SLOVENSKI STANDARD
SIST EN 13379:2002

01-november-2002

Stroji za izdelavo testenin - Stroji za razvlaļenje, valjanje in rezanje, paliļno povratni tekoļi trak, skladiģļe - Varnostne in higienske zahteve

Pasta processing plants - Spreader, stripping and cutting machine, stick return conveyor, stick magazine - Safety and hygiene requirements

Maschinen zur Teigwarenherstellung - Behänger, Abstreif- und Schneidmaschinen, Stabrücktransporte, Stabmagazine - Sicherheits- und Hygieneanforderungen

Machines pour pâtes alimentaires - Etendeuses, dégarnisseuses-découpeuses, convoyeurs de retour des cannes et accumulateurs de cannes - Prescriptions de sécurité et d'hygiene

Ta slovenski standard je istoveten z: **EN 13379:2001**

ICS:

67.260	Tovarne in oprema za živilsko industrijo	Plants and equipment for the food industry

SIST EN 13379:2002 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

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English version

Pasta processing plants - Spreader, stripping and cutting machine, stick return conveyor, stick magazine - Safety and hygiene requirements

Machines pour pâtes alimentaires - Etendeuses, dégarnisseuses-découpeuses, convoyeurs de retour des cannes et accumulateurs de cannes - Prescriptions relatives à la sécurité et à l'hygiène

Maschinen zur Teigwarenherstellung - Behänger, Abstreif- und Schneidmaschinen, Stabrücktransporte, Stabmagazine - Sicherheits- und Hygieneanforderungen

This European Standard was approved by CEN on 10 February 2001.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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FOREWORD

This European Standard has been prepared by Technical Committee CEN/TC 153 "Food processing machinery - Safety and hygiene specifications ", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2001, and conflicting national standards shall be withdrawn at the latest by October 2001.

It is one of a series of safety standards for machines used in continuous pasta processing plants.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

For relationship with EC Directive(s), see informative Annex ZA, which is an integral part of this standard.

The annexes A and B are normative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Standard has been prepared to be a harmonized standard providing a means of conforming with essential safety requirements of the EU "Machinery directive" and associated EFTA regulations.

This European Standard is a type C standard as stated in EN 1070. The machinery concerned and the extent to which hazards are covered are indicated in the scope of this standard.

In addition, the machinery shall comply as appropriate with EN 292 for hazards which are not covered by this European Standard.

The machinery, for which this European Standard applies, can cause certain hazardous situations to the operators, due to their moving parts, drive components and electrical equipment.

Besides the specific hygiene requirements common to all food processing machinery, spreader, stripping and cutting machine, stick return conveyor and stick magazine also comply with the requirements covering cleanability described in the present European Standard

1 Scope

This European Standard applies to spreader, stripping and cutting machine, as well as the stick return conveyor and the stick magazine (see clause 3), used in continuous pasta processing plants able to produce more than 100 kg/h.

This European standard specifies the safety requirements for the design, manufacture and information for safe use of spreader, stripping and cutting machine, as well as the stick return conveyor and the stick magazine classified as stationary units which cannot be moved when in operation.

This European Standard does not apply to:

- household machines,
- semiautomatic machines, so called "batch machines" requiring manual loading.

The significant hazards covered by this standard are listed in clause 4.

These hazards and the measures for their reduction are described in the present European Standard.

Ancillary equipment, which is not an integral part of the machinery (e.g. hoppers), is not covered by this European Standard.

This European Standard applies to machines which are manufactured after ….(date of issue of appoval by CEN) .

2 Normative references

This European Standard incorporates, by dated or undated references, provisions from other publications. These normative references are cited at the appropriate place in the text and the publications are listed hereafter. For dated references, subsequent amendments or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 292-1:1991	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
EN 292-2:1999 /A1:1995	Safety of machinery - Basic concepts, general principles for design – Part 2: Technical principles and specifications
EN 294: 1992	Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs

EN 418	Safety of machinery - Emergency stop equipment, functional aspects - Principles for design
EN 457	Safety of machinery - Auditory danger signals - General requirements, design and testing (ISO 7731:1986, modified)
EN 953: 1993	Safety of machinery - General requirements for the design and construction of guards (fixed, movable)
EN 954-1:1996	Safety of machinery - Safety related parts of control systems - Part 1: General principles for design
EN 982	Safety of machinery - Safety requirements for fluid power system and components - Hydraulics
EN 983	Safety of machinery - Safety requirements for fluid power system and components - Pneumatics
EN 1070	Safety of machinery - Terminology
EN 1088:1995	Safety of machinery - Interlocking devices associated with guards - Principles and selection for design
EN 1672-2: 1997	Food processing machinery - Basic concepts - Part 2: Hygiene requirements
EN 60204-1:1997	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:1997)
EN 60529:1991	Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)
EN 61496-1:1997	Safety of machinery – Electro-sensitive protective equipment – Part 1: General requirements and tests (IEC 61496-1:1997)
EN ISO 3744	Acoustics - Determination of sound power levels of noise sources using sound pressure - Engineering method employing an enveloping measurement surface in an essentially free field over a reflecting plane (ISO 3744:1994)
EN ISO 3746	Acoustics - Determination of sound power levels of noise sources - Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:1995)
EN ISO 4871:1996	Acoustics - Declaration and verification of noise emission values of machinary and equipment (ISO 4871:1996)
EN ISO 9614-1:1995	Acoustics - Determination of sound power levels of noise sources using sound intensity–Part 1: Measurement at discrete points (ISO 9614-1:1993)
EN ISO 9614-2	Acoustics - Determination of sound power levels of noise sources using sound intensity–Part 2: Measurement by scanning (ISO 9614-2:1996)
EN ISO 11204	Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at a work station and at other specified positions - Method requiring environmental corrections (ISO 11204:1995)
prEN ISO 14122-1:1999	Safety of machinery - Permanent means of access to machines and industrial plants - Part. 1: Choice of a fixed means of access between two levels
prEN ISO 14122-2:1999	Safety of machinery - Permanent means of access to machines and industrial plants - Part. 2: Working platforms and gangways
prEN ISO 14122-3:1999	Safety of machinery - Permanent means of access to machines and industrial plants - Part. 3: Stairways, stepladders and guard-rails
prEN ISO 14122-4:1999	Safety of machinery - Permanent means of access to machines and industrial plants - Part. 4: Fixed ladders

EN ISO 11688-1	Acoustics - Recommended practice for the design of low-noise machinery and equipment - Part 1: Planning (ISO/TR 11688-1:1995)
ISO 468	Surface roughness - Parameter values and general rules for specifying requirements
IEC 60332-1	Tests on electrical cables under fire conditions – Part 1: Test on a single vertical insulated wire or cable

3 Definitions, terminology and description

For the use of this European Standard the definitions stated in EN 1070 apply.

Additional definitions specifically needed for this European standard are added below:

3.1
spreader (fig.1)
The spreader is placed between the extruder and the dryer. The dough strings continually discharged from the extruder, are cut off to a certain length, then placed on the sticks and cut to the required length on the lower end. Subsequently, the covered sticks are transferred to the dryer. The empty sticks are taken over by the stick return conveyor and can be heated or treated with edible oil before they are covered with product anew.

The cut product remnants are usually transported away from the spreader by means of conveyor belts and are fed to the extruder by means of a pneumatic conveying line. In order to prevent the still wet product on the sticks sticking together, it is necessary to have venting devices at several spots.

The spreader can also be equipped with a device for introducing or removing the sticks.

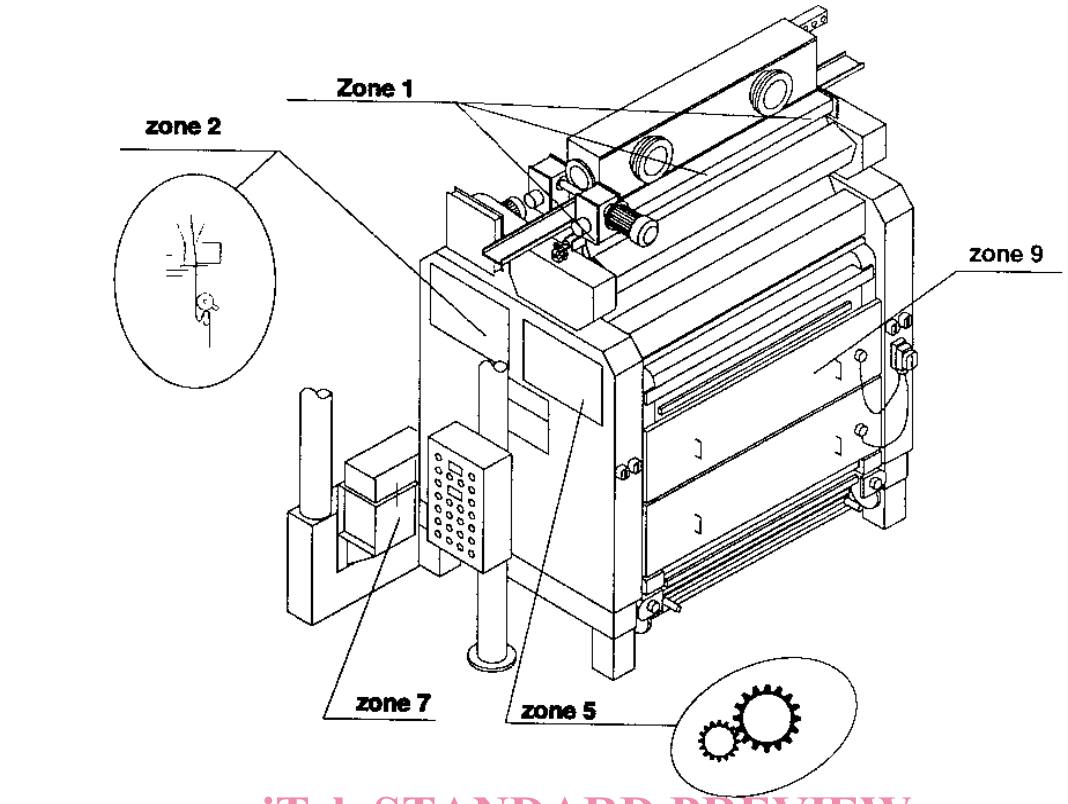
3.2
stripping and cutting machine (fig.2)
The stripping and cutting machine is positioned after the cooler or after the stick stacker. The stick with the dried product are taken over, the product is stripped off the sticks and is cut to the desired length. The cut product is discharged via oscillating conveyors or conveyor belts and is transferred to the packaging unit or to a stacker. The cut-off material is in most cases transported away by means of a pneumatic conveying line. The empty sticks are transferred to the stick return conveyor. Normally, the stripping and cutting machine comprises also a stick removal device, which takes off the empty sticks to allow for their cleaning or repair.

3.3
stick return conveyor and stick magazine (fig.3)
The stick return conveyor brings the empty sticks from the stripping and cutting machine back to the spreader. This device is usually positioned underneath the dryers.

In certain cases one of the functions of this return conveyor is the formation of a stick magazine with the sticks being transported possibly in several tiers.

A further stick magazine, called intermediate stick magazine, for a small number of product-covered sticks, can become necessary for plants working without a stick stacker. In this case, the intermediate stick magazine is placed ahead of the stripping and cutting machine.

Figure 3 shows the arrangement of the return stick conveyor and the stick magazine within a long-pasta line.



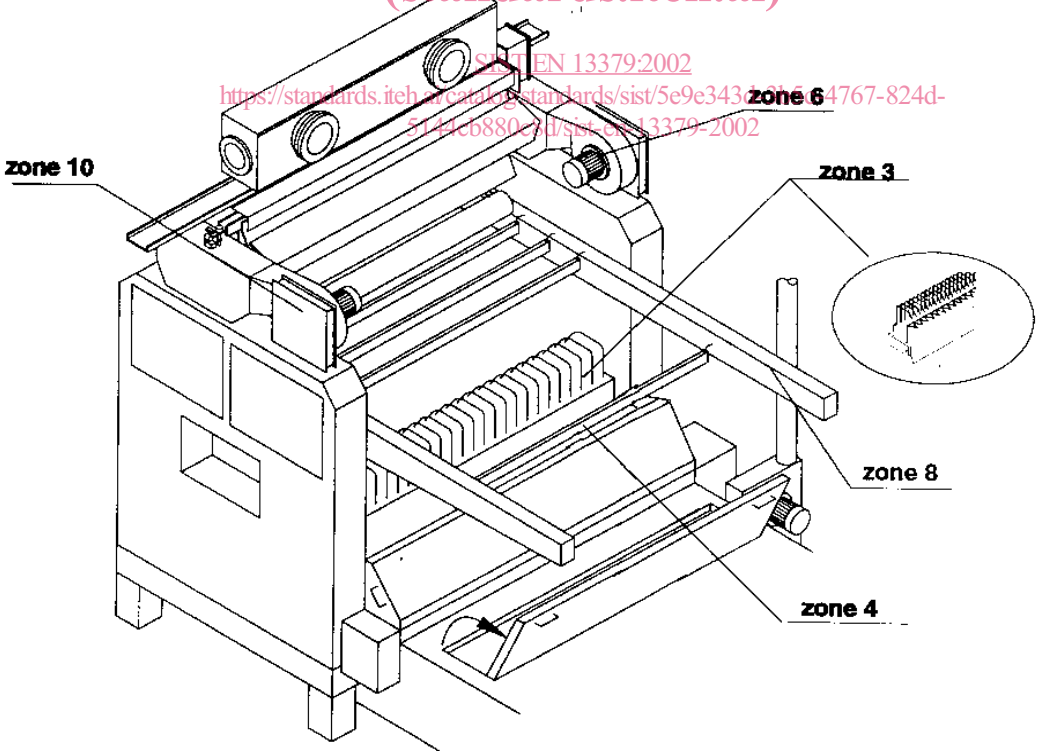


Figure 1 - Hazard zones at the spreader

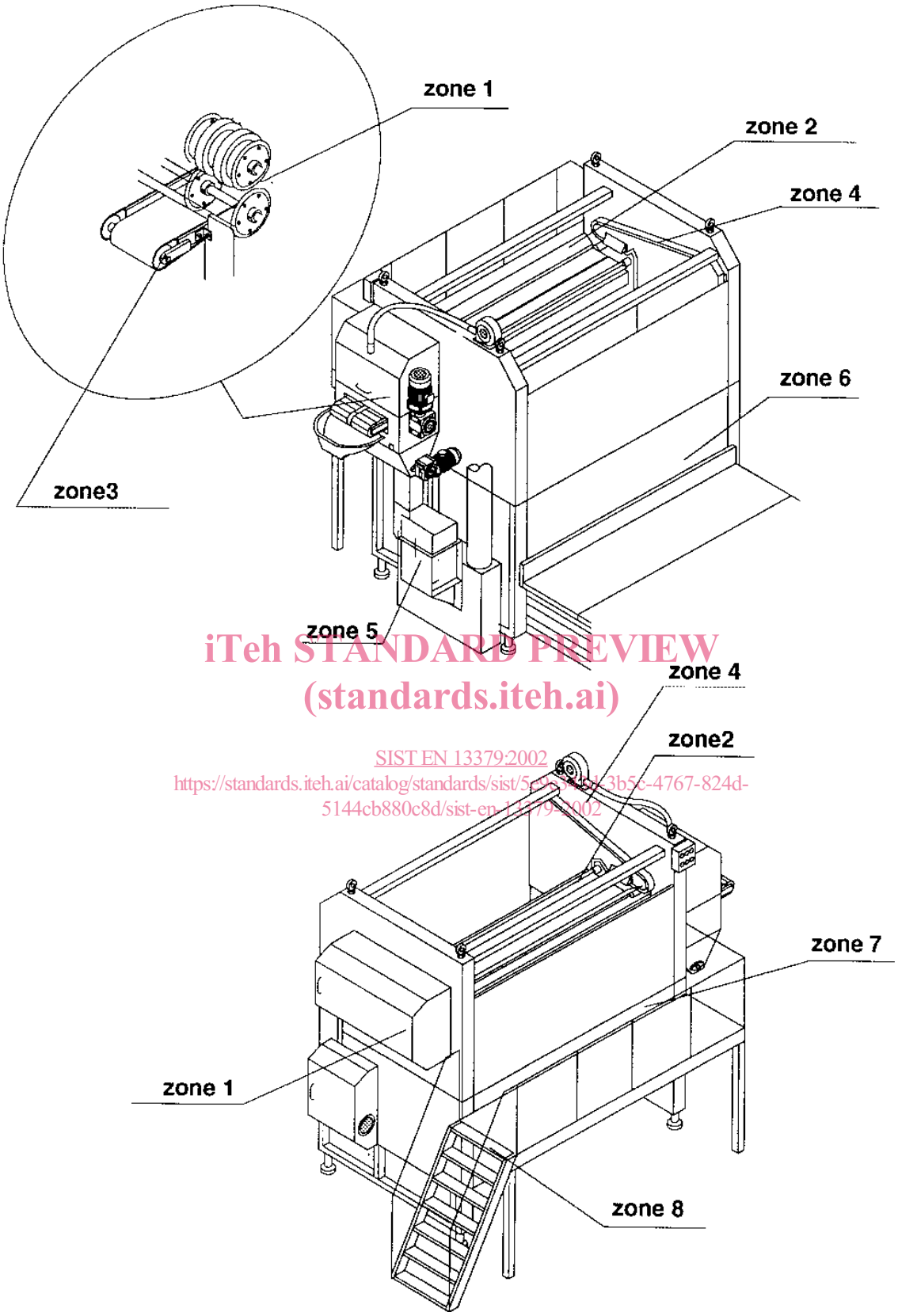


Figure 2 - Hazard zones at the stripping and cutting machine

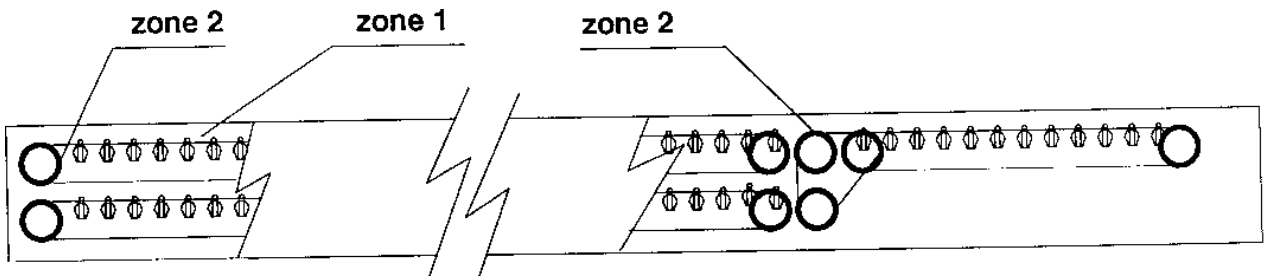


Figure 3 - Hazard zones at the return conveyor and stick magazine

3.4
continuous working machine
machine with non-stop product cycle. The pre-formed pasta is fed automatically into the machine and the end-product is extracted continuously.

3.5
batch machine
machine where the pre-formed pasta is loaded in separate units. The material is fed into the machine under manual control and the machine is emptied before a new cycle is started.

4 List of hazards

This clause covers all hazards, as far as they are considered in this European Standard, and identified by risk assessment significant for this type of machinery and requiring an action to eliminate or reduce risk.

4.1 Mechanical hazards

The significant mechanical hazards are:
- crushing hazard;
- cutting or severance hazard;
- entanglement hazard;
- shearing hazard;
- impact hazard;

The examples shown in figures 1, 2 and 3 illustrate the danger zones associated with these hazards.

4.1.1 Mechanical hazards at the spreader (see fig. 1)

4.1.1.1 Automatic lifting of the inlet hood at the start of production creates, a danger zone at this location. When the inlet hood is lifted, hands or fingers of operators can get squeezed between the die and the inlet hood; when the hood is lowered, the danger area is underneath the inlet hood (zone 1).

4.1.1.2 The upper cutter for cutting the extruded product represents one particularly hazardous zone. For starting production, the inlet hood is pushed out of the way or is removed and the product extrudes until the discharge is uniform. In this situation, the cutting device may become accessible, which means that fingers and hands of operators are exposed to risk of injury (zone 2).

4.1.1.3 The lower cutter, which cuts the product on the sticks to equal length also represents an area which is particularly hazardous. For maintenance and cleaning, there is free access to the cutter, because the guards have been opened, and there is danger of severe cuts of the fingers and hands (zone 3).

4.1.1.4 The empty sticks being moved on the front of the machine for spreading with product also represents an area which is particularly hazardous. There is a risk of injury (pinching) (zone 4).

4.1.1.5 The conveying belts with the danger of body-parts being drawn-in are further hazard zones (zone 5).

4.1.1.6 The fans for venting the product can cause injuries, such as finger amputation (zone 6).

4.1.1.7 The shredder fan used for transporting the cut-off material back to the extruder can amputate fingers or hands during cleaning. In addition to this, the rotor has accumulated kinetic energy , which can also lead to injuries for a certain time after the machine was shut down (zone 7).

4.1.1.8 The chain transmissions for moving the stick can also cause injuries by pinching and drawing-in (zone 8).

4.1.2 Mechanical hazards on the stripping and cutting machine (see fig. 2)

4.1.2.1 The cutting device, which usually comprises rotating cutter blades is especially dangerous. There is a risk of severe laceration.

The energy accumulated in the cutters represents another danger, as the cutters will continue to turn for a certain time after the machine has been shut down; injuries might result. Another hazard is parts coming loose from the cutter blade, such as hard metal teeth, which are thrown off and may cause injuries (zone 1).

4.1.2.2 The stripping and depositing devices represent additional hazard zones. Here, especially the clamping zones may cause danger of pinching (zone 2).

4.1.2.3 The conveying elements for the stripped off and cut or uncut product, such as chains, belts or oscillating conveyors, can cause injuries by pinching and drawing-in (zone 3).

4.1.2.4 The chain transmission and possibly the disk cams of the stick drives, as well as of the stripping device, can cause injuries (pinching) (zone 4).

4.1.2.5 The fan for transporting the remaining product back to the milling device, may cause injuries to the fingers or hands during cleaning. In addition to this, the rotor has accumulated kinetic energy , which can also lead to injuries for a certain time beyond the point where the machine was shut down (zone 5).

4.1.2.6 The side of the cutting machine where the sticks are introduced is normally attached to adjacent machines, for instance to the stick stacker. Uncovered openings and channels may offer free access to the moving parts and thus these may cause injuries by drawing-in and pinching (zone 6).

4.1.2.7 At the stick removal device there is risk of getting injured at the clamping and drawing-in zones (zone 7).

4.1.3 Mechanical hazards at the stick return conveyor and the stick magazine (see fig. 3)

4.1.3.1 In the stick transfer area and along the conveying elements there is risk of pinching at the clamping points that may cause injuries (zone 1).

4.1.3.2 Driving elements such as chain transmissions, rotating shafts, and stick transfer points may cause injuries due to drawing-in and pinching (zone 2).

4.1.3.3 In case of removal and feeding devices of the stick, there is risk of pinching at the clamping points.

4.1.4 Fluid ejection hazards

Failure of heating pipings under hydraulic pressure and failure of power hydraulic and pneumatic systems may cause hazard of ejection of fluid which may cause injury (zone 9, fig. 1).

4.1.5 Hazards due to unexpected start or failure of emergency device

Unexpected start up or failure of emergency device may cause hazard of contact with dangerous moving parts, with the consequences listed in clause 4.1, 4.2, 4.3.

4.2 Electrical hazards

Hazard of electric shock from direct or indirect contact with live components.This hazard is present in control consoles, motor connectors, electrical resistances, etc.

Hazard of external influence on electrical components.This hazard is present in running operation of machinery (e.g. caused by interferences to controlling signal or by cleaning with water or steam).

4.3 Thermal hazard

Risk of burns exists at the spreader in the case of direct contact with stick heating (zone 9, fig. 1).

Furthermore, the high temperatures of heat exchangers for product venting devices, their supply pipes and fittings may cause burns (zone 10, fig. 1).

4.4 Noise hazard

Noise generated by these machines can lead to

- permanent loss of hearing
- ringing in the ears
- fatigue, stress
- interference with speech communication, acoustic signals.

4.5 Hazards due to slip,trip and fall

Walkways, stairs and gangways may cause slip, trip and fall with danger of broken bones (zone 8, fig. 2).

4.6 Hazard due to neglecting of hygienic principles

Neglecting of hygienic principles may cause a hazard to human health and unacceptable modification of foodstuff (e.g. contamination by microbial growth or foreign materials and pests).

4.7 Harmful substance

The use of a cleaning agent may cause harm to the skin, eyes and respiratory system by direct contact or by ingestion.

5 Safety requirements and/or measures

Machinery shall comply with the safety requirements and/or measures of this clause.

5.1 Mechanical hazards

Where reference is made to fixed guards throughout clause 5, they shall comply with 3.2 of EN 953: 1997.

Where reference is made to interlocking devices throughout clause 5, they shall comply with EN 1088: 1995 (see 5.1.5.7).