CDM Systems, Inc.
a KMGlobal company

Drag Chain Conveying System

Redesigned Conveyor Layout Supports Refiner Filter Cake Recycle and Reuse

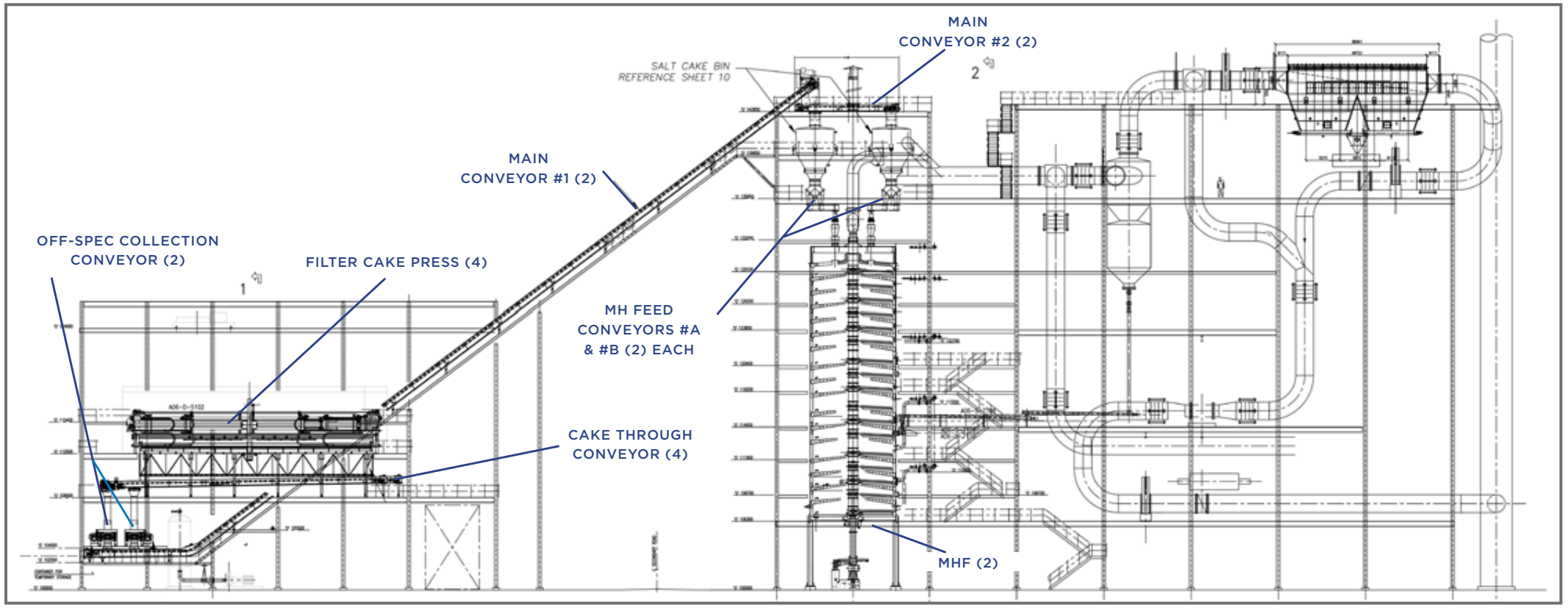
THE SITUATION

A large oil company sought to expand refinery operations at one of their global locations. To accomplish this, the expansion required a more effective way to move the filter cake at a new refinery both horizontally and vertically to the facility's two multi-hearth furnaces to be burned and reclaimed as an energy source.

NUMEROUS CONVEYERS WERE NEEDED TO MEET THE HIGH VOLUME OF FILTER CAKE AND SYSTEM REDUNDANCY REQUIRED.

In addition, the refinery required reliable, 24/7 operation of the conveyors in a corrosive environment.

THE LAYOUT



THIS IS THE FILTER CAKE PROCESSING LAYOUT FOR A SINGLE SYSTEM. EACH SYSTEM HAD 4 IDENTICAL UNITS FOR A TOTAL OF 64 CONVEYORS.

THE CHALLENGE

CDM was tasked to design a new system with dual strand drag conveyors to transfer the filter cake to collection conveyors and then into one of two main elevating conveyors to reach the surge bins before entering the multi-hearth furnaces (MHF). This new system must meet the required material transfer rates and provide reliable operation in a corrosive environment.

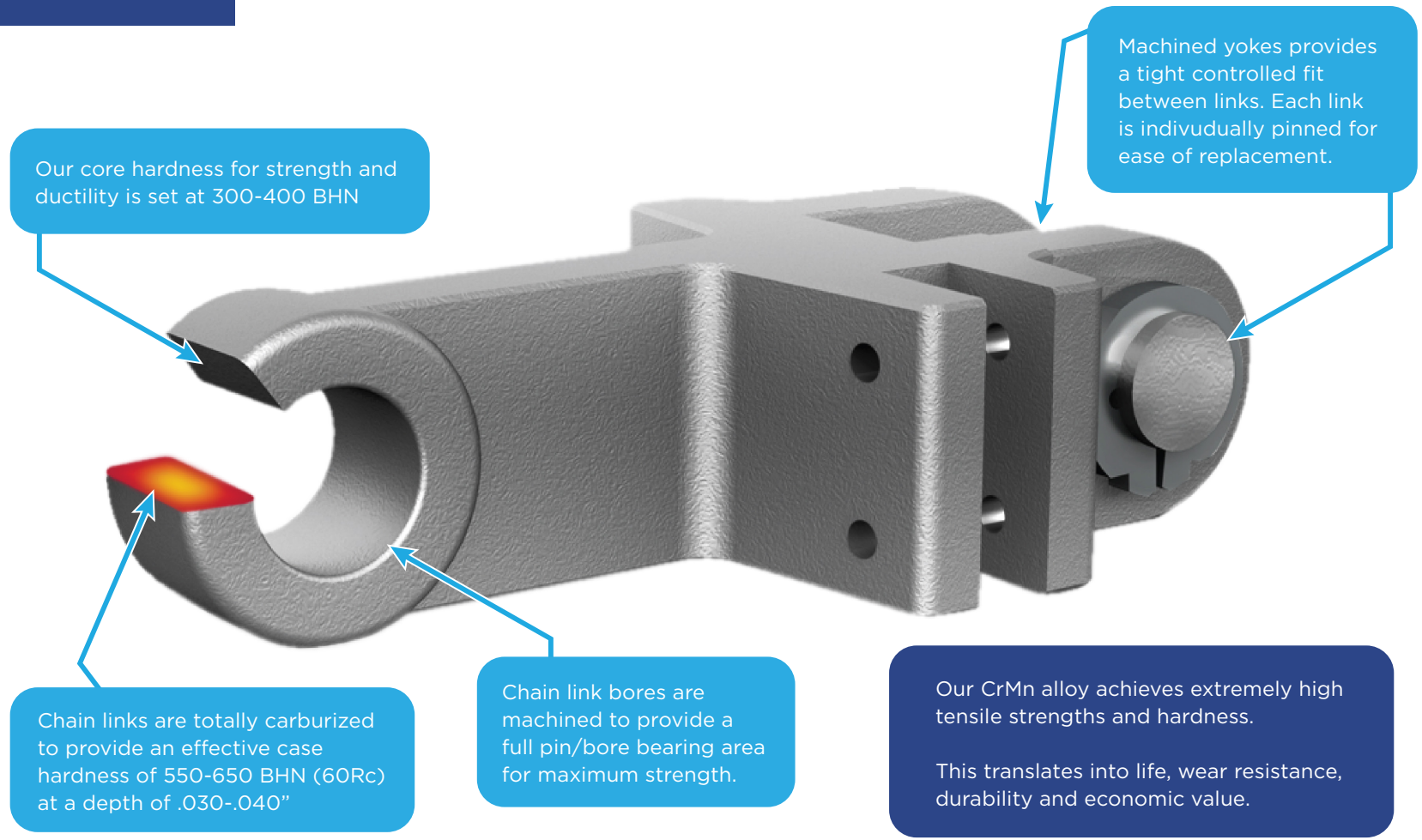
ADDITIONALLY, A SEPARATE HOPPER AND CONVEYING SYSTEM WERE NEEDED TO EFFECTIVELY DISCHARGE OFF-SPEC MATERIAL AND TRANSFER IT TO STORAGE.

THE SOLUTION

CDM's exclusive CrMn forged steel alloy chains have a core hardness of 300-400 BHN and are machined and carburized for a case of 550-650.

THIS CONFIGURATION, COUPLED WITH THE SIZE AND SPACING OF THE FLIGHTS, MINIMIZED CHAIN PULL AND MITIGATED THE RISK FOR UNPLANNED DOWNTIME.

To support the required reliability in a 24/7 operation, the housing was constructed with ferritic stainless steel.



Exclusive drop-forged, case hardened chain provides long, reliable service life.

THE RESULTS

A refinery relies on the 24/7 operation of the conveyors to carry bulk material.

When a conveyor goes down unexpectedly, production at the facility is compromised, and workers are exposed to unnecessary risk. Large-scale production facilities have many confined spaces, hazardous material, dangerous utilities and operations that have the possibility for injury or extended outage when exposed to emergency downtime.

CDM ENGINEERED THE CONVEYORS AND THEIR COMPONENTS SPECIFICALLY FOR THIS APPLICATION, WHICH WAS CRITICAL TO DELIVER UNINTERRUPTED PRODUCTION AND INCREASE THE LONGEVITY OF THE EQUIPMENT.