Tray Splitter Loss Parameters

Article Overview

Tray splitter losses can be quantified as insertion and excess loss for optical splitters, or as field tray efficiency for chemical distillation splitters.

Optical Tray Splitters

Optical tray splitters are used in passive optical networks (PONs) to distribute fiber signals. Loss parameters are critical for ensuring signal quality:

o Insertion Loss: The ratio of optical power launched at the input to the power at a single output port. It includes both splitting loss and excess loss. For example, a 1x2 splitter typically has an insertion loss around 3.5 dB, while a 1x8 splitter may have 10-11 dB depending on the design .
o Excess Loss: The difference between the total input power and the sum of all output powers. It accounts for imperfections in the splitter and ensures total output is never higher than input .
o Typical Loss Table (approximate values for PLC splitters):
o 1x2: 3.5 dB
o 1x4: 7.0 dB
o 1x8: 10.5 dB
o 1x16: 13.5-14 dB
o 1x32: 17-18 dB Tray splitters can be pigtail type or adapter type, installed in 19" standard ODF or cabinets, and are designed to maintain fiber curvature and channel capacity . Testing is performed using an optical power meter and light source, following double-ended loss test procedures to ensure symmetry in attenuation .

Chemical Distillation Tray Splitters

In propylene or C3 splitters, tray efficiency is a key parameter affecting separation performance:

o Field Tray Efficiency: Represents the fraction of ideal separation achieved on a tray. Typical values for common distillation towers are:
o C2 & C3 Splitter: 85%
o Depropanizer: 75%
o Demethanizer: 65%
o Stabilizer: 80%
o Debutanizer: 80%

o Factors Affecting Efficiency:
o Tower pressure and geometry
o Flow rates and paths of vapor and liquid

o Composition and physical properties of streams
o Tray design and type (sieve, valve, bubble cap)

o Design Considerations: Proper tray spacing, downcomer sizing, and reflux ratio are essential to achieve near-equilibrium conditions and optimal efficiency .

Summary

o Optical tray splitters: Loss parameters are measured in dB, including insertion and excess loss, and vary with splitter ratio.
o Chemical tray splitters: Efficiency is expressed as a percentage of ideal separation, influenced by tower design, operating conditions, and tray type. Both types of tray splitters require careful design and testing to ensure performance meets operational requirements.

The document contains tables listing the insertion loss in dBm for various splitting ratios of an optical splitter, ranging from 1% to

3. Tray Optimization In the design of trays for large diameter splitters there are a number of challenges that need to be addressed;

Tray splitter is with good optical circuit design and ensures the curvature radius of fiber as well as realization of channel capacity

The simplest is a sieve tray -- it has a perforated tray deck with a uniform hole diameter of from less than a mil-limeter to about 25

To select best fiber optic splitter, Let"s delve into four critical indicators: insertion loss, splitting ratio, isolation and

Basic understanding on Tap ratio for Splitter and Coupler Understanding Power Division, Insertion Loss, and Practical

This paper aims to study the design, simulation, and optimization of low-loss Y-branch passive optical splitters up to

Parameter of Optical Splitter Loss : I have already written a very detailed article about optical splitter, whose link will be

Each tray in a distillation column is designed to promote contact between the vapor and liquid on the stage, so

there is

Calculate optical splitter insertion loss for PON, FTTH, and fiber distribution networks. Design passive splitter cascades for GPON,

The exclusive alliance with Shell Global Solutions enables us to offer the complete range of Shell tray technology with multi

The split ratio and insertion loss are two key parameters defining their performance. A deeper understanding of these

To accurately measure optical splitter loss, utilize optical test equipment like power meters

The most common type of power splitter/combiner has equal amplitude and 0º phase difference among the N ports,

Flowpath length: With a multi-downcomer tray, flowpath length becomes an important parameter as this affects the efficiency of the

The key parameters are influenced in the same direction during the design stage. A well-designed power

Web: https://www.kremgroup.co.za