Table 2 — Customer Data Requirements for TDE-BOF™

Legend:
● **Required** ◐ **Recommended** ○ **Optional** — **Not required**

Required input from customer	Offline Simulator	DSS / Advisory Mode	Online Digital Twin
Basic BOF plant data (converter size, nominal heat size, route description, main equipment)	●	●	●
General BOF process description (charge practice, blowing logic, flux practice, target grades)	●	●	●
Typical operating values (hot metal temperature, hot metal chemistry, scrap ratio, oxygen consumption, endpoint targets)	●	●	●
Standard recipes / operating practice	●	●	●
Historical heat results (final temperature, final chemistry, oxygen used, additions, tap results)	◐	●	●
Heat-by-heat production data	○	●	●
Time-stamped process sequence (blow start/end, additions, measurements, sampling events)	○	◐	●
Actual process measurements during operation	○	●	●
Off-gas data (if available)	○	◐	●
Sublance or in-process temperature / sampling data (if available)	○	◐	●
List of available data sources (Excel, CSV, historian, database, Level 2, etc.)	◐	●	●
Live signal availability	—	○	●

Required input from customer	Offline Simulator	DSS / Advisory Mode	Online Digital Twin
PLC / Level 1 / Level 2 tag list	—	○	●
Tag description and engineering units	—	○	●
Data communication architecture (OPC-UA, database, API, historian, network constraints)	—	◐	●
Automation sequence and phase logic	—	○	●
IT / OT environment and deployment constraints	—	○	●
Customer expectations and project objectives	●	●	●

TDE-BOF™ can start as an Offline Simulator and progressively evolve into DSS / Advisory Mode and a fully integrated Online Digital Twin as plant data availability increases.