6.3.7.4 Specific Actual Cost of Thermal Energy per Gigajoule [RC/GJ]

Description

Specific actual cost of traditional thermal energy per Gigajoule corresponds to the total cost of traditional fuels consumed in clinker production, including preparation and handling costs, per Gigajoule [GJ].

Specific actual cost of alternative thermal energy per Gigajoule corresponds to the total cost of alternative fuels consumed in clinker production, including preparation and handling costs, per Gigajoule [GJ].

## Reference to Process

This indicator refers to:

- Main cost center 'Clinker production'
- Pre-process cost centers 'Traditional fuels preparation and handling' and 'Alternative fuels preparation and handling'
- Product sub-segment Clinker and Cement

Purpose

To measure the actual cost of fuel per Gigajoule and per fuel types: traditional and alternative.

To facilitate comparison/benchmarking of thermal energy cost between different plants and processes.

Calculation
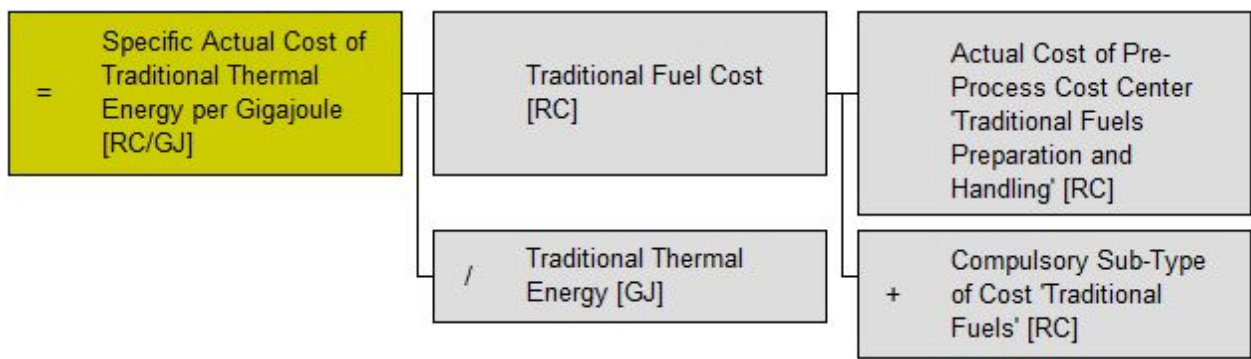
Specific actual cost of traditional thermal energy per Gigajoule [RC/GJ] = (Actual cost of traditional fuels preparation and handling' + Compulsory sub-type of cost 'Traditional fuels') [RC] / Traditional thermal energy [GJ].

Traditional thermal energy [GJ] = (Traditional thermal energy [GJ] + Alternative thermal energy [GJ]) * (1-TSR [%]).
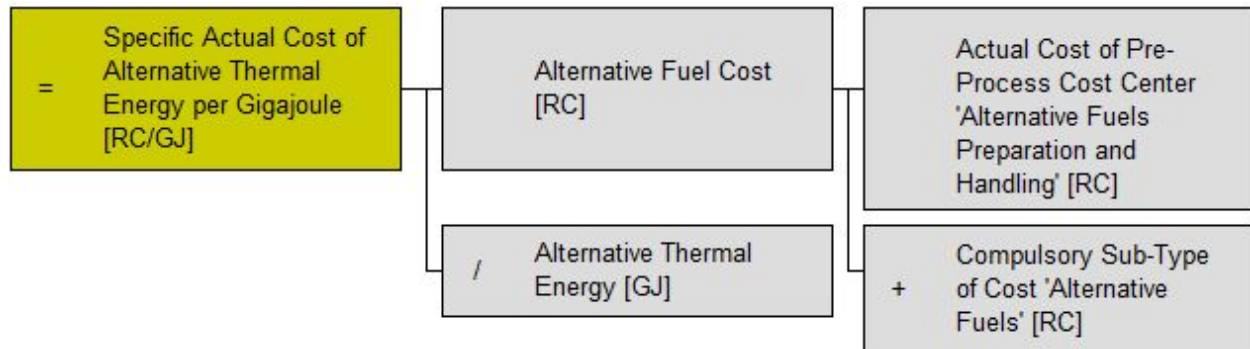
Specific actual cost of alternative thermal energy per Gigajoule [RC/GJ] = (Actual cost of alternative fuels preparation and handling' + Compulsory sub-type of cost 'Alternative fuels') [GJ] / Alternative thermal energy [GJ].

Alternative thermal energy [GJ] = (Traditional thermal energy [GJ] + Alternative thermal energy [GJ]) * TSR [%].

The following components are defined as indicators in 'Specific thermal energy consumption (kiln) [MJ/t clin]':

- Traditional Thermal Energy - 'Traditional thermal energy consumption (kiln) [GJ]'
- Alternative Thermal Energy- 'Alternative thermal energy consumption (kiln) [GJ]'

Note:1 Gigajoule [GJ] = 10^9 Joule

The Joule [J] is a derived unit of energy, work, or amount of heat in the International System of Units.

Comments and Examples

Specific actual cost of traditional thermal energy per Gigajoule includes the 'Actual cost of traditional fuels preparation and handling' pre-process costs center (see also 'Definitions' of pre-process cost centers) and also the costs of the traditional fuels themselves. It refers to the GJ of traditional fuels only. (By technical personnel this can also be referred to as 'Thermal energy unit cost (all traditional fuels)'.

TIS data normalization code: ICS 000+LCGJU+TF.

Specific actual cost of alternative thermal energy per Gigajoule includes the 'Actual costs of the alternative fuels preparation and handling' pre-process costs center (see also 'Definitions' of pre-process cost centers) and also the costs of the alternative fuels themselves (included in the compulsory sub-type of cost 'Alternative fuels' within main cost center 'Clinker production'.) It refers to the GJ of alternative fuels only.

(By technical personnel this can also be referred to as 'Thermal energy unit cost (all alternative fuels)'.

TIS data normalization code: ICS 000+LCGJU+AF

Specific actual cost of thermal energy per Gigajoule includes the 'Actual costs of the traditional fuels preparation and handling' and 'Alternative fuels preparation and handling' pre-process costs centers (see also 'Definitions' of pre-process cost centers) and also the costs of the fuels themselves (type of cost 'Fuels / thermal energy (kiln)' within main cost center 'Clinker production').

(By technical personnel this can also be referred to as 'Thermal energy unit cost (all fuels)'.

TIS data normalization code: ICS 000+LCGJU+FUEL

The alternative fuels are listed in Thermal substitution rate - TSR'.

If the total thermal energy consumed in the kiln system is 111'680 GJ and TSR is 16%,

If the Type of cost 'Fuels / Thermal Energy (Kiln)' = 52'672 RC,

If the Compulsory sub-type of cost 'Traditional Fuels' = 158'015 RC,

If the Compulsory sub-type of cost 'Alternative Fuels' = -105'343 RC,

If the Actual cost of Actual Cost of 'Traditional Fuels Preparation and Handling' = 105'500 RC,

If the Actual cost of Actual Cost of 'Alternative Fuels Preparation and Handling' = 101'600 RC, then:

'Specific actual cost of traditional thermal energy per Gigajoule' = (158'015 + 105'500) / 111'680 * (1 - TSR) = (158'015 + 105'500) / 93'810 = 2.81 [RC/GJ]

'Specific actual cost of alternative thermal energy per Gigajoule' = (-105'343 + 101'600) / 111'680 * TSR = (-105'343 + 101'600) / 17870 = -0.21 [RC/GJ]

'Specific actual cost of thermal energy per Gigajoule' = (52'672 + 105'500 + 101'600) / 111'680 = 2.33 [RC/GJ];

For the functional reports the calculation must be made by type of material according to the PSCS classification (overview and guidance).

The Gigajoules (GJ) are calculated by the volume of each type of fuel consumed (family, classes) according to the PSCS classification (detailed list) and the relevant Net Calorific Value.

The net calorific value has to be determined for all fuels. It can be determined in own laboratory, by third parties, by literature reference or consider the one specified on the invoice. If measured, it has to be measured after preparation (at the burner pipe or entrance of the kiln and not at the plant gate).

NOTES:

These indicators must not to be confused with [Specific actual cost of thermal energy [RC/t clin]](#)

Related operational performance indicators include: [Specific thermal energy consumption [MJ/t clin]](#) and [Thermal substitution rate - TSR.](#)

3.6 GJ is an approximate amount of thermal energy required to produce one ton of clinker.

Reporting Requirements

The indicators are reported in SAP FC.