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OPTICAL CHLORIDE FILM DETECTOR AGAINST DIOXINS

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Abstract: The aim of the study is the development of a nonintrusive mass flow measurement for moved bed gravity flow of novel new process of DRI and naphtha making reactor and the development of treatment for waste garbage plastics ie. Sanuki RDF System against Dioxins. The former is 0.9 % FS using a steady state heat transfer method and 3.5 % FS using a pulse heating cross correlation method. The later is already found out a blue light detector for the transparent chlorinated plastic film of garbage wrapping using two dimensional FFT analyzer instead of X ray or $CuCl_2$ green flame.

Keywords: chloride film detector, dioxins, gravity flow, nonintrusive measurement

1 INRODUCTION

One of the authors developed PCI (pulverized coal injection system) in 1982 shown in [1]. PCI has been used for teen set of novel blast furnaces in the World and it is very useful for RPF (refuse plastics fuel) or RDF (refuse derived fuel) in order to recycle the resources. He has been developing moved bed gravity flow and nonintrusive measurement of the process since 1983 shown in [2-4].

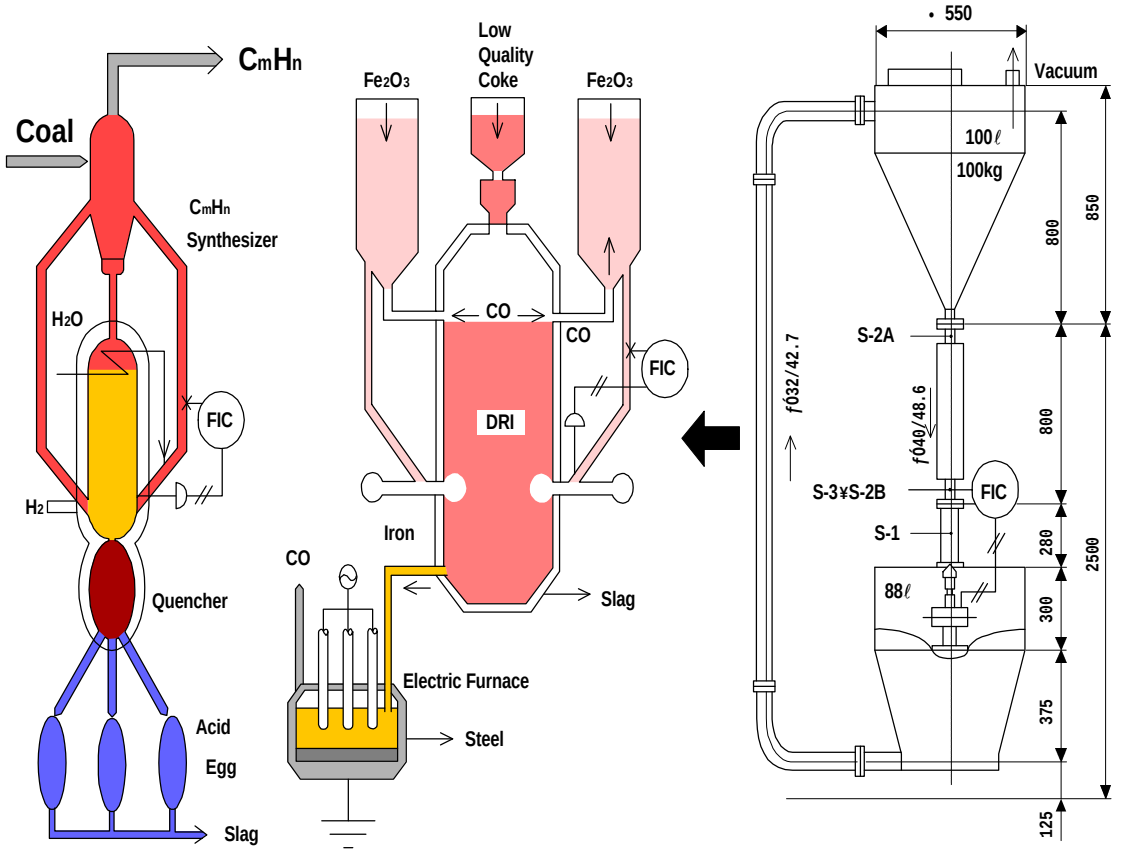

Figure 1. New process, test equipment and locations of sensors

PCI and the moved bed gravity flow shown in [5] are more economical and ecological than classical type for energy recovery and saving carbon dioxide. Because the carrier gas is less than conventional type.

The cross correlation type, heat transfer type and PZT acoustic emission type are developed by him and reported in [4] and [6].

The authors developed a optical detector for PVDC($\{-C_2H_2Cl_2-\}_n$) and PVC($\{-C_2H_3Cl-\}_n$) rejection method shown in [7] in garbage for Sanuki RDF system against Dioxins since 1998 reported in [5] by one of the authors.

The authors think that we should compensate our developed control system for our ecology in the World against Dioxins.

2 THE PAST EFFORTS

Figure 1 shows the new process and the test equipment for developing nonintrusive measuring methods for the moved bed gravity flow. Figure 2 shows Sanuki RDF system. The former is 0.9 % FS for stationary heat transfer method and 3.5 % FS for a pulse heating cross correlation method for 40ö, respectively. The later requires the chlorinated waste film detector of the garbage compost reactor for the left upper figure of Figure 2. The right upper figure shows RPF making process for cement kilns and blast furnaces for reducing chlorinated films. The lower figure shows RDF making and burning process. Reducing Dioxins in the fly ash in the burning process is the most important by reducing chloride film in RDF.

Chloride films in the garbage are very useful for oxygen barrier for raw meet wrapping but are not useful for Dioxins making in garbage incinerators. Then they must be rejected using garbage compost reactors or suitable chloride film detectors.

3 THE TEST EQUIPMENT FOR CHLORIDE FILM DETECTOR

Figure 3 shows RGB light lamp, test film, CCD camera and a personal computer. The power of the light source is 100 W. RGB is made of the filters for the light source. The relation between light wave length and the light intensity of the film pass light and the relation between the normalized light intensity and number of pixels on the film using two dimensional FFT of Nexus's NewQube. The detected films are 10~20 μm new PVDC, PVC and non-chloride films. Sampling area of the test film is 15 mm ö for the reflection light of the surface of the film on the black plate.

4 THE EFFORTS OF CHLORINATED FILM DETECTOR

Figure 4 shows the actual image for the light intensity on the films for the blue light.

Figure 5 shows the relation between the intensity and the number of the pixels on the films for blue light.

Figure 6 shows the relation between the light Intensity and the thickness of films.

5 CONCLUSIONS

1. Figure 5 shows PVDC and PVC films have the strong reduced light intensity for the blue light.
2. The authors assume the chlorine radicals make blue light adsorption based on chlorine lone pair by UV or lowest wave length (blue wave).
3. Increasing the thickness of the films increases the light intensity based on the light reflection.

6 THE FUTURE STUDY AND FUTURE FORECASTS

1. The reformed film made of the exhaust films of the garbage composter will be test by the method.
2. RPF will be qualified by the chlorine contents based on this blue light detector.
3. PVDC and PVC should be controlled by the government policy

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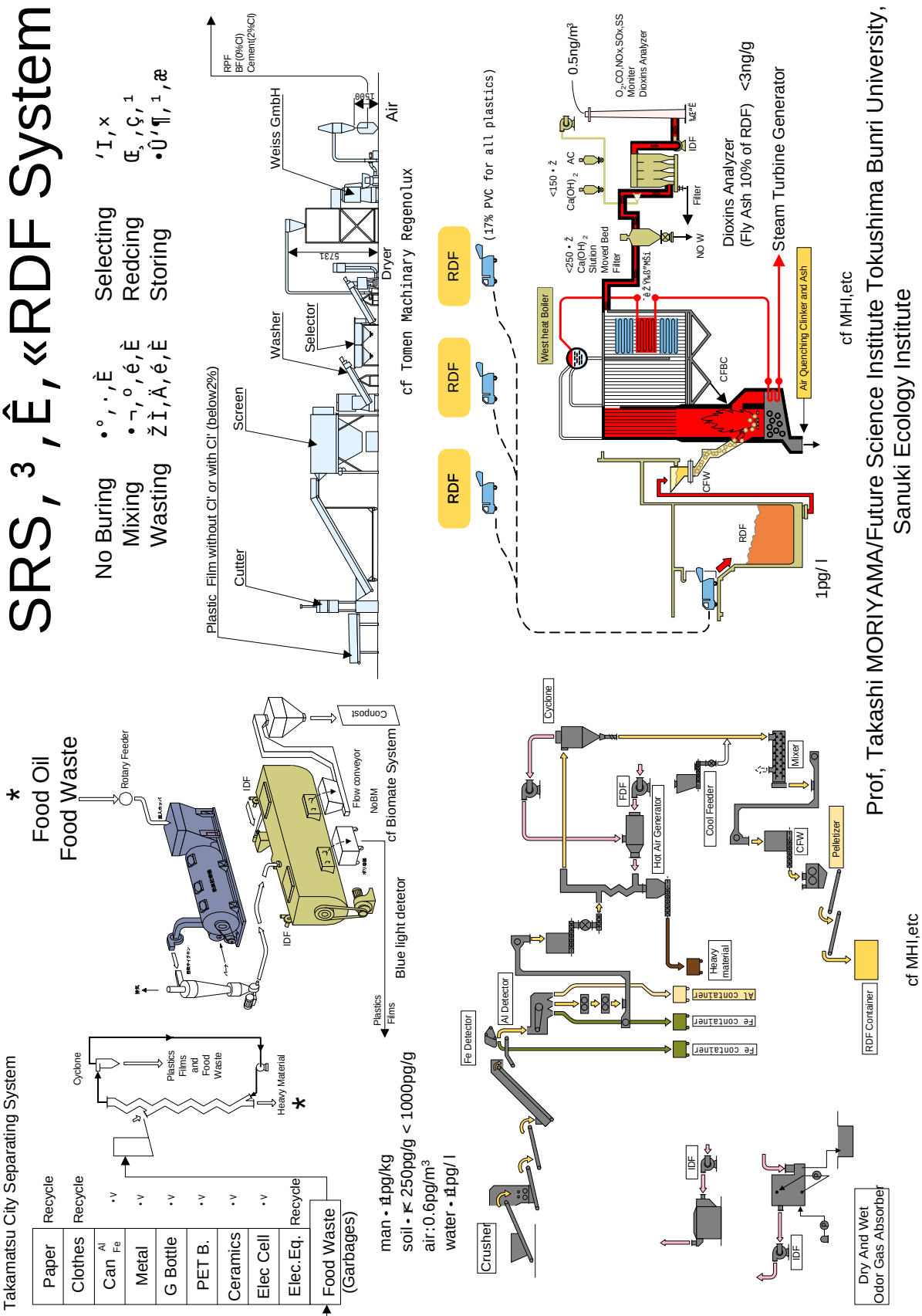

Figure 2. Sanuki RDF system against Dioxins

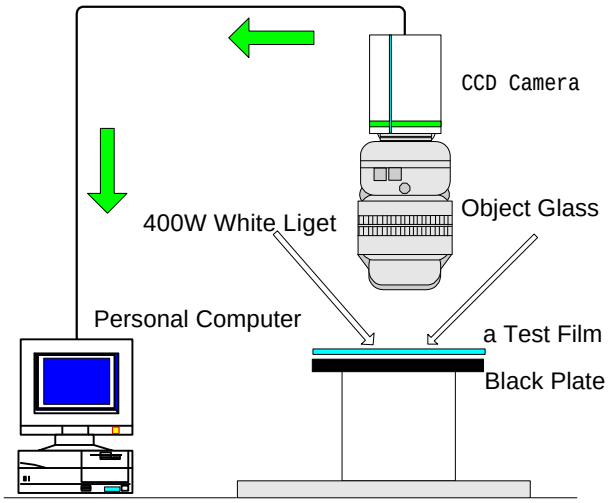

Figure 3. Test Equipment

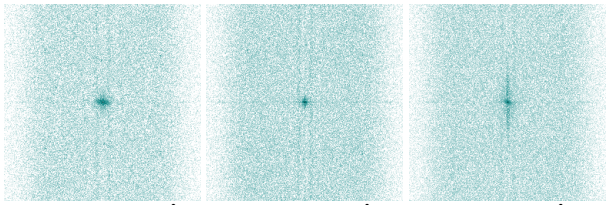

Figure 4. Actual image on Personal computer through CCD

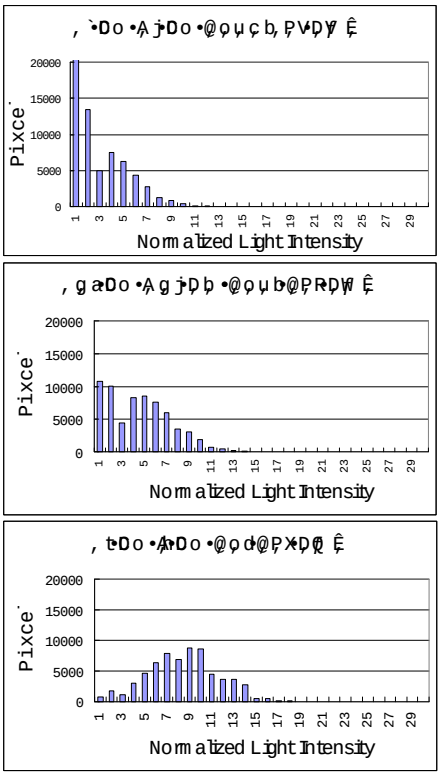

Figure 5. Relation between light intensity and pixels for blue light

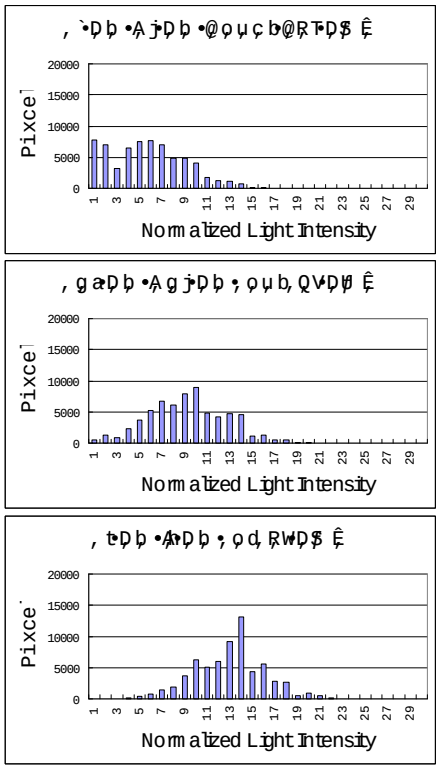

Figure 6. Relation between thickness and Figure 5 for blue light

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