Table 2 — Customer Data Requirements for TDE-EAF™

What information is required from the customer?

The implementation level depends on the quality, depth and availability of plant data. The matrix below shows what is typically needed for each TDE-EAF™ deployment level.

Legend:
● Required   ◐ Recommended   ○ Optional   — Not required

Required input from customer	Offline Simulator	DSS / Advisory Mode	Online Digital Twin
Basic EAF plant data (furnace size, transformer power, nominal heat size, shell type, main equipment)	●	●	●
General EAF process description (melting practice, charge sequence, oxygen practice, carbon injection, slag foaming logic, transfer philosophy toward AOD/VOD)	●	●	●
Typical operating values (scrap mix, stainless alloy additions, return scrap, hot heel practice, power-on time, tapping temperature targets)	●	●	●
Standard recipes / operating practice	●	●	●
Electrical operating data (power profiles, voltage/current levels, transformer settings, electrode consumption if available)	◐	●	●
Historical heat results (tap temperature, tap chemistry, power consumption, oxygen used, alloy additions, yield data)	◐	●	●
Heat-by-heat production data	○	●	●
Time-stamped process sequence (charge events, bucket sequence, power-on/off, oxygen blowing, carbon injection, tapping events)	○	◐	●
Actual process measurements during operation	○	●	●
Off-gas data (if available)	○	◐	●
Furnace electrical signals (active/reactive power, current, voltage, arc stability indicators, if available)	○	●	●
Oxygen, natural gas and carbon injection data	○	●	●
Electrode regulation / arc control related data (if available)	○	◐	●
Temperature measurement data	◐	●	●
Chemistry and sampling data	◐	●	●
Alloy addition and stainless charge balance data	○	●	●
Transfer conditions toward AOD / VOD (tap temperature, transfer timing, expected chemistry window)	○	◐	●
List of available data sources (Excel, CSV, historian, database, Level 2, etc.)	◐	●	●
Live signal availability	—	○	●
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-EAF™ 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.