

## Environmental Considerations at the Design Development Stage

At Kubota, we work constantly to achieve sustainable development at the global level. Right from the design and development stages, environmental concerns are a primary focus of everything we do, including raw materials, parts procurement, manufacturing, distribution, usage, and disposal of our products. In our product assessment reviews, we look at how our products affect the environment. One of our most important quests right now is the introduction of the LCA, with the aim of fulfilling the ISO 14000

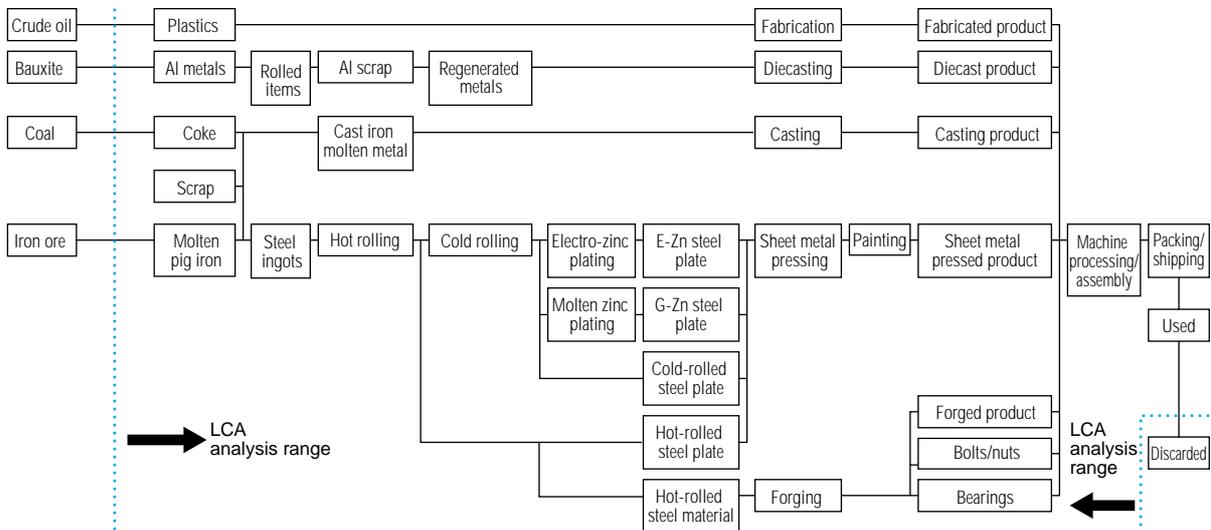
series of international standards. Every day, we use every conceivable means to make sure that our products affect the environment only in the most positive ways.

### An example of the LCA (Kubota's compact general-purpose gasoline engine)

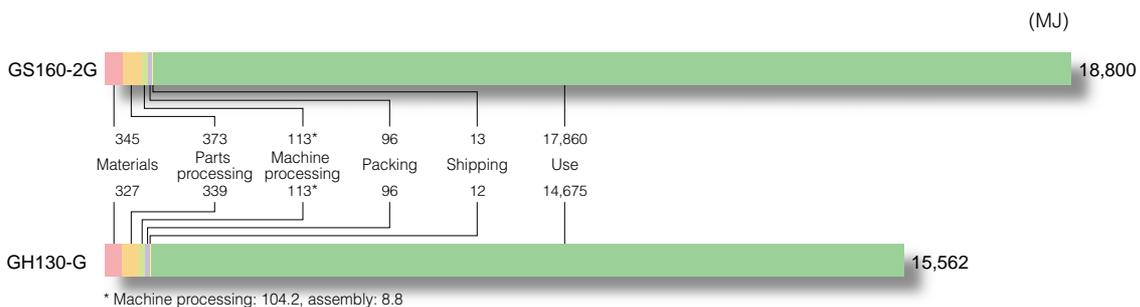
In order to make sure that our products don't add to the already heavy burden on the environment, we use the LCA system in our general-purpose air-cooled gasoline engines. Our

current project focuses on the compact air-cooled gasoline engines used in a broad range of fields, such as commonly used in agricultural machinery, power generators, and welding sources at construction sites. Kubota manufactures around 200,000 units of these engines per year.

### Process flow of engine manufacturing



### Life cycle energy load of the compact general-purpose gasoline engine



**Reduced numbers of parts, simpler disassembly, marking of material codes (agricultural machines and others)**

Based on the results of product assessments, Kubota is committed to making environmental concerns an integral part of our designs. The following are just a few of the many ways that we're lightening the load on the environment.

●Tractor cabin doors

All doors are now made of glass, with no more door frames. Weather strips are placed directly on the glass, reducing the number of parts involved and simplifying disassembly.

●Hoods for rice transplanters

Drawing on the resilience of resin materials, hoods can now be attached and detached, and are more easily disassembled.

●Hoods for mini-backhoes (construction machines)

Resin materials impervious to impact and shock are used, and hoods are consolidated with the backhoe, to reduce the number of parts involved.

●Tractor headlights

Using a resin hood means we can attach the headlights directly to the hood, so fewer parts are needed.

●Grain tanks for combine harvester

These have been changed to an integrated resin tank, reducing the number of parts involved and making disassembly easier. Also, tanks no longer need to be painted.

●Marking of resin parts

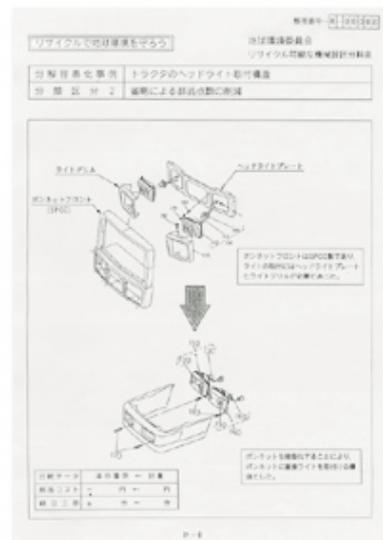
The first step in recycling plastic which was formerly discarded as waste is to mark different types of plastic so they can be differentiated. At Kubota, we mark any plastic resin parts that weigh 100 grams or more in our agricultural machines or vending machines, to make recycling easier at the retrieval stage.



Rice transplanter



Tractor



**Product assessment example**

**Kubota “Mastiff” single-axis crusher**

Based on the evaluations of product assessments, changes were made to conserve resources (product weight was reduced), to conserve energy (power consumption was reduced), and to reduce noise.



製品アセスメント機材選定評価表

項目	評価項目	評価基準	評価結果	改善点					
1	製品重量	1.0	2.0	5	1.0	1.0	4.0	10	5
2	電力消費	5	5	5	1.0	1.0	5.0	10	5
3	騒音	5	5	5	1.0	1.0	5.0	10	5
4	メンテナンス	5	5	5	1.0	1.0	5.0	10	5
5	安全性	5	5	5	1.0	1.0	5.0	10	5
6	信頼性	5	5	5	1.0	1.0	5.0	10	5
7	操作性	5	5	5	1.0	1.0	5.0	10	5
8	耐久性	5	5	5	1.0	1.0	5.0	10	5
9	コスト	5	5	5	1.0	1.0	5.0	10	5
10	その他	5	5	5	1.0	1.0	5.0	10	5

製品アセスメントチェックシート

項目	評価項目	評価基準	評価結果	改善点					
1	製品重量	1.0	2.0	5	1.0	1.0	4.0	10	5
2	電力消費	5	5	5	1.0	1.0	5.0	10	5
3	騒音	5	5	5	1.0	1.0	5.0	10	5
4	メンテナンス	5	5	5	1.0	1.0	5.0	10	5
5	安全性	5	5	5	1.0	1.0	5.0	10	5
6	信頼性	5	5	5	1.0	1.0	5.0	10	5
7	操作性	5	5	5	1.0	1.0	5.0	10	5
8	耐久性	5	5	5	1.0	1.0	5.0	10	5
9	コスト	5	5	5	1.0	1.0	5.0	10	5
10	その他	5	5	5	1.0	1.0	5.0	10	5

Check sheet

