

TECHNICAL BULLETIN



ACE-MODEL HT100-2 PERFORMANCE CAPABILITIES

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SUMMARY

ACE-Model HT100-2 is a versatile machine for deactivating catalysts. The “HT” stands for “HydroThermal”, 100 for the nominal capacity per reactor in grams, and the 2 for two reactors per unit. The current version has numerous modes of operation providing for a wide variety of catalyst deactivation protocols.

KTI’s Technical Center has three Model HT100-2 units (six reactors) providing the capacity to do several thousand catalyst deactivations per year. Operating temperatures are usually in the range of 760-815°C, but special treatments up to 1000°C+ are achievable. The performance capabilities are described further below.

CAPABILITIES

CATALYST STEAMING:

Simple “steaming” is usually prescribed at a set temperature for a specific time interval (e.g., 788°C for 20 hours). Within this context, HT100-2 offers the following variables to alter the effects of the hydrothermal treatment.

- Variable steam partial pressure (to a certain mole% by using N2 diluent)
- Steaming in the presence of Oxygen (to a certain mole%) including variable steam partial pressure
- Steaming in the presence of Hydrogen (to a certain mole%) including variable steam partial pressure

RSPO:

RSPO is a KTI proprietary method for ageing catalysts that contain contaminant metals. The RSPO technique uses RedOx cycles with variable concentrations of reducing gas and oxidizing gas. The number of RedOx cycles is easily varied from none into the 1000s. The RSPO mode of operation enables the HT100-2 to vary the extent of contaminant metals activity as well as for studying the performance of metals trapping agents.

CYCLIC PROPYLENE STEAMING (CPS) – W.R. GRACE:

The HT100-2 can be setup to operate under the protocol of CPS developed by W.R. Grace. KTI plans to publish a comparison of the RSPO and CPS techniques.