
* 英语学习 *

英语翻译技巧(16)

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3.1.1 Screw Extruders

A screw extruder comprises a feed hopper, a feed screw operating within a barrel, a head, and a die or a die plate.

The screw is rotated from an electric motor through a reduction gear, and pushes compound through the barrel into the head where it builds up a pressure, this being relieved by allowing the compound to pass through an orifice or die to form the desired shape^①.

The purpose of the feed hopper is to receive the compound and pass it down into the flights of the screw. The compound may be supplied hot, in the form of an intermittent or continuous feed strip, as 'dollies', or as the discharge of an internal mixer, or it may be supplied cold in the form of a strip or pellets^②.

The feed hopper may be undercut to assist the feed, or may have a driven roll adjacent and parallel to the screw to give a 'roller feed'^③. In the case of the internal mixer discharge, a power-operated ram will be needed to push the rubber compound into the flights of the screw. The screw-type extruder is meant to be a continuous operating machine, so most systems are satisfactory with the exception of hand-feeding from dollies or strips.

The screw should preferably have a lower volume in the flights at the outgoing than at the ingoing end. This can be achieved by

(a) a reduction in pitch of the screw; (b) a reduction in the depth of the base of the screw; (c) a reduction in overall diameter of the screw and barrel; or (d) an increase in the number of starts in the screw. Methods (b) and (d) are the most commonly used, the objectives being to give sufficient compression to eliminate air and also to ensure a constant pressure in the head. It is most important that an extruder screw is full at the discharge end, otherwise changes in swell of the compound will arise from surges of compound arriving in the head, resulting in dimensional changes in the extrudate which often seem to occur at the same frequency as the speed of rotation of the screw^④. Using hot compound, the length-diameter ratio of the screw is usually 4 : 1 or 5 : 1 whereas, with a cold feed extruder, this ratio is increased considerably, to 15 : 1 or 20 : 1 depending upon the type of compound to be extruded. The barrel of an extruder is usually of a hardened steel and is controlled so that a constant compound temperature is maintained in the extruder head. The screw rotates within the barrel and has a clearance of approximately 0.4mm.

生 词

screw extruder	螺杆挤出机
feed hopper	喂料斗, 进料斗
feed screw	进料螺杆
die plate	口型板
reduction gear	减速齿轮, 减速装置

barrel	机筒
build up	形成, 生成
relieve	减压, 降压
orifice	小孔
flight	螺纹
dolly	胶卷
undercut	截去下部的
discharge	排胶
pitch	节距, 螺距
number of starts	
(in the screw)	(螺杆) 螺纹头数
surge	(压力) 波动

译 文

3.1.1 螺杆挤出机

螺杆挤出机由进料斗、在机筒内运转的进料螺杆、机头和口型或口型板组成。

螺杆由电动机通过减速装置带动, 推动胶料通过机筒进入机头, 胶料进入机头后压力升高, 然后通过一小孔或口型挤出形成所需形状产品, 胶料压力也随之消失^①。进料斗的作用是接受胶料并使之进入螺杆的螺纹。胶料可以不连续或连续胶条的形式, 如开炼机下的胶卷或密炼机的排胶热喂入挤出机, 也可用冷胶条或胶粒直接冷喂^②。

可切去进料斗下侧进料, 也可在靠近螺杆的地方安装一个与之平行的从动辊作为旁压供料辊^③。使用密炼机的排胶, 则需用动力操作的柱塞将胶料推入螺杆的螺纹。螺纹挤出机是连续作业的设备, 除用手工喂胶卷或胶条外, 大多数系统都是令人满意的。

出料端螺杆螺纹的容积最好比进料端小。实现这一点有下列 4 种方法: (a) 减小螺杆螺距; (b) 减小螺纹槽深度; (c) 同时减小螺杆和机筒的直径; (d) 增加螺杆螺纹的头数。 (b) 和 (d) 这两种方法是最常用的, 其目的是获得充分压缩以除去空气并确保机头压力恒定。挤出机螺杆的排料端充满胶料是十分重要的, 否则机头内的压力波动将引起胶料膨胀率变化, 从而引起挤出物尺寸变化, 这种变化的频率往往

和螺杆的转速相同^④。在热喂料挤出机上, 螺杆长径比为 4:1 或 5:1, 而在冷喂料挤出机上, 该比值增加很大, 根据挤出胶料的种类不同, 可为 15:1 或 20:1。挤出机机筒通常用淬火钢制作, 而且可以控制其温度, 以便挤出机机头内胶料的温度保持恒定。螺杆在机筒内旋转, 其间约有 0.4mm 的间隙。

注: ①句中“where”=“in which”, 引出的是定语从句, 修饰“the head”, 从句中“it”指前面的“compound”; “this being……”为分词独立结构, “this”指的是“pressure”。

②此句中“hot”和“cold”为副词, 作状语。

③“to give a ‘roller feed’”直译为“形成辊筒喂料”, 可意译为“作为旁压供料辊”。

④“It is most important that……”中“it”引出的是主语从句, 它的主句与“otherwise”后面的句子并列; 第 2 分句中“changes”为名词, 作主语, “arriving in the head”为现在分词短语作定语, 修饰前面的“compound”, “resulting in……”为现在分词短语作结果状语; “which”引出的定语从句修饰“dimensional changes”。

英译汉常见错误实例

“such tests”he believes, “could help to produce new materials specifications for rubbers based on composition as well as performance, rather than on performance alone.”

误: 他确信这样的试验能帮助胶料组分如同性能一样产生一种新的材料规范, 而不仅是使用性能。

正: 他确信这样的试验有助于根据胶料的组分同时根据其性能来提出新的材料规范, 而不仅以胶料的性能为依据。

注: ①“produce”的宾语是“specifications”, “based on……alone”是其状语。

②“as well as”的意思是“以及”, 并非“如同”。

③“help”是不及物动词, 作“有助于”讲。