SYSTEM AND METHOD FOR PROCESSING BARS

The present invention relates to a system for processing bars, comprising an input for receiving a plurality of bars to be processed, wherein the input is arranged to receive said bars extending substantially parallel along a transfer direction, a cutting station located in the transfer direction with respect to the input and arranged for cutting bars and feeding the cut bars to a receiving surface, a storage for storing the cut bars, wherein the storage comprises a plurality of bins, each arranged to receive a plurality of bars, wherein the storage is located in a direction perpendicular to the transfer direction with respect to the receiving surface of the cutting unit and a transfer unit for transferring the cut bars to the bins of the storage. The invention further relates to a method for processing bars, in particular using the system as mentioned above.

Apparatuses or systems for processing bars, such as steel bars or rods, that are used for reinforcement in concrete structures, as described above are known. Such bars are typically cut according to the design specifications of the concrete structure. Once the bars are cut, the bars are stored in a storage. Typically, such a storage comprises a plurality of (storage) bins, each arranged to receive a plurality of bins. The bins are typically separated from each other in a row in a direction perpendicular to the longitudinal axes of the bars to be received. A lifting apparatus or transfer unit is then provided to transfer the cut bars from the cutting station, for instance from the receiving surface thereof, to a bin of the storage.

Typically, a bin of a storage contains a plurality of cut bars, possibly also of different lengths, according to a predetermined ordered batch of bars. Cutting, transferring and collecting the bars in a bin as mentioned above is however not efficient. At the same time, collecting such a batch near the receiving surface of the cutting station may be inefficient, in particular when a bar is cut several times, resulting in each length of cut bars having to be transferred away from the receiving surface to allow the cutting station to keep operating, which makes it difficult to efficiently collect an ordered batch at that location, in particular when the bars or batches of bars need further processing, such as bundling.

It is a goal of the present invention, next to other goals, to provide an improved system for processing bars, wherein at least one of the above-mentioned problems is at least partly alleviated.

This goal, amongst other goals, is met by a system according to appended claim 1. More specifically, this goal, amongst other goals, is met by a system for processing bars, bars comprising:

- an input for receiving a plurality of bars to be processed, wherein the input is arranged to receive said bars extending substantially parallel along a transfer direction;
- a cutting station located in the transfer direction with respect to the input and arranged for cutting bars and feeding the cut bars to a receiving surface;
- a storage for storing the cut bars, wherein the storage comprises a plurality of bins, each arranged to receive a plurality of bars;
- a first conveyor arranged next to the receiving surface for receiving bars from said receiving surface and arranged to transfer bars in a first direction with a component parallel to the transfer direction, preferably in a first direction parallel to the transfer direction;
- a transfer unit for transferring the cut bars to the bins of the storage.

By conveying the bars away from the cutting station, in particular the receiving surface thereof, the efficiency of the cutting station is improved as the output can be emptied immediately, even when operating the cutting station with high capacity.

The transfer unit, for instance in the form of a gripper for lifting the bars, is then arranged to transfer the cut bars as transferred away by the first conveyor to the storage. It may be possible that the bars are processed before storing the bars in the storage. As will be explained below, it may be possible to bundle a plurality of cut bars prior to storing the bars in the storage. The first conveyor may then feed the cut bars to a bundling unit.

The storage is preferably located in a direction with a component perpendicular to the transfer direction, preferably in a direction perpendicular to the transfer direction. Bars are then transferred using the transfer unit in this direction perpendicular to the transfer direction.

A more compact configuration is obtained if the storage is located at a location in a direction with a component perpendicular to the transfer direction, preferably in a direction perpendicular to the transfer direction, with respect to the receiving surface of the cutting unit. The storage is then location next, preferably at least partly next to, the cutting station. This results in a compact configuration of the system.

It is then preferred if the cut bars, as transferred by the first conveyor, are fed back to a location near the cutting station for transfer with the transfer unit. Preferably, the first conveyor is arranged to transfer the bars in a direction opposite the transfer direction. Preferably, the system thereto further comprises a second conveyor to transfer bars in a direction with a component opposite the first direction, preferably a second direction opposite the first direction. The system is then

arranged to transfer the cut bars from the first conveyor to the second conveyor. The first and second conveyor may also form a loop, thereby feeding back the cut bars, optionally via a further processing device such as a bundling unit. Preferably, the second conveyor is arranged parallel to first conveyor. A more compact configuration is obtained if the first and second conveyors extend adjacently. Preferably, the transfer unit is then arranged for transferring the cut bars from the second conveyor to the bins of the storage.

According to a preferred embodiment, the system further comprises a buffer storage for storing bars, wherein the first conveyor is arranged to transfer bars to said buffer. Preferably, the second conveyor is then arranged to transfer bars from the buffer in a direction opposite the first direction.

This beneficially allows bars received on the first conveyor to be transferred to the buffer storage, emptying the first conveyor. This reduces the chance of the first conveyor becoming full, which results in an interruption in the cutting operation. Thus, the buffer storage, in particular in combination with the first and second conveyors, allows for an increase in the operational efficiency of the system.

The first conveyor is preferably arranged next or even adjacent to the receiving surface. It may however also be possible that one or more intermediate storage pockets are arranged between the receiving surface and the first conveyor for temporality storing cut bars prior to transfer with the first conveyor.

Preferably, the receiving surface comprises means to move bars towards the intermediate storage pockets, for example swivelling arms that push the cut bars from the receiving surface towards the intermediate storage pockets. The one or more storage pockets are preferably also provided with means to transfer bars temporarily stored in the pocket towards the first conveyor. For example, similar swivelling arms may be provided to push bars out of a pocket. In a preferred embodiment, the intermediate storage pockets are arranged along a slope descending from the receiving surface towards the first conveyor. This slope allows bars to roll from the receiving surface into an intermediate storage pocket, and from an intermediate storage pocket towards another intermediate storage pocket or the first conveyor.

Preferably, the buffer storage is located in a direction with a component opposite the transfer direction, preferably in a direction opposite the transfer direction, with respect to the storage, wherein the first conveyor is arranged to transfer the bars in the first direction, with a component opposite to the transfer direction, and wherein the second conveyor is arranged to transfer the bars

in a direction with a component parallel to the transfer direction, preferably in the transfer direction. This results in that the buffer storage is located in the same area as the input, which beneficially saves space.

Preferably, the buffer storage is located at least partially underneath the input. More preferably, the buffer storage is located substantially entirely underneath the input. This allows for a practical placement of the buffer storage in the same location as the input. In systems known in the art, also systems without a buffer storage, the storage, and possibly a bundler to bundle cut bars, is/are located on the opposite end of the receiving surface to where the cutting station is located. This arrangement requires sufficient space between the input on one side and the bundler and/or storage on the other side to accommodate the maximum length of bars. In many cases, bars are as long as at least 12 - 24 meters, requiring at least that distance between the input and the storage. By locating the buffer storage underneath the input, the distance between the input and the storage can be reduced to a fraction of the space required in systems known in the art.

Preferably, the second conveyor extends adjacent to the first conveyor. This allows for an efficient arrangement of the second and first conveyors, minimising the space required for the two conveyors.

Preferably, the first conveyor is arranged to transfer bars to the buffer storage at a first location, and wherein bars are received by the second conveyor from the buffer storage from a second location, wherein the first location is different from the second location.

Preferably, the second location is offset from the first location in a direction perpendicular to the transfer direction. This allows the first conveyor and the second conveyor to be placed side by side. To provide bars, received by the buffer storage from the first conveyor in the first location, at the second location to the second conveyor, it is beneficial to transfer said bars in the buffer storage from the first location to the second location.

Preferably, the second location is above the first location. In this embodiment, the first conveyor is thus vertically offset from the second conveyor. Especially when an apparatus such as a bundling unit, as described below, is used, the second conveyor is preferably arranged in line with for example the bundler, to allow bars to pass straight through the bundling unit onto the second conveyor. For the bundling unit to function, it has to be arranged at a certain height relative to the floor, and consequentially the second conveyor is arranged at a certain height relative to the floor.

Also apparatuses other than bundling units often require a certain clearance from the floor, and thus a minimum height of the second conveyor.

The first conveyor, on the other hand, is preferably arranged close to the floor, to allow bars to roll from the receiving surface towards the first conveyor preferably only under the force of gravity. In practice, the first conveyor is thus preferably located closer to the floor than the second conveyor. An additional benefit of the first location being below the second location, is that the receiving plane can be arranged lower to the floor. This allows the transfer unit to be arranged lower to the floor, while being able to pass over the receiving surface. Allowing the transfer unit to be arranged lower may lower the overall height of the system.

Preferably, the buffer storage comprises a buffer transfer unit to move bars from the first location to the second location. This provides an efficient way to move between the first and second location in the buffer storage.

Preferably, the buffer transfer unit comprises a carrier comprising a third conveyor, wherein the third conveyor is arranged to receive bars from the first conveyor and deliver bars to the second conveyor, wherein the buffer transfer unit is arranged to move the carrier from the first location to the second location. This provides an efficient way to move bars between the first location and the second location, while also minimizing the space required for the buffer storage.

Preferably, the buffer transfer unit comprises an elevator arranged to move bars at least in the vertical direction. This allows the buffer transfer unit to at least move bars in the vertical direction.

Preferably, wherein the buffer transfer unit comprises at least one guide member, wherein the carrier is mounted on the at least one guide member, wherein the carrier is arranged to move between the first and second locations along the at least one guide member. Preferably, the at least one guide member is substantially straight, and arranged at an angle to guide the carrier from the first location to the second location, wherein the first location and second location are both vertically and horizontally offset relative to each other. This provides a robust and space efficient way to transfer bars in the buffer storage between the first location and the second location. Alternatively, the at least one guide member may be curved. In an alternative embodiment, the buffer transfer unit comprises at least one rotating member, wherein the carrier is mounted on the at least one rotating member. In this embodiment, a rotation of the at least one rotating member moves the carrier between the first location and the second location.

Preferably, the longitudinal axis of the second conveyor and the longitudinal axis of the third conveyor are substantially aligned when the carrier is in the second location. This allows the bars to be transferred easily from the second conveyor into the buffer storage. Preferably, the longitudinal axes of the second conveyor and the longitudinal axis of the third conveyor extend at a mutual angle of less than 2°, preferably less than 1.5°.

Preferably, the system further comprises a bundling unit arranged to bundle bars. wherein preferably the buffer storage is arranged to provide bars to the bundling unit. In many cases, it is required that cut bars are consolidated in bundles, which are then tied together to facilitate further handling and transport without separating the bundle. As explained previously, in systems known in the art, the bundling unit is typically located on the opposite side of the receiving plane, or equivalent, to the input. This requires at least the maximum length of the bars to be provided between the input and the bundling unit. The buffer storage, in combination with a bundling unit, requires only the space required for the placement of the cutting station and the bundling unit, preferably laterally offset, between the input and the storage. The space required for the cutting station and the bundling unit is less than the maximum length of bars, for example 20 metres. Thus, the buffer storage in combination with a bundling unit provides a significant space saving. In addition, the buffer storage allows for the first conveyor to be emptied without having to feed the bars on the first conveyor immediately through the bundling unit. This allows for more frequent emptying of the first conveyor, which reduces the chance of the cutting operation to have to be interrupted awaiting the emptying of the first conveyor.

As mentioned above, the first conveyor may be arranged to feed the cut bars to a bundling unit. The cuts bars may be received from the receiving surface. The first conveyor may be arranged adjacently to the receiving surface. It may also be possible that the transfer unit transfers the cut bars to the first conveyor, which preferably feeds the cut bars to the bundling unit. It is then not necessary that the first conveyor extends adjacently to the receiving surface. Additionally or alternatively, the transfer unit may be arranged to transfer cut bars from the receiving surface and/or intermediate storage to a bundling unit, in particular to a conveyor, possibly the first or another conveyor, which is in turn arranged to transfer cut bars to the bundling unit.

Preferably, the bundling unit is arranged at the second location, wherein bars received by the second conveyor at the second location pass through the bundling unit to be bound in bundles. Preferably, the bundling unit is substantially aligned with the longitudinal axis of the second conveyor. This provides the aforementioned space savings resulting from the use of the buffer storage in combination with a bundler or another apparatus.

Preferably, the transfer unit comprises a plurality of grippers arranged to grip bars provided on the second conveyor. Preferably, the transfer unit is arranged to run on tracks in a direction perpendicular to the transfer direction. This provides for an effective mounting of the transfer unit, and allows the transfer unit to efficiently move across and between the second conveyor and the storage, and preferably as well as the receiving surface, and the first conveyor.

Another aspect relates to a method for processing bars, in particular in a system according to any of the preceding claims, comprising the steps of:

- receiving a plurality of bars to be processed in an input, wherein the received bars extend substantially parallel along a transfer direction;
- transferring at least one bar to a cutting station located in the transfer direction with respect to the input;
- cutting the at the least one bar;
- conveying, using a first conveyor, the cut bar in a first direction with a component parallel to the transfer direction, preferably in a first direction parallel to the transfer direction,
- transferring the cut bars in a direction with a component perpendicular to the transfer direction, preferably in a direction perpendicular to the transfer direction, to at least one bin of a storage for storing the cut bars, wherein the storage comprises a plurality of bins, each arranged to receive a plurality of bars.

This provides the efficiency benefits as described above, as well as the space savings as described above.

Preferably, the step of conveying, using a first conveyor, the cut bar in a first direction parallel to the transfer direction comprises a step of transferring, using the first conveyor, the cut bars in a direction opposite the transfer direction.

Preferably, the method further comprises a step of, using a bundling unit arranged for bundling bars, bundling bars, wherein the first conveyor is arranged to feed the cut bars to the bundling unit.

Preferably, the method further comprises a step of, using a second conveyor arranged parallel to the first conveyor, conveying at least one bar in a direction opposite the first direction, wherein the transfer unit is arranged for transferring the cut bars from the second conveyor to the bins of the storage.

Preferably, the method further comprises a step of buffering the at least one bar using a buffer, wherein the first conveyor is arranged to transfer bars to said buffer.

Preferably, the method further comprises, after the step of buffering, the step of bundling a plurality of bars and conveying, using the second conveyor, a bundle of bars, wherein the step of transferring comprises transferring a bundle of bars. This provides the efficiency and space savings associated with the use of the buffer storage in combination with a bundler, as described above. It is clear that further features and accompanying advantages of the system as described above are also applicable to the method as described here.

The present invention is further illustrated by the following Figures, which show a preferred embodiment of the system and system according to the invention, and are not intended to limit the scope of the invention in any way, wherein:

- Figure 1 shows a top view of the system;
- Figure 2 shows a perspective view of the system;
- Figure 3 shows a schematic overview of an embodiment of the system;
- Figure 4 shows a view of the buffer storage in more detail;
- Figure 5 shows a view of the buffer storage as arranged in the system; and
- Figure 6 shows a schematic overview of another embodiment of the system.

Figure 1 shows a top view of the system 100. The buffer storage 1, indicated by the dotted box 1', is arranged underneath the input 2. Bars are received in the input 2, and placed onto cutting conveyor 21 to be fed through the cutting station 3. Cut bars are then received on the receiving surface 9. An intermediate storage 91 may be provided next to the receiving surface 9 to collect cut bars from different cutting cycles. Collected bars are then transferred onto the first conveyor 5 and transferred in the first direction D1 towards the buffer storage 1. The bars are received in the buffer storage 1 at the first location A. Bars are then transferred to the second location B by the buffer storage 1, and fed through the bundler 8 in the second direction D2, opposite the first direction D1. Bundled bars are then received on the second conveyor 6. The bundled bars are then transferred to a bin 41 of the storage 4 by the transfer unit 7 (not indicated, but arranged directly above the second conveyor 6 in the figure), running on rails 71 in a direction perpendicular to the transfer direction Dt.

Figure 2 shows a perspective view of the system 100, showing the buffer storage 1 arranged underneath the input 2. The cutting station 3 is not shown. The transfer unit 7 is shown to be running above the storage 4 on rails 71.

Figure 3 shows a schematic overview of the system 100 and the various transfer directions. In input 2 bars are received parallel to a transfer direction Dt. One or more bars are then placed onto cutting conveyor 21 and fed through the cutting station 3 along direction D3, and cut bar(s) are received on the receiving surface 9. An (optional) intermediate storage 91 is arranged laterally beside the receiving surface 9, for example to collect bars from multiple cutting operations before transferring the collected bars to the first conveyor 5. The first conveyor 5 receives cut bars and transfers said bars in direction D2, opposite the transfer direction Dt, towards the buffer transfer unit 10 of the buffer storage 1. The buffer transfer unit 10 receives the bars from the first conveyor 5 in the first location A. The buffer transfer unit 10 may then move along direction Db towards the second location B. At the second location, bars are transferred out of the buffer transfer unit of the buffer storage 1 along direction D2, parallel to the transfer direction Dt. The bars may be passed through a bundler 8, which is arranged at the second location B, and onto the second conveyor 6. Bundled bars are then transferred from the second conveyor 6 into the storage 4 by the transfer unit 7 (not shown).

Figure 4 shows a view of the buffer storage 1 in more detail. The buffer storage 1 comprises a buffer transfer unit 10, which comprises a carriage 11 comprising a third conveyor 12 to receive bars in direction D1 from the first conveyor (not shown). The carriage 11 is mounted on guide members 14, which form part of the elevator 13 which is arranged to move the carriage 11 between the first location A and the second location B along direction Db. The second location B is both vertically and horizontally laterally offset from the first location A. The outlined carriage 11' is indicated in the second location B.

Figure 5 shows a view of the buffer storage 1 as arranged in the system 100, underneath the input 2. The carriage 11 is shown in the first location A, and the carriage 11' is shown in the second location B. The volume V represents one or more bars placed on the third conveyor 12. In the shown view, the cutting station 3, bundler 8, and storage 4, as well as other components located near said components are omitted.

Figure 6 shows another embodiment of the system 101. Bars are received in input 2 and placed on a cutting conveyor 21 to be fed through cutting station 3 in a direction D3 coinciding with the transfer direction Dt. Cut bars are then received on the receiving surface 9 and may be transferred to a first conveyor 5. A transfer unit 7 then transfers cut bars, from the first conveyor 5 or even the receiving surface 9 or a temporary storage next to receiving surface 9, to a second conveyor 6. The second conveyor 6 may then feed the cut bars through a bundler 8a', 8b', which may be arranged

on either end of the second conveyor 8. If the bundler 8a' is arranged on the input 2 side of the second conveyor 6, bars are fed through the bundler 8a' in direction Dua, opposite Dt.

After passing through the bundler 8a', the bars are received on another conveyor 110a, which may optionally function as a buffer storage 1 as described above. Bars may then be transferred back onto the second conveyor 6, or an adjacent conveyor (not shown), in direction D5a, coinciding with Dt, to be further processed, for example by moving the cut bars to a storage bin 41 of a storage 4, in this case shown between the first 5 and second 6 conveyors.

The same applies, *mutatis mutandis,* when the bundler 8b' is arranged on the other end of the second conveyor 5. Bars are fed through the bundler 8b' in direction Dub, corresponding to Dt. After passing through the bundler 8b', the bars are received on another conveyor 110b, which may optionally function as a buffer storage 1 as described above. Bars may then be transferred back onto the second conveyor 6, or an adjacent conveyor (not shown), in direction D5b, opposite Dt, to be further processed, for example by moving the cut bars to a storage bin 41 of a storage 4, in this case shown between the first 5 and second 6 conveyors. The transfer unit 7 moves perpendicular to Dt, in direction Dut.

The present invention is not limited to the embodiment shown, but extends also to other embodiments falling within the scope of the appended claims.

The present invention is further illustrated by the following embodiments, which are not intended to limit the scope of the invention in any way:

1. System for processing bars comprising:
- an input for receiving a plurality of bars to be processed, wherein the input is arranged to receive said bars extending substantially parallel along a transfer direction;
- a cutting station located in the transfer direction with respect to the input and arranged for cutting bars and feeding the cut bars to a receiving surface;
- a storage for storing the cut bars, wherein the storage comprises a plurality of bins, each arranged to receive a plurality of bars, wherein the storage is located in a direction perpendicular to the transfer direction with respect to the receiving surface of the cutting unit;
- a buffer storage for storing bars;
- a first conveyor arranged next to the receiving surface for receiving bars from said receiving surface and arranged to transfer bars to said buffer in a first direction parallel to the transfer direction;

- a second conveyor arranged parallel to the first conveyor to transfer bars in a direction opposite the first direction;
- a transfer unit for transferring the cut bars from the second conveyor to the bins of the storage.

2. System according to embodiment 1, wherein the buffer storage is located in a direction opposite the transfer direction with respect to the storage, wherein the first conveyor is arranged to transfer the bars in the first direction, opposite to the transfer direction, and wherein the second conveyor is arranged to transfer the bars in the transfer direction.

3. System according to embodiment 2, wherein the buffer storage is located underneath the input.

4. System according to embodiment 1, 2 or 3, wherein the second conveyor extends adjacent to the first conveyor.

5. System according to embodiment 4, wherein the first conveyor is arranged to transfer bars to the buffer storage at a first location, and wherein bars are received by the second conveyor from the buffer storage from a second location, wherein the first location is different from the second location.

6. System according to embodiment 5, wherein the second location is above the first location.

7. System according to any of the preceding embodiments 5 - 6, wherein the second location is offset from the first location in a direction perpendicular to the transfer direction.

8. System according to any of the preceding embodiments 5 - 7, wherein the buffer storage comprises a buffer transfer unit to move bars from the first location to the second location.

9. System according to the preceding embodiment, wherein the buffer transfer unit comprises a carrier comprising a third conveyor, wherein the third conveyor is arranged to receive bars from the first conveyor and deliver bars to the second conveyor, wherein the buffer transfer unit is arranged to move the carrier from the first location to the second location.

10. System according to any of the preceding embodiments 8 - 9, wherein the buffer transfer unit comprises an elevator arranged to move bars at least in the vertical direction.

11. System according to any of the preceding embodiments 8 - 10, wherein the buffer transfer unit comprises at least one guide member, wherein the carrier is mounted on the at least one guide member, wherein the carrier is arranged to move between the first and second locations along the at least one guide member.

12. System according to any of the preceding embodiments 9 - 11, wherein the longitudinal axis of the second conveyor and the longitudinal axis of the third conveyor are substantially aligned when the carrier is in the second location.

13. System according to any of the preceding embodiments, further comprising a bundling unit arranged to bundle bars, wherein the buffer storage is arranged to provide bars to the bundling unit.

14. System according to at least embodiments 4 and 13, wherein the bundling unit is arranged at the second location, wherein bars received by the second conveyor at the second location pass through the bundling unit to be bound in bundles.

15. System according to the preceding embodiment, wherein the bundling unit is substantially aligned with the longitudinal axis of the second conveyor.

16. System according to any of the preceding embodiments, wherein the transfer unit comprises a plurality of grippers arranged to grip bars provided on the second conveyor.

17. System according to the preceding embodiment, wherein the transfer unit is arranged to run on tracks in a direction perpendicular to the transfer direction.

18. Method for processing bars, in particular in a system according to any of the preceding embodiments, comprising the steps of:

- receiving a plurality of bars to be processed in an input, wherein the received bars extend substantially parallel along a transfer direction;
- transferring at least one bar to a cutting station located in the transfer direction with respect to the input;
- cutting the at the least one bar;
- conveying, using a first conveyor, the cut bar in a first direction parallel to the transfer direction to a buffer for storing bars;
- buffering the at least one bar;

- conveying, using a second conveyor, at least one bar from the buffer in a direction opposite the first direction;
- transferring the cut bars from the second conveyor in a direction perpendicular to the transfer direction to at least one bin of a storage for storing the cut bars, wherein the storage comprises a plurality of bins, each arranged to receive a plurality of bars.

19. Method according to embodiment 18, further comprising, after the step of buffering, the step of bundling a plurality of bars and conveying, using the second conveyor, a bundle of bars, wherein the step of transferring comprises transferring a bundle of bars.

Claims

1. System for processing bars comprising:
   - an input for receiving a plurality of bars to be processed, wherein the input is arranged to receive said bars extending substantially parallel along a transfer direction;
   - a cutting station located in the transfer direction with respect to the input and arranged for cutting bars and feeding the cut bars to a receiving surface;
   - a storage for storing the cut bars, wherein the storage comprises a plurality of bins, each arranged to receive a plurality of bars, wherein the storage is located in a direction perpendicular to the transfer direction with respect to the receiving surface of the cutting unit;
   - a first conveyor arranged next to the receiving surface for receiving bars from said receiving surface and arranged to transfer cut bars in a first direction parallel to the transfer direction;
   - a transfer unit for transferring the cut bars to the bins of the storage.

2. System according to claim 1, the first conveyor is arranged to transfer the bars in a direction opposite the transfer direction.

3. System according to claim 1 or 2, wherein the system further comprises a bundling unit arranged to bundle bars, wherein the first conveyor is arranged to feed the cut bars to the bundling unit.

4. System according to claim 1, 2 or 3, wherein the system further comprises a second conveyor arranged parallel to the first conveyor to transfer bars in a direction opposite the first direction, wherein the transfer unit is arranged for transferring the cut bars from the second conveyor to the bins of the storage.

5. System according to any of the preceding claims, wherein the system further comprises a buffer storage for storing bars, wherein the first conveyor is arranged to transfer bars to said buffer.

6. System according to claims 2, 4 and 5, wherein the buffer storage is located in a direction opposite the transfer direction with respect to the storage, opposite to the transfer direction, and wherein the second conveyor is arranged to transfer the bars in the transfer direction.

7. System according to claim 6, wherein the buffer storage is located underneath the input.

8. System according to at least claim 4, wherein the second conveyor extends adjacent to the first conveyor.

9. System according to claim 8, wherein the first conveyor is arranged to transfer bars to the buffer storage at a first location, and wherein bars are received by the second conveyor from the buffer storage from a second location, wherein the first location is different from the second location.

10. System according to claim 9, wherein the second location is above the first location.

11. System according to any of the preceding claims 9 - 10, wherein the second location is offset from the first location in a direction perpendicular to the transfer direction.

12. System according to any of the preceding claims 9 - 11, wherein the buffer storage comprises a buffer transfer unit to move bars from the first location to the second location.

13. System according to the preceding claim, wherein the buffer transfer unit comprises a carrier comprising a third conveyor, wherein the third conveyor is arranged to receive bars from the first conveyor and deliver bars to the second conveyor, wherein the buffer transfer unit is arranged to move the carrier from the first location to the second location.

14. System according to any of the preceding claims 12 - 13, wherein the buffer transfer unit comprises an elevator arranged to move bars at least in the vertical direction.

15. System according to any of the preceding claims 12 - 14, wherein the buffer transfer unit comprises at least one guide member, wherein the carrier is mounted on the at least one guide member, wherein the carrier is arranged to move between the first and second locations along the at least one guide member.

16. System according to any of the preceding claims 13 - 15, wherein the longitudinal axis of the second conveyor and the longitudinal axis of the third conveyor are substantially aligned when the carrier is in the second location.

17. System according to at least claim 3 and any of the preceding claims 5 - 16, wherein the buffer storage is arranged to provide bars to the bundling unit.

18. System according to at least claims 8 and 17, wherein the bundling unit is arranged at the second location, wherein bars received by the second conveyor at the second location pass through the bundling unit to be bound in bundles.

19. System according to the preceding claim, wherein the bundling unit is substantially aligned with the longitudinal axis of the second conveyor.

20. System according to any of the preceding claims, wherein the transfer unit comprises a plurality of grippers arranged to grip bars provided on the second conveyor.

21. System according to the preceding claim, wherein the transfer unit is arranged to run on tracks in a direction perpendicular to the transfer direction.

22. Method for processing bars, in particular in a system according to any of the preceding claims, comprising the steps of:
- receiving a plurality of bars to be processed in an input, wherein the received bars extend substantially parallel along a transfer direction;
- transferring at least one bar to a cutting station located in the transfer direction with respect to the input;
- cutting the at the least one bar;
- conveying, using a first conveyor, the cut bar in a first direction parallel to the transfer direction;
- transferring the cut bars in a direction perpendicular to the transfer direction to at least one bin of a storage for storing the cut bars, wherein the storage comprises a plurality of bins, each arranged to receive a plurality of bars.

23. Method according to claim 22, wherein the step of conveying, using a first conveyor, the cut bar in a first direction parallel to the transfer direction comprises a step of transferring, using the first conveyor, the cut bars in a direction opposite the transfer direction.

24. Method according to any of the preceding method claims, further comprising a step of, using a bundling unit arranged for bundling bars, bundling bars, wherein the first conveyor is arranged to feed the cut bars to the bundling unit.

25. Method according to any of the preceding method claims, further comprising a step of, using a second conveyor arranged parallel to the first conveyor, conveying at least one bar in a direction opposite the first direction, wherein the transfer unit is arranged for transferring the cut bars from the second conveyor to the bins of the storage.

26. Method according to any of the preceding method claims, further comprising a step of buffering the at least one bar using a buffer, wherein the first conveyor is arranged to transfer bars to said buffer.

27. Method according to at least claims 25 and 26, further comprising, after the step of buffering, the step of bundling a plurality of bars and conveying, using the second conveyor, a bundle of bars, wherein the step of transferring comprises transferring a bundle of bars.