



Green Diesel Solutions

Leverage Emerson's valves, actuators, regulators, and services to accelerate and optimize your green diesel production.





With global demand for green diesel soaring, speed and reliability are more critical than ever.

Producing green diesel comes with inherent risks and uncertainties.

Green diesel is a highly efficient, reliable, clean alternative to traditional diesel. But there are challenges in its production. Ensuring effective pre-treatment and variability of renewable feedstocks can put production at risk and require shifts in operation targets. As global demand increases, complexity and risk continue to rise.

Refineries, more than most process facilities today, are tasked with environmental, safety, and social responsibilities that make it harder than ever to stay profitable.

The appeal of stacking tax and state credits has encouraged a race for renewable diesel production capacity that will likely transform America's bio-mass-based-diesel industry over the next few years.
–Biodiesel Magazine

The market for these fuels has grown as the U.S. consumed ~3 billion gallons of biobased diesel fuel in 2020 and the market is set to double by 2030.
–National Biodiesel Board Member

When it comes to solutions to reduce emissions from the heavy-duty sector, we should rely on biobased diesel fuel to do the most to reduce these emissions today.
–Executive Director, Biofuel Technology & Services

Demonstrate a commitment to a lower carbon future

In today's changing energy market, refiners are under increasing pressure to implement operational flexibility. Emerson's solutions make it easier for operators to safely meet demand while lowering operating costs, reduce unplanned slowdowns and shutdowns, and adapt to new clean fuels regulations.



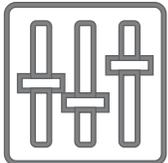
Demonstrate commitment to a lower carbon future

- Meeting corporate sustainability objectives
 - Maximizing government incentives and benefits for bio/green diesel
 - Capitalizing on low-cost feedstock
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Ensure successful pre-treatment

- Ensure elimination of contaminants and protect catalyst downstream
 - Design processes to treat multiple feedstocks and adapt to future ones
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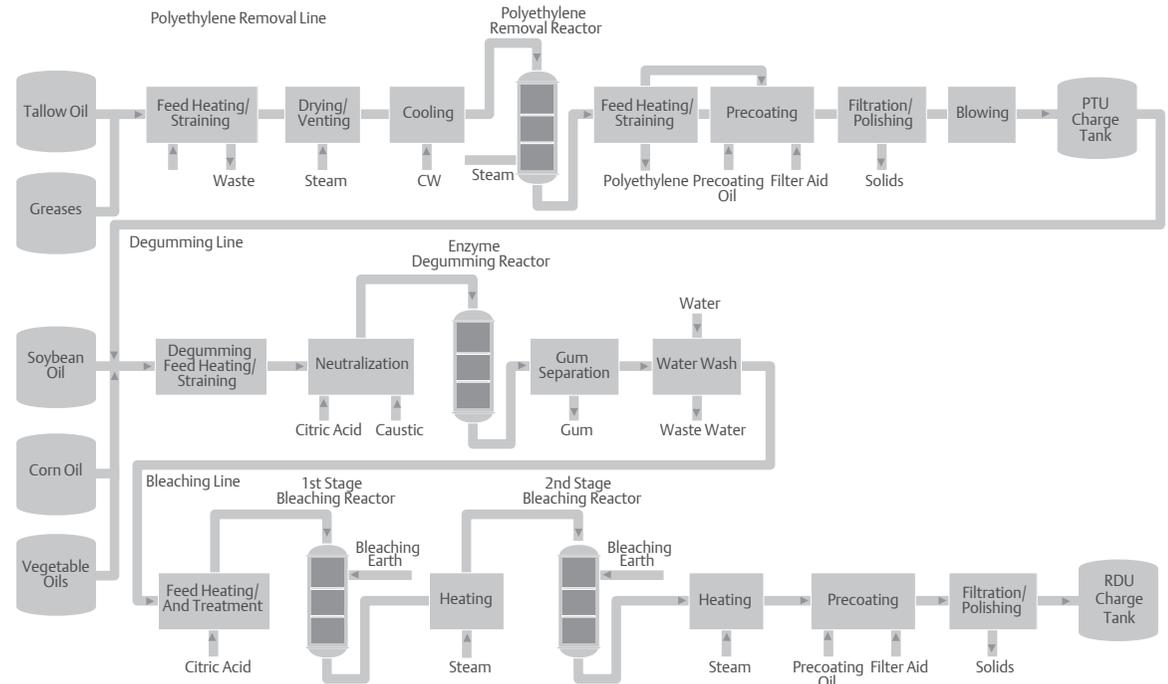


Improve reactor operations

- Accurately calculate mass and energy balances even when using variable feedstocks
- Minimize risk and impact of corrosion on assets

Green Diesel Refining Pre-Treatment Solutions

Pre-treatment eliminates the contaminants that can poison catalysts in the reactor. Overall throughput can be negatively impacted if the acidity and adhesiveness of the fluid is not taken into consideration. Stable and reliable operation lays the foundation for an effective pre-treatment process. Unexpected maintenance or surprise failures have the potential to bring down the entire process, limiting your usable renewable feedstock.



What's your opportunity?

- Ensure elimination of contaminants and protect catalyst downstream
- Maximize design process to treat multiple feedstocks and adapt to future ones
- Maintain emissions below permit limits
- Avoid limited throughput due to adhesive fluids



Automate valves with your choice of actuators.

On/off valves typically account for 90 percent of the total valve population in a production facility, representing a significant portion of the plant's control architecture, protocol, and DCS I/O. Emerson offers complete automated on/off valve solutions with pneumatic, electric, or hydraulic actuation.



Services offered...

- Shutdown, turnaround, and outage planning and execution support
- Startup optimization and performance testing
- Valve sizing and selection
- Technology upgrades and retrofit
- Online and offline diagnostics
- Leak detection
- Control, isolation, and pressure relief valve calibration and repair
- Regulator configuration and repair
- Product and system training

Featured Pre-Treatment Solutions

Fisher Valve Diagnostics



Receive advanced notice of valve performance issues and recommended corrective actions.

- No linkage to wear, loosen, corrode, or vibrate in order to handle harsh environments and provide non-stop cycling
- Integral independent position feedback is available

[Fisher Diagnostic Software webpage](#) ►

Fisher Low-Emissions Valve Packing



Achieve long-term, consistent valve sealing performance with packing systems proven to help secure your process to conserve valuable process fluid and effectively control emissions to avoid regulatory fines and help keep personnel safe.

- Easily installed in existing valves or added to new valve assemblies

[Fisher ENVIRO-SEAL Control Valve Packing Systems webpage](#) ►

Fisher Bleaching Control



Ensure precise flow control of process fluids through the bleaching line into the bleaching reactor and optimize reaction performance and efficiency.

- Erosion-resistant trim materials help promote long, dependable service life in erosive applications.

[Fisher V500 product webpage](#) ►

Fisher Neutralization Control



Effectively handle highly-sulfuric processes with durable, NACE-compliant materials

- Increased wear resistance of the standard hardened stainless steel trim means long lasting service
- Monitor valve performance online to evaluate performance and reliability

[Fisher Globe Valves webpage](#) ►

Featured Pre-Treatment Solutions

Bettis | Vanessa Automated Isolation Valve



Reduce corrosion, embrittlement, and blistering issues often caused by HPHT hydrogen.

- Zero-leakage valve integrates metallurgy, design, manufacturing, and gasket technology to achieve the high performance standards demanded by hydrogen processes

Anderson Greenwood Modulating Pressure Relief Valve



Protect against control valve failures to enhance the reliability of your process.

- Soft seat design provides repeatable, bubble-tight performance before and after each relief cycle
- Modulating action minimizes product loss during relief events

[Anderson Greenwood Series 200/400/800 product webpage](#) ►

Fisher Degumming Control



Achieve proper flow control of adhesive fluids through the gum separation process with a reliable, low maintenance control valves designed to maintain unrestricted flow passages.

- Specially selected trim materials and body coatings help avoid build up and control valve sticking that could lead to process shutdown.

[Fisher Segmented Ball Valves webpage](#) ►

Asset Management Tags



Store and retrieve critical information on an asset tag on valves. Using a handheld RFID reader, the tag contents can be viewed. These intrinsically safe tags and devices enable digital identification and tracking of equipment.

[Asset Management Tag product webpage](#) ►



Visit Fisher.com to learn more.

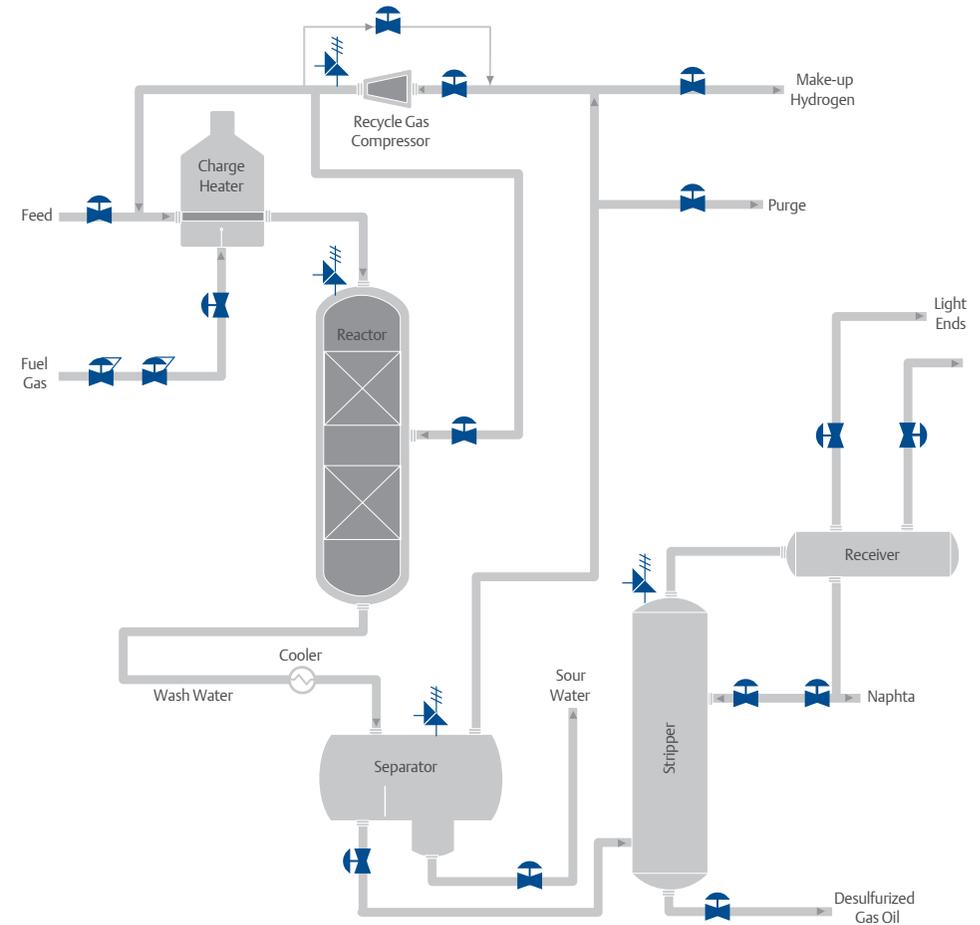
Hydrotreater Solutions

Hydrotreaters are critical in protecting downstream process catalysts, as poor performance can significantly affect product yield and efficiency and potentially require an earlier shutdown for catalyst replacement. The temperatures, pressures, and corrosive nature of green diesel production pose unique challenges for operations. Paraffin-like components also make the process more 'sticky,' causing control problems over time. The reactor section of the hydrotreater is the most critical unit for maximizing profitability, with reliable and tight control required for smooth operations. Poor control performance can shorten catalyst life and reduce yield, so picking the right control valves is a crucial step in the design process.

What's your opportunity?



- Increase quality and yields with better regulatory controls that improve temperature control of the fired heater and hydrogen quench controls
- Improve functioning safety and operate within increasingly stringent environmental regulations with automation solutions that deliver better measurement, control, and diagnostic information



▲ Hydrotreater Unit process diagram



Maximize uptime with tight reactor bed temperature control and improved downstream catalyst performance.

Using our hydrotreating solutions, you'll gain the tight control, accurate measurements, and real-time compositional data needed to maximize the yield of higher-value products while reducing the typical operator intervention needed to keep your process running well.



Services offered...

- Startup optimization and performance testing
- Valve Condition Monitoring and analysis
- Control valve online and offline diagnostics
- Regulator configuration and repair
- Pressure relief valve configuration and repair
- Technology upgrades and retrofit
- Product and system training
- Leak detection
- Pressure relief valve spare pool management
- Outgassing valve sizing and selection

Featured Hydrotreater Solutions

Fisher Separator Letdown Valve Trim



Minimize outgassing issues that lead to severe vibration and poor controllability and accelerated trim wear. This trim is ideal for critical, high-pressure letdown applications where long valve and trim life is crucial to keeping the unit running smoothly.

[Fisher DST-G product webpage](#) ▶

Fisher Feed Valve



Implement adjustable cycle times as required for high-cycling feed applications with a reliable rotary valve and actuator package.

[Fisher 8580 product webpage](#) ▶

Fisher Reactor Hydrogen Valve



Control the reactor bed temperatures to avoid an excursion, prevent a runaway reaction, maximize catalyst life, and achieve a better product yield.

- These valves use a balanced valve plug and offer excellent shutoff with process temperatures below 232°C (450°F)

[Fisher HP product webpage](#) ▶

Anderson Greenwood H2 Compressor Discharge Overpressure Protection



Achieve stable relief despite pressure “spikes” from the reciprocating compressor with this pilot-operated pressure relief valve.

- Soft seat design provides repeatable, bubble-tight performance before and after each relief cycle
- Minimize product loss per relief situation with available modulating action

[Anderson Greenwood Series 200/400/800 product webpage](#) ▶

Featured Hydrotreater Solutions

Fisher Optimized Compressor Anti-surge Valve and Accessories



Protect your critical and costly compressor from a damaging surge event with a complete optimized anti-surge valve package that provides higher gains, precise response, and remarkable stability.

- The Fisher control valve provides quick, accurate response during a surge to recycle the discharge flow back to the suction side of the compressor, avoiding expensive and disruptive damage

[Fisher Anti-Surge Valve Solutions webpage](#) ▶

Fisher Dump/Purge Valve



Ensure hydrogen is processed purely and efficiently with a valve solution that provides quick stroke speeds and fully open to fully closed travel.

- Rugged cage guiding provides high valve plug stability, reducing vibration, noise, and maintenance requirements

[Fisher ET product webpage](#) ▶

Bettis | Vanessa Automated Hydrogen Isolation Valve



Isolate fuel lines, pumps, flare lines and manage reactor depressurization with fully engineered automated isolation solutions.

- Zero leakage shutoff
- Low fugitive emissions designs
- Low running torques

[Bettis G Series product webpage](#) ▶
[Bettis RPE Series product webpage](#) ▶

Tartarini™ Fuel Gas Header Regulator



Achieve reliable pressure control to maintain a constant fuel gas header pressure throughout the process unit.

- Pilot-operated regulator
- Fast speed of response
- Noise attenuation

[Tartarini FL Series product webpage](#) ▶



Visit Fisher.com to learn more.

Reduce emissions and improve the safety, production, and reliability of your refinery.



Emerson delivers time-tested and innovative refining solutions designed to help you improve your operation's overall safety, reliability, and performance. Contact us now for world-class technologies and services that can maximize your energy savings, improve asset management, and shorten turnarounds. Getting started is easy. Visit [Emerson.com/FinalControl](https://www.emerson.com/FinalControl)

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