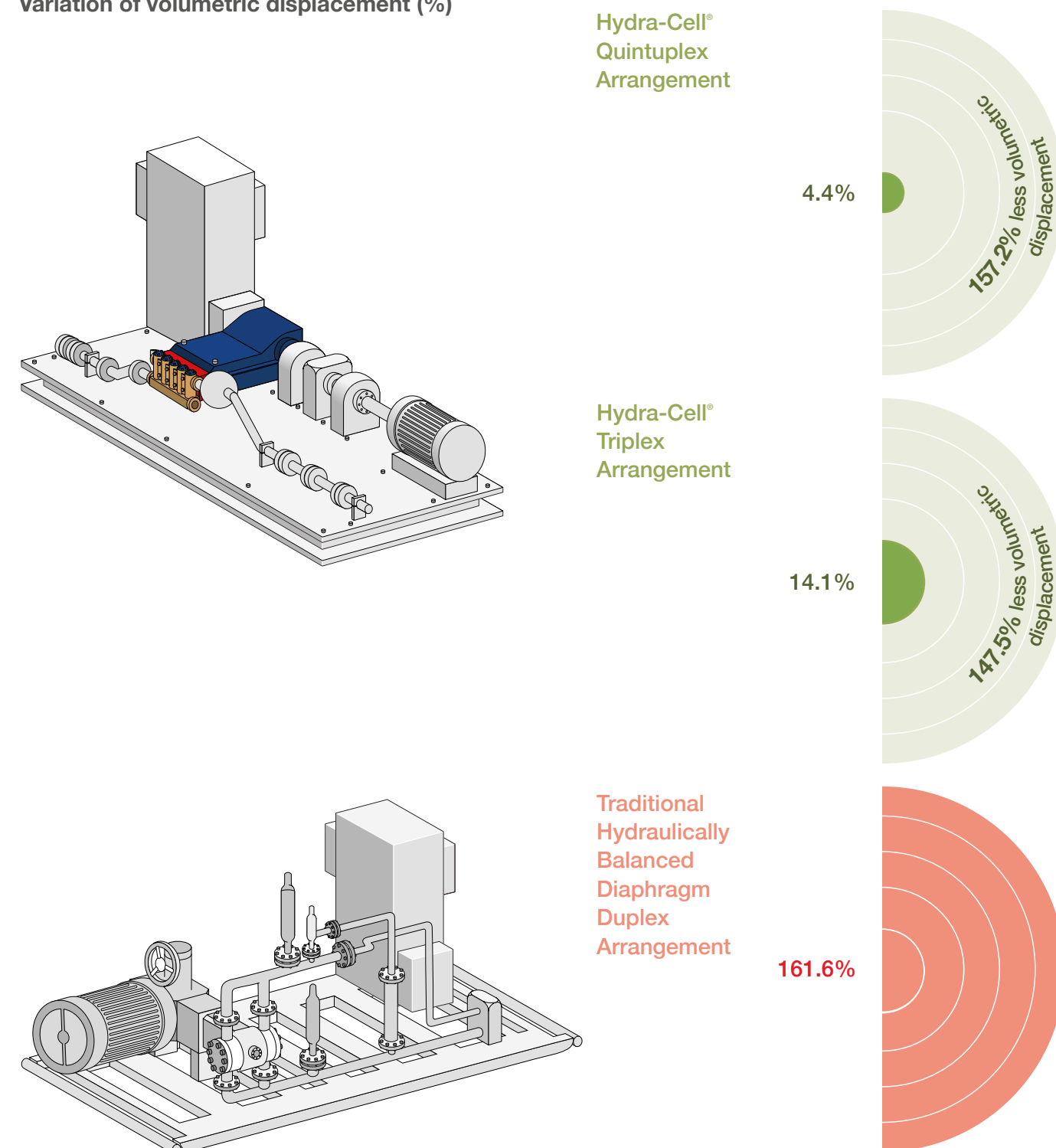
Why Choose Hydra-Cell®?

- Accuracy, linearity and repeatability to API 675
- Extreme low pulsation – elimination of pipe strain and damage to pump through hydraulic shocks
- Elimination of pulsations dampeners
- Low acceleration head losses
- Compact footprint

PULSATION EFFECT COMPARISON

Multiple Pumping Elements in a Single Pump Head Versus Duplex & Simplex Arrangements

Variation of volumetric displacement (%)



HYDRA-CELL®

Creating Value

Comparing to other Pump Technologies - API 676

- POSITIVE DISPLACEMENT PUMPS
- ROTARY/SCREW PUMPS
- PROGRESSING CAVITY PUMPS
- GEAR PUMPS
- SLIDING VANE PUMPS

ELIMINATE SEALS AND PACKING MAINTENANCE COSTS

80% of pump maintenance and service costs are due to dynamic seals and this increases if the pumped liquid is non-lubricating, corrosive or contains particles.

The Hydra-Cell® pump's seal-less (no dynamic seals) and packing-free design significantly reduces service and maintenance costs.

100% LEAK-FREE PROTECTING YOUR OPERATORS AND THE ENVIRONMENT

The pumped liquid is 100% contained within the Hydra-Cell® sealed pumping chamber, eliminating:

- Emission of volatile organic compounds (VOCs)
- Ground contamination around the pump
- Emission of dangerous chemicals

For extra security of your process, if a diaphragm rupture is detected, the Hydra-Cell® T and Q series pumps shut down aromatically; the diaphragms are pulled into their back position sealing off the process liquid.

- Lowest maintenance and service costs
- Dry run capable
- Power efficiency
- Non lubricating fluid handling

Why Choose Hydra-Cell®?



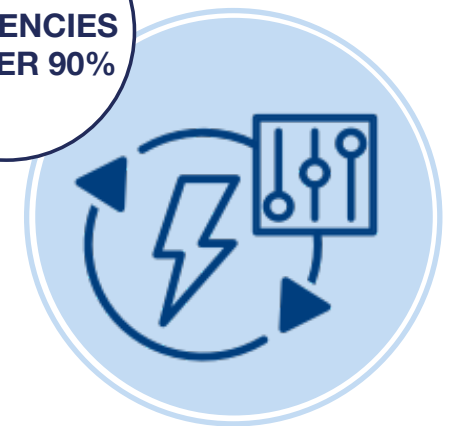
Comparing to other Pump Technologies - API 685

- MAG DRIVE CENTRIFUGAL PUMPS
- CANNED MOTOR PUMPS

REDUCE ENERGY COSTS WITH LOWER ENERGY CONSUMPTION

Hydra-Cell® pumps' true positive displacement pumping action and minimal internal losses achieve high efficiencies, as measured from pump shaft to hydraulic output power. This combined with the wide range of flow rate controllability ensures optimum energy usage – greatly reducing energy costs.

HIGH EFFICIENCIES OF OVER 90%



RELIABLE HANDLING OF DIFFICULT LIQUIDS

Hydra-Cell's® unique, spring-loaded check valves allow particles to flush through giving more reliable performance when pumping liquids with solid suspensions. Liquids with suspended granular solids in the range 30% can be pumped reliably (up to 45% with special considerations to system design.)

UNIQUE CHECK VALVE DESIGN



- Power efficiency
- Dry run capable
- Particle handling / slurry handling
- Lowest lifecycle costs

Why Choose Hydra-Cell®?

HYDRA-CELL®

Creating Value

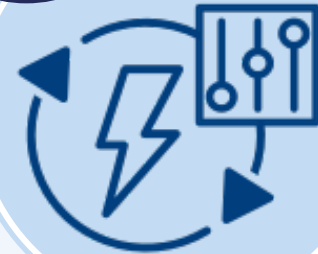
Comparing to other Pump Technologies - API 610

- CENTRIFUGAL PUMPS
- MULTISTAGE CENTRIFUGAL PUMPS

REDUCE ENERGY COSTS WITH LOWER ENERGY CONSUMPTION

Hydra-Cell® pumps' true positive displacement pumping action and minimal internal losses achieve high efficiencies, as measured from pump shaft to hydraulic output power. This combined with the wide range of flow rate controllability ensures optimum energy usage – greatly reducing energy costs.

HIGH
EFFICIENCIES
OF OVER 90%

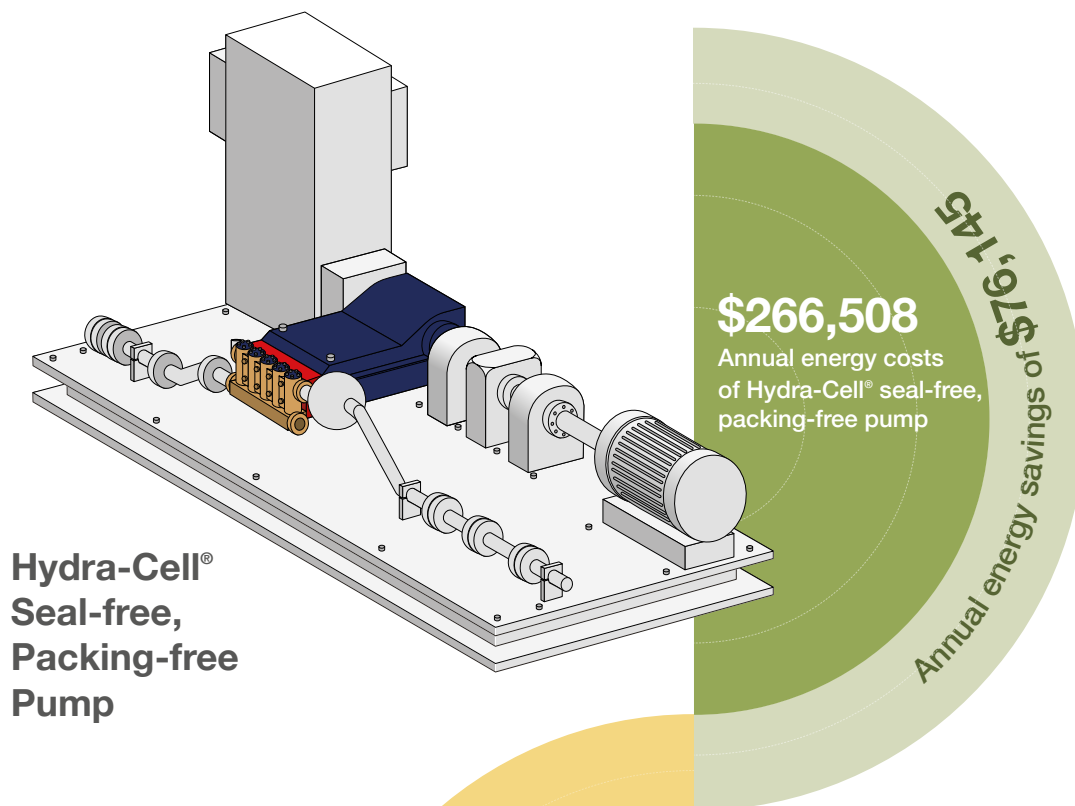


- No leakage
- Lowest maintenance
- Lowest power consumption
- Particle handling

Why Choose
Hydra-Cell®?



ANNUAL ENERGY SAVINGS OF \$76,145 (\$8.69 KWH) WITH HYDRA-CELL® SEAL-LESS PUMP SKID



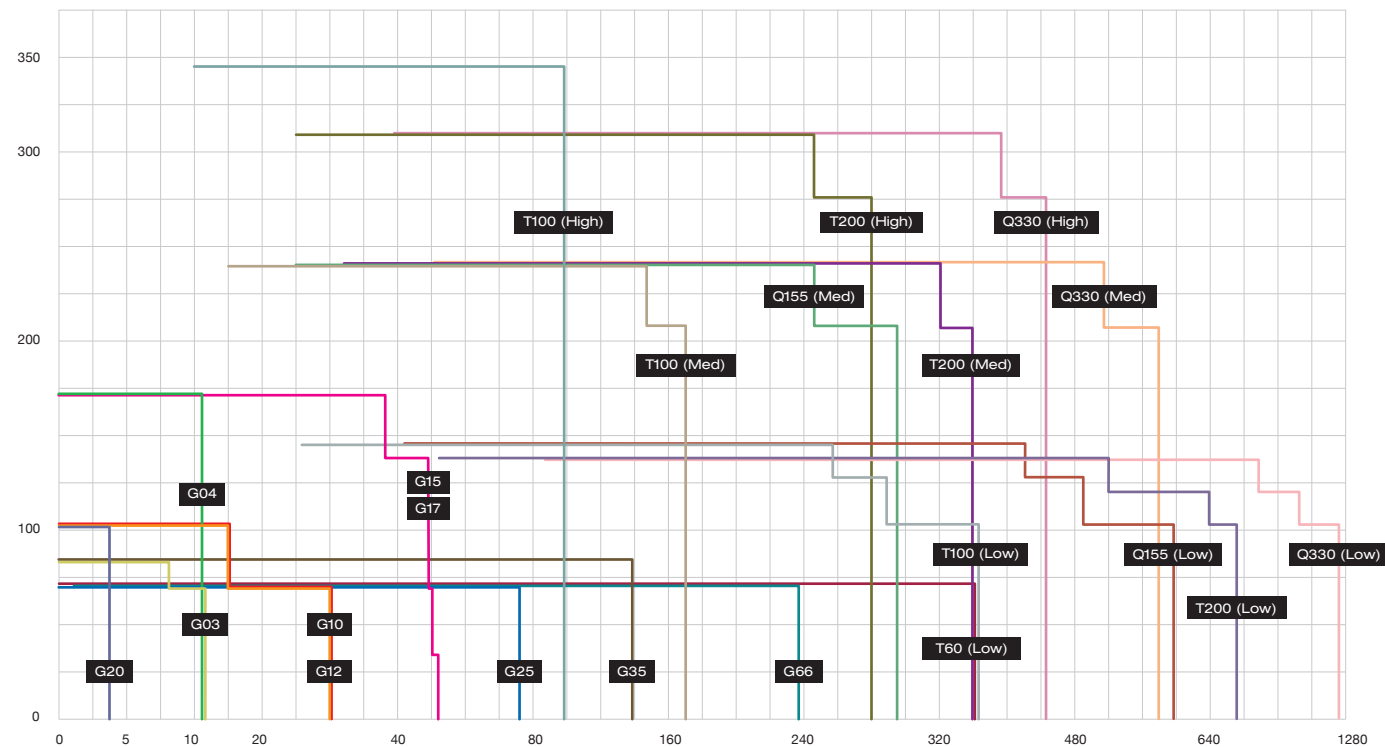
Hydra-Cell®
Seal-free,
Packing-free
Pump

Horizontal Multistage
Centrifugal pump

The example above shows the annual energy cost for a pump running at 3500 psi at 4,500 bpd with a cost of electricity of \$0.11 per kwh. Assuming 24 hours per day 365 days per year operation.

PUMP SELECTION

INDUSTRIAL PROCESS PUMPS

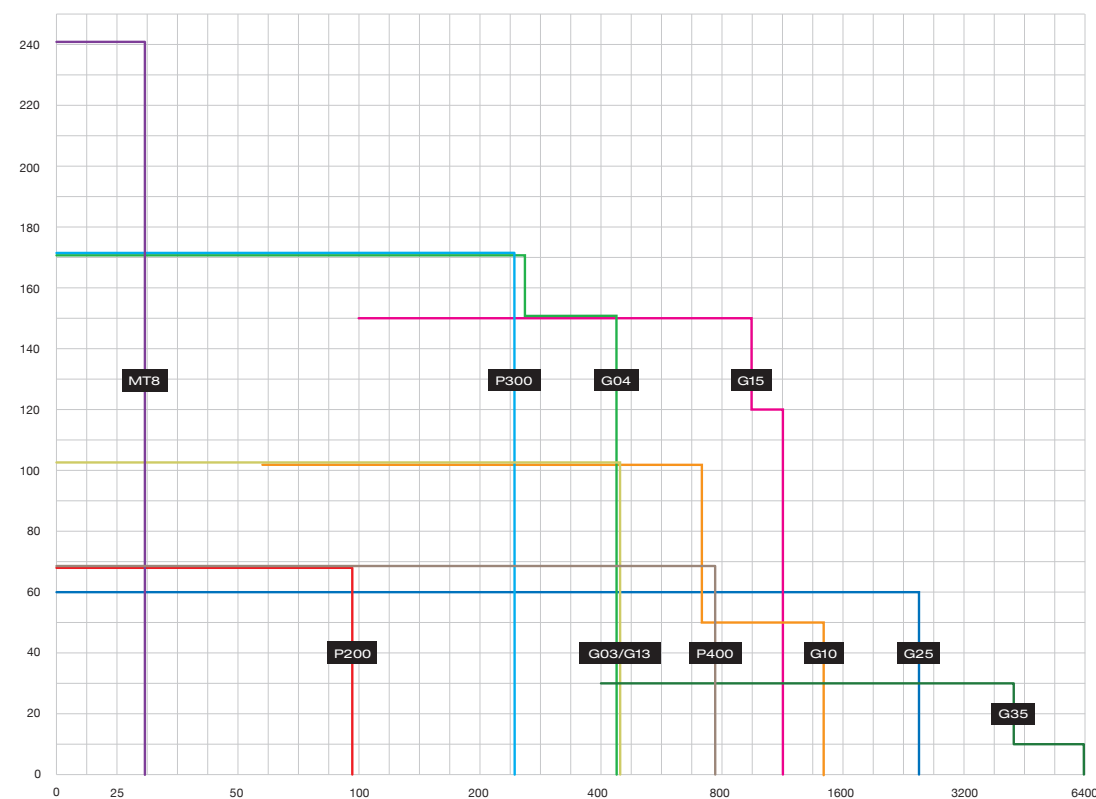


Hydra-Cell® T-Series

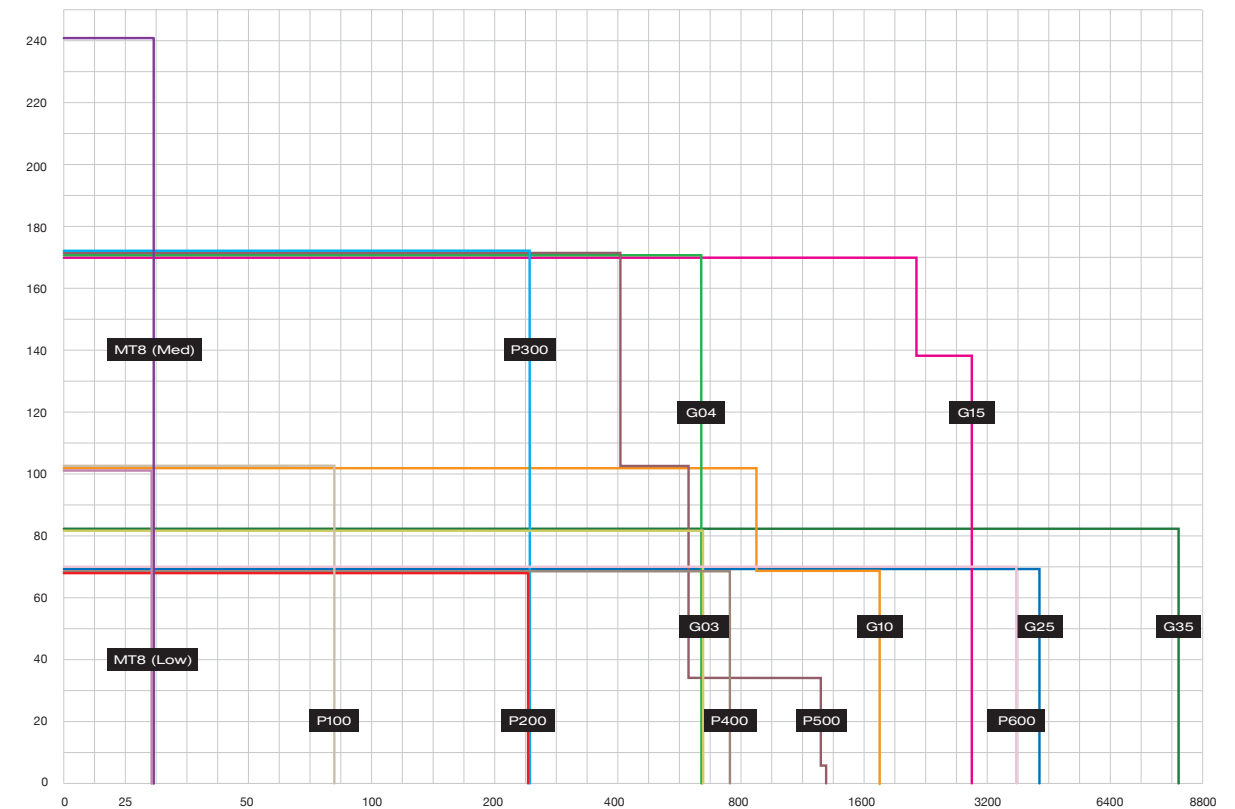
The world's first Packing Free,
Seal Free API 674 Triplex
Single-headed, Diaphragm Pump

Lowest Life Cycle Costs

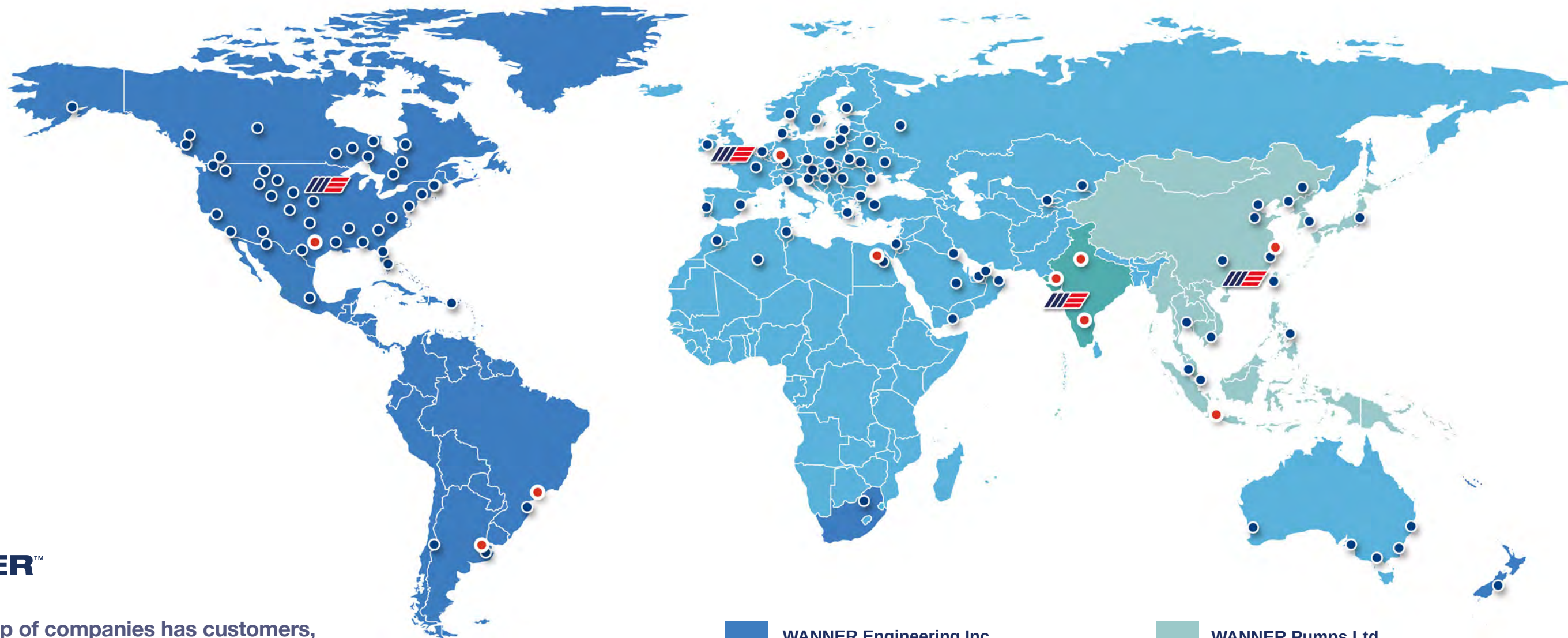
METERING & DOSING PUMPS ATEX / HAZARDOUS AREAS



METERING & DOSING PUMPS NON-ATEX / SAFE AREAS



GLOBAL SUPPORT



The WANNER group of companies has customers, partners and suppliers all around the world, and it's our priority to help our customers run far more cost-effective, environmentally sound and safe pumping processes as part of their overall operations.

Our global network of Hydra-Cell® champions and our WANNER technical engineers can easily set-up video conference calls or face-to-face meetings. We have all had to change the way we work, but we still have real humans answering the phone ready to help with your process challenge.

Tel: + 44 (0) 1252 816847
Email: sales@wannerint.com

 **WANNER Engineering Inc.**
 World Headquarters & Manufacturing

-  Minneapolis, Minnesota USA
-  Wichita Falls, Texas, USA
-  São Paulo, Brazil
-  Buenos Aires, Argentina

 **WANNER International Ltd.**

-  Hampshire, UK
-  Cairo, Egypt
-  Remagen, Germany

 **WANNER Pumps Ltd.**

-  Kowloon, Hong Kong
-  Shanghai, China
-  Jakarta, Indonesia

 **WANNER India Pvt Ltd.**

-  Mumbai, India
-  New Delhi
-  Bangalore
-  Gujarat



WANNER INTERNATIONAL LIMITED

Hampshire UK +44 (0) 1252 816847 sales@wannerint.com

www.hydra-cell.co.uk/OilandGas

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