

SHELL RENEWABLES CATALYSTS (SRC)

HOW LATEST-GENERATION CATALYSTS CAN TAKE YOUR HVO UNIT TO THE NEXT LEVEL

Is your hydrotreated vegetable oil (HVO) unit experiencing...

- fouling or plugging due to phosphorus?
- build-up of CO and CO₂?
- issues with difficult feeds such as animal fats (tallow), including suboptimal dewaxing and cold flow properties?

If so, then it may be necessary to reconsider your HVO catalyst solution.

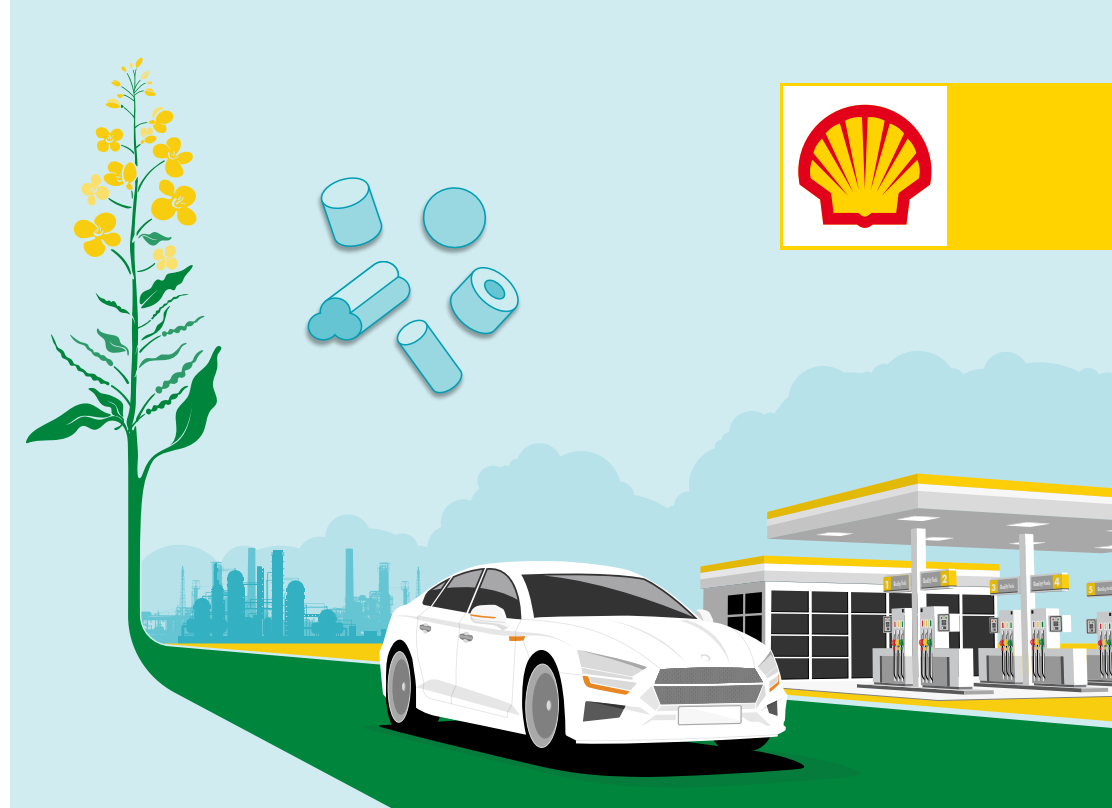
As the energy transition gathers pace, more and more refiners are shifting to the production of renewable fuels. As a result, global HVO capacity is expected to nearly double over the next two years, helped by favourable policy environments, particularly in Europe and the USA, according to the IEA.

HVO production, however, is challenging. This is because it relies on a wide range of renewable feedstocks with chemical properties that lead to operational issues, including accumulation of carbon monoxide (CO), carbon dioxide (CO₂) and other lights in recycle gas; undesirable flow properties; fouling; coking; corrosion; and cracking.

And, as feeds become more difficult, contaminants become harder to remove, often resulting in reduced catalyst and HVO unit performance. Refiners, therefore, need a catalyst system that is flexible and adaptable, and that enables the HVO unit to maintain optimal performance regardless of the feed.

TAILORED CATALYST SOLUTION

Through extensive R&D, Shell Catalysts & Technologies has developed a patented portfolio of renewables catalysts that can be stacked in combination to offer a holistic catalyst solution tailored to the specific needs of your feed. See next page for a typical solution.



With superior HDO selectivity, dewaxing and isomerisation capabilities, our SRC portfolio has been engineered to maximise yields from one- and two-stage 100% HVO units and handle a wide range of biofeeds, including vegetable oils (waste cooking oils, soy, distillers corn oil and canola oil) and more challenging feeds such as animals fats (tallow).

Our SRC portfolio also includes our step-out **SRC-201** catalyst – our latest mono-metallic renewables catalyst engineered with superior HDO selectivity, first-stage dewaxing and isomerisation capabilities.

TECHNOLOGY LEADERSHIP

Our renewables catalyst system has been developed through intensive R&D and builds on Shell Catalysts & Technologies' track record of developing industry-leading catalyst solutions. And the development never stops: we are always refining our renewables catalyst products to meet the changing demands of the HVO market.

REFERENCE PROJECTS

Our SRC portfolio will be used by the new 820,000 t/y hydroprocessed esters and fatty acids unit at the **Shell Energy and Chemicals Park** Rotterdam, which will start up in 2024.

THE FULL SRC PORTFOLIO IS KEY TO TAILORING A SOLUTION ACCORDING TO YOUR SPECIFIC FEEDS, UNIT CONSTRAINTS AND OBJECTIVES

Are phosphorus or other poisons limiting your cycle length?

- SRC-101 and SRC-102 would provide activity and contamination control.

Do you have a build-up of CO and CO₂?

- SRC-201 has up to 98% HDO selectivity.

Are you processing a difficult feed such as tallow or used cooking oil?

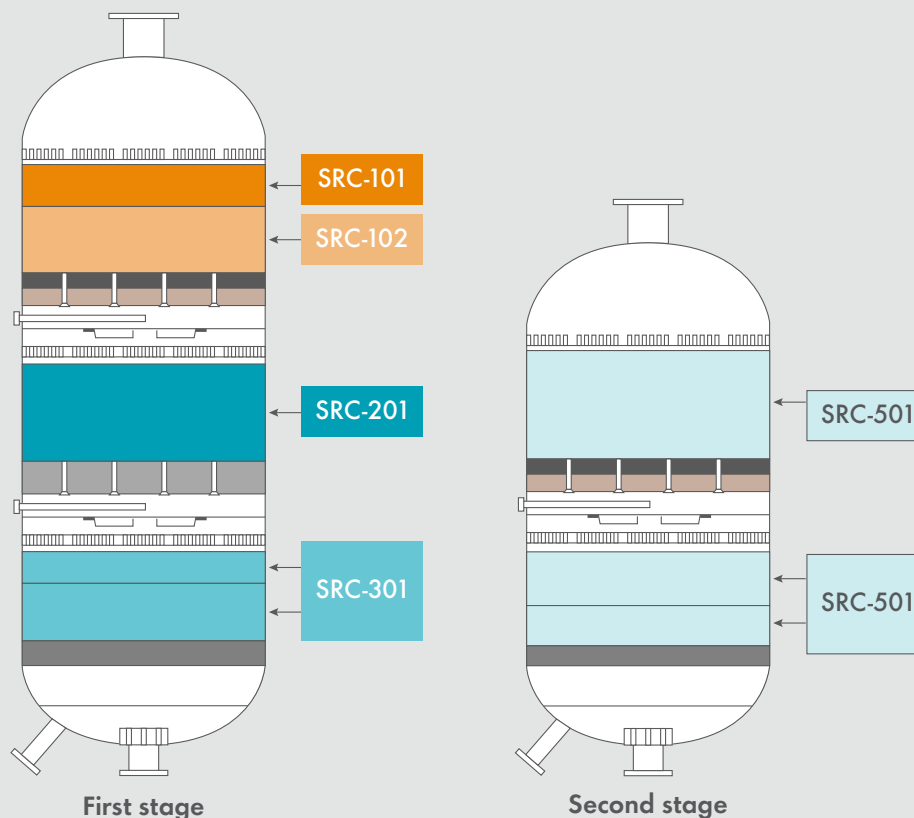
- SRC-301 provides high hydrogenation activity.

Are you having difficulty maintaining high yield due to sub-par dewaxing?

- SRC-201 and SRC-501 would provide higher yields through first- and second-stage dewaxing, respectively.

SRC PORTFOLIO	
FIRST-STAGE CATALYST	
SRC-101	Activity grading and contamination control
SRC-102	Activity grading and contamination control
SRC-201	High HDO selectivity and 1st-stage dewaxing
SRC-221	First-stage dewaxing
SRC-301	High hydrogenation activity
SECOND-STAGE CATALYST	
SRC-501	Second-stage dewaxing

A typical solution



SRC CATALYSTS ARE ALSO AT THE HEART OF THE **SHELL RENEWABLE REFINING PROCESS**, LICENSED BY SHELL CATALYSTS & TECHNOLOGIES

For more information, please visit www.shell.com/ct.

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