Not all crude oils are created equal. The characteristics of crude oil as a feedstock (input) to a refinery have a significant impact on planning, operations and products. Refineries are configured to process particular types of crude oils based on long-term forecasts and expectations of availability. The advances in technology that made the tight oil boom possible have introduced variability in crude oil quality compared to traditional crude oil supplies. Fast analysis and flexible operations are the new normal for U.S. refineries. This has allowed U.S. refiners to benefit from the availability and proximity of domestic crude oils which have been price advantaged, or discounted compared to international supplies. This talk will present an overview of the refining process and the challenges and decisions refiners are faced with in optimizing the processing of crude oil into fuels.