



## How project inputs change the material route

| Case                          | Key inputs                                 | Initial selection logic                                                                                                                    | Still to verify                                                 |
|-------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| High-temperature process line | 400 °C , high pressure, long service       | Carbon steel and code allowable stress form the first comparison basis; Cr-Mo enters the comparison when creep or allowable stress governs | Metal temperature, allowable stress, creep, WPS/PWHT, corrosion |
| Low-temperature line          | MDMT = -50 °C                              | Notch-toughness grades such as ASTM A333 are considered                                                                                    | Actual CVN temperature, thickness, welds and code impact rules  |
| Heat-exchanger tube           | OD 19.05 mm , WT 1.65 mm , corrosive fluid | Tube product standard, environment-compatible grade, and required manufacturing and testing provisions                                     | Corrosion, tube sheet, ET/UT, length, MTC and documentation     |

Source / basis: <https://niktrd.com/material-selection-guide>